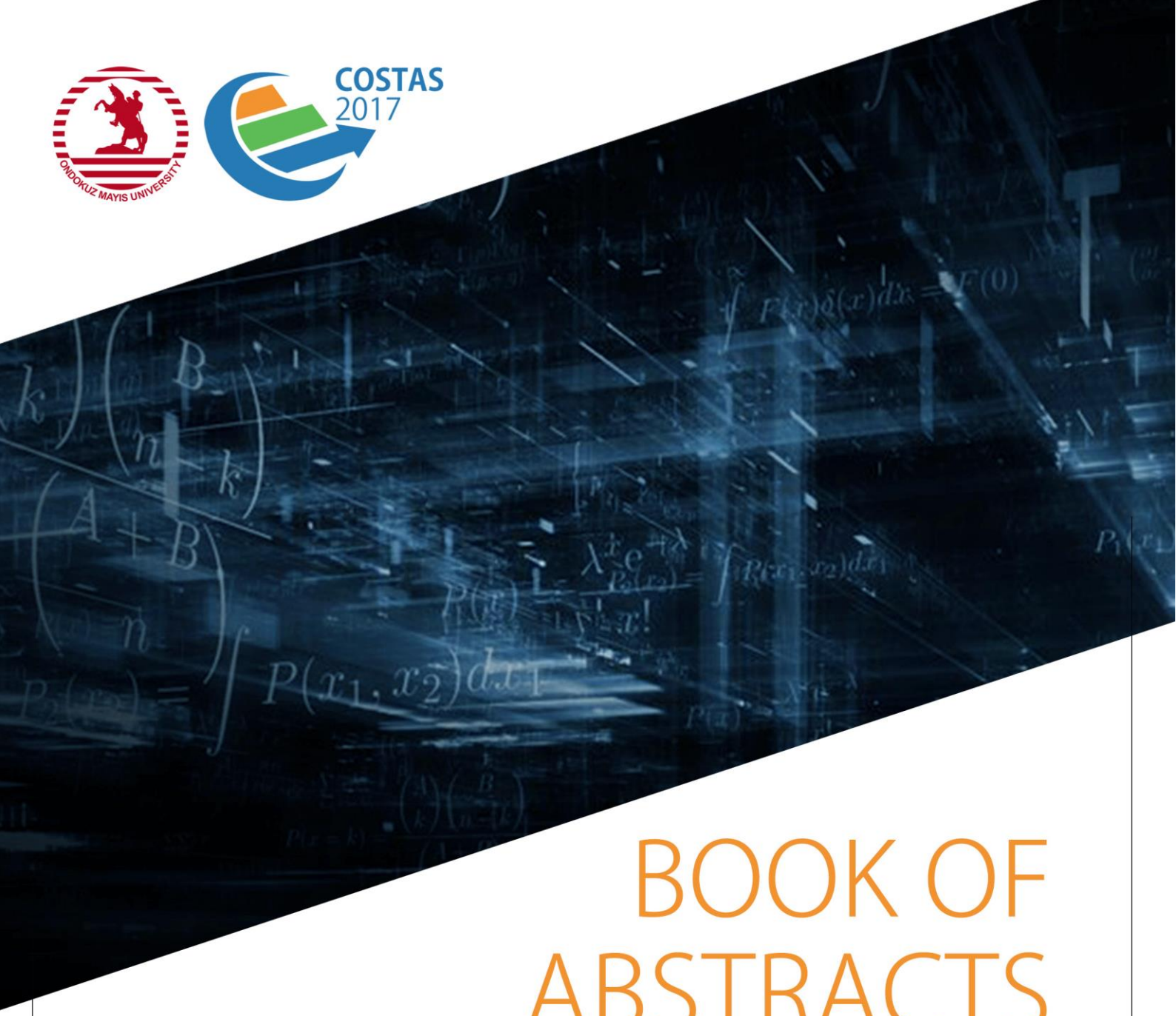

BOOK OF ABSTRACTS

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ORAL PRESENTATIONS

ARTIFICIAL NEURAL NETWORK MODELS FOR REDUCING SPOILED PRODUCT RETURN RATE IN FMCG

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The emerging threat of our time is climate change, and its effects on agriculture, water resources. The decrease of water resources and agricultural fields due to global warming, nutrient deficiency in humans spreads like an endemic. Considering that bread is the main nutrient resource of the larger population, waste of bread is an important issue. Use of preservative ingredients may delay spoiling of such an important nutrient, their effect on human health also causes discussions.

Recent statistics show that waste of bread is increasing rapidly. This increase is first important for humanity and population, and also important for bread production companies. From local bakeries to corporate bread production, spoiled bread and stale bread amount is alarming. Local initiatives such as *hanging bread* help to reduce wasted or spoiled bread amount. However for corporate production of bread such initiatives are not suitable. In order to reduce wasted or spoiled amount of bread companies should predict future sales of customer efficiently. Then prediction of sales would create a positive backlash starting with logistics, production planning.

In this study, Artificial Neural Network models are trained using historic data for making weekly sales predictions. By selecting the most precise ANN model we aim to reduce waste bread ratio which will lead to decrease in various operations costs and environmental costs.

Keywords: Artificial Neural Network; Fast Moving Consumer Goods; Sales Planning

References

[1] Özel, M. (2014). *Bir ekmek üretim firmasında sipariş seçimine yönelik bir karar destek sisteminin geliştirilmesi.* MSc Thesis, Başkent University

[2] Toprak Mahsülleri Ofisi (2013). *Ekmek Tüketimiyle İlgili Tutum ve Davranışlar ile Ekmek İsrafı ve İsraf Üzerinde Etkili Olan Faktörler Araştırması.*

[3] Taylor, W. A. (2000). *Change-point analysis: a powerful new tool for detecting changes.* Variation.com

*Presenter

USING OF THE SOME BOUNDED INFLUENCE ESTIMATORS IN A SURVEY STUDY

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Researches in social and behavioral sciences use generally the data collected via questionnaires. Factor analysis is commonly chosen for analysis of these data. Factor scores from the factor analysis can be used in more advanced statistical methods. Multiple regression analysis can be conduct by factor scores. Least squares methods are widely used for parameter estimation in multiple linear regression. But, if there are outliers in factor scores taken as the dependent or independent variables, more resistant regression methods than the least squares can be preferred. There are various robust methods coping with different type of outliers, such as M estimators resisting to outliers in y direction and bounded influence estimators resisting to outliers in x and y direction. In this study, we focused on some bounded influence estimators. We applied these estimators to a survey data and compared the results of the analysis of these estimators.

Keywords: Outlier; Bounded Influence Estimator; Survey Data.

References

[1] Maronna, R.A., Martin, R.D., & Yohai, V.J. (2006). *Robust statistics: theory and methods*. Wiley, New York.

[2] Montgomery, D.C., Peck, E.A., & Vining, G.G. (2001). Introduction to linear regression analysis. Wiley, New York.

[3] Myers, R.(1990). Classical and modern regression with applications. Duxbury Press.

[4] Rousseeuw, P.J., & Leroy, A.M. (1987). *Robust regression and outlier detection*. Wiley, New York.

*Presenter

DETERMINATION OF THE LAPLACE TRANSFORM FOR THE FIRST FALLING MOMENT TO ZERO LEVEL OF A SEMI-MARKOV RANDOM PROCESS

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The investigation of the distributions for the processes of semi-Markov random process have an important value in the random process theory. There are number of works devoted to definition of the Laplace transforms for the distribution of the first passage of the zero-level. Some authors are used the asymptotic, factorization and etc. methods (see references [1], [2] and [5]). But other authors narrowing the class of distributions of walking are found the evident form for Laplace transforms for distributions and its main characteristics (see [3], [4]).

The purpose of the present study is to find the Laplace transforms for Erlang distribution of the semi-Markov random processes with positive tendency and negative jump. The first passage of the zero level of the semi-markov process with positive tendency and negative jumps will be included as a random variable. The Laplace transform for the distribution of this random variable is defined.

Keywords: Semi-Markov Process; Laplace Transform; Erlang Distribution.

References

[1] Afanas'eva, L. G., Bulinskaya, E. V., 'Some asymptotical results for random walks in a strip' *Teor. Veroyatn. Primen.* 29, 4, 658-668 (1983).

[2] Borovkov, A. A., *Stochastic Processes in The Theory of Queues*, Nauka, Moscow 1972.

[3] Borovkov A. A., 'On the asymptotic behaviour of the distributions of the first passage', Mat. Zametki, Vol.75, No.1, pp.24–39, (2004).

[4] Feller, W., *An Introduction to Probability Theory and Its Applications*, Vol. I, Wiley, New York 1968.

[5] Gihman, I. I., Skorohod, A. V., The Theory of Stochastic Processes II, Springer-Verlag, 1975.

[6] Lotov, V. I., On some boundary crossing problems for gaussian random walks, The Annals of Probab., 24, 1996, pp.2154–2171, (1996).

[7] Lotov, V. I., 'On the asymptotics of distributions in two-sided boundary problems for random walks defined on a Markov chain', *Sib. Adv. Math*. 1, 3, 26-51 (1991).

[8] Nasirova, T. H, Karimova ,U. Y., 'Definition of Laplace ransform of the first passage of zero level of the semimarkov random process with positive tendency and negative jump', Applied mathematics, 2, pp. 908-912, (2011).

[9] Nasirova, T. I., and Shamilova, B. G., 'Investigation of Some Probabilistic Characteristics of One

*Presenter

Class of Semi Markov Wandering with Delaying Screens', Automatic Control and Computer Sciences, Vol. 48, No. 2, 109–119 (2014).

[10] Nasirova, T. I., Sadikova, R. I., and Ibaev, E. A., 'Determination of the Mean and Mean Square Deviations of the System Level', Automatic Control and Computer Sciences, Vol. 49, No. 1, 37–45 (2015).

[11] Omarova, K. K., Bakhshiev, S. B., 'The Laplace Transform for the Distribution of the Lower Bound Functional in a Semi Markov Walk Process with a Delay Screen at Zero', Automatic Control and Computer Sciences, Vol. 44, No. 4, 246-252 (2010).

[12] Omarova, K. K., 'Laplace transformation of ergodic distribution of the step process of semi-markov random walk with delaying screen at positive point', The Third International Conference "Problems of Cybernetics and Informatics", (2010).

[13] Prabhu, N. U., *Stochastic Storage Processes*, New York, Springer-Verlag, 1981.

[14] Spitzer, F., *Principles of Random Walk,* Van Nostrand, Princeton, 1969.

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COMPARISON OF FUZZY BAYESIAN HYPOTHESES TESTS

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In this study, the effect of Bayesian approach to fuzzy hypothesis testing is compared. Especially; we focused on how choosing the type of prior distribution is affected the final decision of hypothesis. In the study, Gamma, Weibull, Normal, Exponential Jeffrey's and Uniform distributions are employed as the prior distributions. In the study, the data are derived from Poisson and Exponential distributions based on the assumption that the distribution of the parameters related to these two distributions' is assumed Gamma distribution.

Employing the derived data, we performed simulation in order to measure performance of fuzzy Bayesian hypothesis test. We developed computer code in Python language. With aid of the code, we easily calculated fuzzy Bayesian probabilities. During simulation, we used optimization techniques in order to choose best suitable prior distribution to our data set. Using optimization in that phase helps us to eliminate main criticism about choosing prior distribution. Moreover, adding fuzzy theory into Bayesian hypotheses testing process, we gain flexibility and find a kind of mathematical background to subjective nature of Bayesian approach.

Actually; while we use Jeffrey's as our prior distribution, we reach ordinary (frequentist) hypothesis testing results. Based on these results, we did sensitivity analysis of fuzzy Bayesian hypothesis testing results as well. We observed that if the sample size of the data is small; fuzzy Bayesian hypotheses testing produces good results compared with frequentist approach. However; this superiority disappears while the sample size of the data gets bigger and bigger.

Keywords: Bayesian Hypotheses Test; Bayesian Approximation; Fuzzy Logic; Fuzzy Hypotheses; Prior Distributions.

References

[1] Taheri, S.M., & Behboodian, J. (2001). *A Bayesian approach to fuzzy hypotheses testing, Fuzzy Sets and Systems, 123:39-48*

[2] Taheri, S.M., & Behboodian, J. (2002). *Fuzzy hypotheses testing with fuzzy data: a Bayesian approach, 527-533pp, Advances in Soft Computing, Pal N.R. and Sugeno M. (Eds), AFFS2002, Springer, 535p*

[3] Berger, J.O., (1985). Statistical Decision Theory and Bayesian Analysis (2. Edition), Springer-Verlag, 629p

[4] Zadeh, L.A. (1965). Fuzyy sets, Information and Control, 8(3):338-353pp (APA style)

[5] DeGroot, M.H. & Schervish, M.J., (2012). *Probability and Statistics (4. Edition), Addison-Wesley, 911p*

*Presenter

[6] Grzegorzweski, P., (2000). *Testing statistical hypotheses with vague data, Fuzzy Sets and Systems, 112:501-510*

[7] Taheri, S.M., & Behboodian, J. (2009). *Testing fuzzy hypotheses based on fuzzy test statistic, Soft Computing, 13:617-625pp*

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HERMITE-HADAMARD TYPE INEQUALITIES FOR QUASI-CONVEX FUNCTIONS VIA KATUGAMPOLA FRACTIONAL INTEGRALS

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The paper deals with quasi-convex functions, Katugampola fractional integrals and Hermite-Hadamard type integral inequalities. The main idea of this paper is to present new Hermite-Hadamard type inequalities for quasi-convex functions using Katugampola fractional integrals, Hölder inequality and the identities in [1]-[3].

Keywords: Quasi-Convex Function; Katugampola Fractional Integrals; Hermite-Hadamard Inequality.

References

[1] Chen, H., Katugampola**,** U.N. (2014). Hermite-Hadamard and Hermite-Hadamard-Fejer type inequalities for generalized fractional integrals, *J. Math. Anal. Appl.*, 446, 1274-1291.

[2] Kilbas, A.A., Srivastava, H.M., Trujillo, J.J. (2006) *Theory and applications of fractional dfferential equations*, Elsevier B.V., Amsterdam, Netherlands.

[3] Prudnikov, A.P., Brychkov, Y.A., Marichev, O.I. (1981). *Integral and series. In: Elementary Functions*, vol. 1. Nauka, Moscow.

[4] Rainville, E.D. (1960). *Special Functions*, The Mcmillan Company, New York.

*Presenter

ESTIMATION EFFECT UNDER NON NORMALITY ON T^2 CONTROL CHART FOR MONITORING LINEAR PROFILES

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In recent years, several control charts are developed to monitor quality of a process or product in terms of the relation between a response variable and explanatory variable(s) named as "profile". The aim is to monitor the changes in profile over time. A profile can be modeled via many models like simple/multiple, linear/nonlinear regression, nonparametric regression, mixed models, wavelet models. In this study, we focus on simple linear profiles. There are different methods developed to monitor simple linear profiles in literature [1 – 4]. For a detailed discussion of profile monitoring, one can refer to [5]. The methods mostly assume that the in control parameter values are known in Phase II analysis and the error terms are normally distributed which are seen to be invalid in practice. Although, the properties of these charts are investigated under these assumptions, there are few studies available for investigating estimation effect under normality [6] and the effect of non-normality but with known parameter values [7]. Therefore there is a need to study the estimation effect under non-normality. One of the prominent charts is the bivariate T^2 control chart which is proposed by Kang and Albin [1]. This chart monitors the regression parameters of the simple linear profile jointly. In this study, the estimation effect on the performance of T^2 control chart under non-normality is investigated. For this purpose, average run length (ARL) and run length standard deviation (SDRL) values are obtained by simulation when the error terms are distributed as student's t with different degrees of freedom values. The results reveal that the performance of the T^2 control chart is strongly affected from estimation. When the profile number used in estimation is small (i.e. m=10 or even $m \leq 30$) under t distribution, SDRL values become too high which makes ARL values questionable. When SDRL values are high, using ARL as a performance measure would be unreliable, and the practitioners should be aware of this degradation in the chart performance.

Keywords: Control Chart; Non-Normality; Profile Monitoring; Run Length.

References

[1] Kang, L., & Albin, S. L. (2000). On-line monitoring when the process yields a linear profile. *Journal of Quality Technology*, *32(4)*, 418-426.

[2] Kim, K., Mahmoud, M. A., & Woodall, W. H. (2003). On the monitoring of linear profiles. *Journal of Quality Technology*, *35(3)*, 317-328.

[3] Noorossana, R., Amiri, A., Vaghefi, S.A., & Roghanian, E. (2004). Monitoring quality characteristics using linear profile. In *Proceedings of the 3rd International Industrial Engineering Conference.*

*Presenter

[4] Saghaei, A., Mehrjoo, M. & Amiri, A. (2009). A CUSUM-based method for monitoring simple linear profiles. *The International Journal of Advanced Manufacturing Technology, 45(11),* 1252–1260.

[5] Noorossana, R., Saghaei, A., & Amiri, A. (2011). *Statistical Analysis of Profile Monitoring.* John Wiley & Sons.

[6] Mahmoud, M. A. (2012). The performance of phase II simple linear profile approaches when parameters are estimated. *Communications in Statistics – Simulation and Computation, 41(10),* 1816-1833.

[7] Noorossana, R., Vaghefi, A., Dorri, M. (2011). Effect of non-normality on the monitoring of simple linear profiles. *Quality and Reliability Engineering International*, *27*, 425-436.

*Presenter

THE COMPARISON OF THE ESTIMATORS OF SKEWNESS AND KURTOSIS VIA SIMULATION

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For most of the studies it is required to identify the distribution of the data set or at least to characterize various aspects of the distribution. It is known that the first four moments are enough for most practical purposes [1]. Many studies show the necessity of the estimation of the skewness and kurtosis in addition to location and scale parameters, which are functions of the first four moments [2,3,4]. In this study we compared the performance of 4 different types of skewness and kurtosis estimators via a simulation study under standard normal, student's t, log-normal and Weibull distributions for several sample sizes. We simulated the bias, variance and mean square error of the mentioned estimators of skewness and kurtosis. The results show that the traditional estimators of skewness and kurtosis depending on the sample moments of the distribution perform quite well for non-symmetric distributions such as log-normal and Weibull whereas it is surprising to observe that their efficiencies are quite low w.r.t. the other estimators of skewness and kurtosis for symmetric distributions such as standard normal and student's t.

Keywords: Skewness; Kurtosis; Quantiles; Mean Square Error.

References

[1] Pearson, E.S. (1963). Some problems arising in approximating to probability distributions, using moments. *Biometrika*, *50*(1/2), 95-112.

[2] Kim, T. & White, H. (2004). On more robust estimation of skewness and kurtosis, *Finance Research Letters*, *1*, 65–70.

[3] Clements, J.A. (1989). Process capability indices for non-normal calculations, *Quality Progress*, *22*, 49-55.

[4] Burr, I.W. (1973) Parameters for a general system of distribution to match a grid of α_3 and α_4, *Communications in Statistics*, *2*(1), 1-21.

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THE ESTIMATION OF THE PARAMETERS OF WEIBULL DISTRIBUTION WITH CENSORED DATA

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Censored data are encountered when some observations cannot be included in the study because of missing values or limitations such as time and cost [1]. There are many types of censoring such as Type I, Type II, random, interval, right, left and double censoring [2]. In some situations data are deliberately censored for robustness [3]. When the data are censored, it may be problematic to estimate the parameters of the underlying distribution [3]. In this study we derive the Modified Maximum Likelihood (MML) Estimators for Weibull distribution with Type I and Type II censored data from left and right [4]. We also conducted an extensive simulation study to observe the efficiency of the estimators. In the simulations we deliberately censored the data from left and right, and compared the results with the Maximum Likelihood (ML) estimators which use the full sample. By this way, we intend to observe the amount of efficiency loss in the estimation because of censoring. A real life data application is also given. The simulation results show that the efficiencies of the MML estimators using censored data are almost as high as the ML estimators using the whole sample. This shows the high efficiency of the MML estimators with censored data and they can also be used to robustify the estimators for a whole sample case.

Keywords: Censoring; Weibull Distribution; Maximum Likelihood; Modified Maximum Likelihood.

References

[1] Topçu, Ç. (2007). Variance estimation with Greenwood and Kaplan-Meier method, MSc Thesis, Ankara University, Ankara.

[2] Lawless, J.F. (2003). Statistical Models and Methods for Lifetime Data. John Wiley & Sons, Canada.

[3] Tiku, M.L. & Akkaya, A. (2004). Robust Estimation and Hypothesis Testing. New Delhi: New Age International Limited Publishers.

[4] Ekmekci, B. (2014). Comparison of the parameter estimation methods for censored skewed distributions, MSc Thesis, Ege University, İzmir.

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ASSOCIATION AND MARKET BASKET ANALYSIS IN DATA MINING AND IMPLEMENTATION

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Data mining is the process of exploring patterns which are hidden in databases. Customer sale information data can be easily used purposefully thanks to data mining. It is seen that using customer databases which are created especially in the sectors with a broad customer department for management goals has become quite essential. There are different techniques in data mining which are appropriate for data structure. Assosiation Rules, one of these techniques, is named as Market Basket Analysis when it is used in marketing sector in order to find out the co-sale relations of the products in shopping baskets. In this study it is aimed to discover the association of customers based on their shopping information with the help of Apriori algorithm which is commonly used in Market Basket Analysis. SPSS Clementine Programme has been used in the data analysis. The products which are purchased together have been determined according to the obtained results and in the light of this information, it has been presented that market managers may consider alternative ideas in market arrangements, shelf packing and determining promotional items.

Keywords: Data Mining; Association; Market Basket Analysis, Customer

References:

[1] Ergün, E. (2008). *Ürün Kategorileri Arasındaki Satış İlişkisinin Birliktelik Kuralları ve Kümeleme Analizi ile Belirlenmesi ve Perakende Sektöründe Bir Uygulama*, Afyon Kocatepe Üniversitesi, Sosyal Bilimler Enstitüsü, İşletme Anabilim Dalı, Doktora Tezi.

[2] Şen, F. (2008). *Veri Madenciliği İle Birliktelik Kurallarının Bulunması*. Fen Bilimleri Enstitüsü, Sakarya Üniversitesi.

[3] Döşlü, A. (2008). *Veri Madenciliğinde Market Sepet Analizi Ve Birliktelik Kurallarının Belirlenmesi* (Doctoral dissertation, YTÜ Fen Bilimleri Enstitüsü).

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HERMITE-HADAMARD TYPE INEQUALITIES FOR HARMONICALLY CONVEX FUNCTIONS VIA KATUGAMPOLA FRACTIONAL INTEGRALS

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In this work, firstly, we established Hermite-Hadamard's inequalities for harmonically convex functions via Katugampola fractional integrals. Then we give some Hermite-Hadamard type inequalities of these classes functions.

Keywords: Hermite-Hadamard Inequality; Riemann-Liouville Fractional Integrals; Katugampola Fractional Integrals.

References

[1] I. Iscan, S.Wu, *HermiteHadamard type inequalities for harmonically convex functions via fractional integrals,* Applied Mathematics and Computation 238 (2014) 237-244.

[2] Kilbas, A.A., Srivastava, H.M., Trujillo, J.J. (2006) *Theory and applications of fractional dfferential equations*, Elsevier B.V., Amsterdam, Netherlands.

[3] U.N. Katugampola, *New approach to generalized fractional derivatives*, Bull. Math. Anal. Appl., 6(4), (2014), 1-15.

[4] E. Set, M.A. Noor, M.U. Awan, A. Gözpınar, *Generalized Hermite-Hadamard type inequalities involving fractional integral operators*, Journal of Inequalities and Applications (2017).

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AN EFFICIENT RESOURCE PLANNING SOFTWARE PROPOSAL FOR SMALL MEDIUM ENTERPRISES (SMEs): A CASE STUDY IN A FACTORY

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In today's economy, having an efficient and effective resource planning system is of critical importance for a company to be competitive, particularly for small and medium enterprises (SMEs) that are described as the backbone of our economy. Although there are various enterprise resource planning (ERP) programs used for this purpose, most of them are not preferred by SMEs due to their high prices or complexity. The aim of this study is to develop a user friendly, inexpensive and modifiable alternative enterprise resource planning system for a SME. The program is developed using Microsoft Excel and the implementation of it is carried out in a manufacturing company. At the outset, the needs and deficiencies of the company are observed and then the content of the program is determined. The program provides the company to have information on the followings; registration of orders; calculation of the raw material and work power required for the orders; creation of the master production plan; recording the company's production, consumption, supply and shipment movements and waste amounts. In addition, the company can create various reports based on the information they can obtain from the program.

Keywords: Resource Planning; Small Medium Enterprise (SME); Manufacturing Planning And Control; Microsoft Excel.

References

[1] Draper, N. R., & Smith, H. (2014). *Applied regression analysis*. John Wiley & Sons.

[2] Ram, B., Naghshineh, M. R. & Yu, X. (2014). *Material Requirements Planning With Flexible Bills-Of-Material*, International Journal of Production Research, 44:2, 399-414.

[3] Mabert, V., Soni, A. & Venkataramanan, M. A. (2000). *Enterprise Resource Planning Survey Of USA Manufacturing Firms*, Production And Inventory Management Journal, 41:2, 52–58.

[4] Bayraktar, E. & Efe, M. (2006). *Kurumsal Kaynak Planlaması (ERP) Ve Yazılım Seçim Süreci*, Selçuk Üniversitesi Sosyal Bilimler Enstitüsü Dergisi, 15, 679-709.

*Presenter

[5] Ar, A. & İskender, H. (2005). *Türkiye'de KOBİ'ler ve KOBİ'lerde Planlama*, Uygulama ve Denetim, Mevzuat Dergisi, 8:87.

[6] Özcan, M. O. (2006). *KOBİ'ler İçin Web Tabanlı ERP Uygulamaları*, Yüksek Lisans Tezi, Balıkesir Üniversitesi Fen Bilimler Enstitüsü, Balıkesir.

[7] Yegül, M. & Toklu, B. (2004). *Türkiye'de ERP Uygulamaları*, Endüstri Mühendisliği Dergisi, 15:1 2-5.

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HERMITE-HADAMARD INEQUALITY FOR $M_{\varphi}A$ STRONGLY CONVEX FUNCTIONS

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In this paper we obtain the Hermite-Hadamard Inequality for $M_{\varphi}A$ strongly convex function. Using this $M_{\varphi}A$ strongly convex function we get the new theorem and corollary.

Keywords: $M_{\varphi}A$ Strongly Convex Functions; Hermite-Hadamard Type Inequalities.

References

[1] Noor, M. A., & Noor, K. I., & Iftikhar, S. (2016). Hermite-Hadamard inequalities for strongly harmonic convex functions. *Journal of Inequalities and Special Functions, 7* (3), 99-113.

[2] Turhan, S., & İşcan, İ., & Kunt, M. (2017). Hermite-Hadamard type inequalities for $M_{\varphi}A$ convex functions.

[3] Erdem, Y., & Öğünmez, H., & Budak, H. (2016). Some generalized inequalities of Hermite-Hadamard type for strongly *s*-convex functions. *RGMIA Research Report Collection, 19, Article. 110*.

[4] İşcan, İ. (2014). Hermite-Hadamard type inequaities for harmonically convex functions. *Hacettepe Journal of Mathematics and Statistic 43*(6), 935-942.

[5] Turhan, S., & Okur, N., & Maden, S. (2016). Hermite-Hadamard type inequality for strongly convex functions via sugeno integrals. *Sigma J Eng and Nat. Sci., 8*(1), 1-10.

[6] Nikodem, K., & Sanchez, J. L., & Sanchez L. (2014). Jensen and Hermite-Hadamard inequalities for strongly convex set-valued maps. *Mathematica Aeterna, 4* (8), 979-987.

[7] Angulo, H., & Gimenez, J., & Moros, A. M., & Nikodem, K. (2011). On strongly h-convex functions. *Annals of Functional Analysis, No.2*, 85-91.

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THE PROBLEM OF OUTLIERS IN COX REGRESSION MODELS

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The outliers differ from the rest of the data. In many studies, the outliers are encountered and they are ignored because they violate the assumptions. With this deletion of observation with outliers in the data, the sample size is getting smaller and this cause decreases statistical power. Because of the reason, it is important to eliminate the problem of outliers. In survival analysis, outliers in data could lead to violation of proportional hazard assumption which is one of the most important assumptions of Cox regression and it leads to the emergence of inaccurate estimates. Because they have strong influence on the estimates of the parameters of model. For this reason, the presence of outliers in the data set is a big problem for the researchers. The aim of the study, the problem caused by outliers was transformed as an missing value problem and it was solved by missing data analysis method. As an application a real survival data was used in this study. Consequently, using the estimates obtained by missing data analysis method is suggested to solve the outliers problem.

Keywords: Cox Regression Model; Outliers; Missing Value

References

[1] Alkan, B.B., Atakan C., Alkan, N. 2015. A Comparison of Different Procedures for Principal Component Analysis in the Presence of Outliers, Journal of Applied Statistics,Vol. 42, No. 8, 1716–1722.

[2] Alkan, N., Terzi, Y., Cengiz, M. A., Alkan B B. 2013. Comparison of Missing Data Analysis Methods in Cox Proportional Hazard Models. Turkiye Klinikleri Journal of Biostatistic, 5(2), 49-54.

[3] Cox, D.R., 1972. Regression models and life tables. Journal of the Royal Statistical Society, 34, 187-220.

[4] Kleinbaum, D.G., Klein, M., 1996. Survival Analysis, A Self Learning Text. Springer, 124 s, USA.

[5] Rubin, D.B. 1987. Multiple Imputation for Nonresponse in Surveys, Wiley&Sons, New York.

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THE SOLUTION PROPOSAL FOR MISSING VALUE IN COX REGRESSION MODEL

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Missing values are encountered in many researches. Data with missing values is a significant problem for researchers because traditional statistical methods and softwares assume that the data sets are complete. For this reason, the obstacle of missing values must be removed. Almost all statistical softwares are simply designed to delete any cases with missing values. This method is known as listwise deletion or complete case analysis. Informative priors can lead to some benifical properties in the missing data model. Particularly in cases with missing data, the parameters for the likelihood function may generally not be identifiable, even if the parameter is defined; very little information can be obtained from the data. Using Bayesian approaches with informative priors in cases with missing data can help to overcome these difficulties. The aim of this study is to determine the effect of informative priors for variables with missing value. For this purpose, we use simulated data sets and a real data set. Consequently we propose that the missing data problem can be solved with Bayesian approach.

Keywords: Cox Regression Model; Missing Value; Informative Priors.

References

[1] Allison, P. D. (2000). Multiple imputation for missing data: a cautionary tale. Sociological Methods and Research 28:301–309.

[2] Congdon, P. (2003). Applied Bayesian modelling. England: JohnWiley & Sons.

[3] Cox, D. R. (1972). Regression models and life tables. Journal of the Royal Statistical Society 34:187–220.

[4] Gilks,W. R., Richardson, S., Spiegelhalter, D. J. (1996). Markov ChainMonte Carlo in practice. London:Chapman and Hall.

[5] Enders, C. K. (2010). Applied Missing Data Analysis. New York: Guilford Press, pp. 165–286.

[6] Hosmer, D. W., Lemeshow, S. (1999). Applied Survival Analysis: Regression Modeling of Time to Event Data, Canada: JohnWiley & Sons, Inc.

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CONJOINT ANALYSIS AND IMPLEMENTATION IN DETERMINING MOBILE PHONE CONSUMER PREFERENCES

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Nowadays, determination of market demands and requirements by companies and accordingly making profit by satisfying consumers underlie the modern marketing approach. As a requirement of modern marketing, producers are obliged to develop customer-oriented mindset and ascertain customer needs and expectations instead of service-oriented mentality. The use of conjoint analysis in researches brings out how a full-featured service affects preference and therefore facilitates the decision-making process. Thus, customers are able to choose the most appropriate option from among a wide range of alternatives. Therefore, the implementation of this study has been carried out with the help of conjoint analysis, a multivariate statistical technique, which is frequently used in marketing research. SPSS Programme has been used in the data analysis. 22 choice cards have been created by means of orthogonal sequence and these cards have been presented to 250 people in a questionnaire form. The result of this analysis enables to conduct a prior market research on a new product by giving advice about the most preferred mobile phones and the ideal price range.

Keywords: Conjoint Analysis; Mobile Phone; Consumer Preference

References :

[1] Ceylan, Hasan, H., Aydın, Serdar,(2011). Tümleşik Hiyerarşik Konjoint Analizi Kullanarak Şehirlerarası Yolcu Taşımacılığında Müşteri Değer Analizi: Uşak Örneği. Süleyman Demirel Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi 16(2):425-437.

[2] Karaarslan, M.H. ve Altuntaş, B. (2016). Kariyer Tercihini Etkileyen Faktör Düzeylerinin Öneminin Konjoint Analizi ile Belirlenmesi. İnsan ve Toplum Bilimleri Araştırmaları Dergisi,5(7):1972-1988.doi:10.15869/itobiad.259499

*Presenter

PRICING AND ORDERING DECISIONS OF RISK-AVERSE NEWSVENDORS: EXPECTILE-BASED VALUE AT RISK (E-VAR) APPROACH

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In this study, we investigate optimal pricing and ordering decisions based on different levels of risk aversity. By using E-VaR measure as an alternative to expectation operator, a one-parameter extension of the classical price-setting newsvendor model is obtained. For the additive demand model, a simulation study is conducted to compare optimal prices and orders of risk averse newsvendors with those of less prudent and risk taker ones.

Keywords: Joint Pricing and Inventory Decisions; Newsvendor Model; Price Sensitive Stochastic Demand; Risk Measures; Risk Behaviors.

References

[1] Petruzzi, N. C., & Dada, M. (1999). Pricing and the newsvendor problem: A review with extensions. *Operations research*, *47*(2), 183-194.

[2] Agrawal, V., & Seshadri, S. (2000). Impact of uncertainty and risk aversion on price and order quantity in the newsvendor problem. *Manufacturing & Service Operations Management*, *2*(4), 410-423.

[3] Zhan, R. L., & Shen, Z. J. M. (2005, December). Newsvendor problem with pricing: properties, algorithms, and simulation. In *Simulation Conference, 2005 Proceedings of the Winter* (pp. 6-pp). IEEE.

[4] Arcelus, F. J., Kumar, S., & Srinivasan, G. (2007). Manufacturer's pricing strategies in a single-period framework under price-dependent stochastic demand with asymmetric risk-preference information. *Journal of the Operational Research Society*, *58*(11), 1449-1458.

[5] Chen, Y., Xu, M., & Zhang, Z. G. (2009). A risk-averse newsvendor model under the CVaR criterion. *Operations research*, *57*(4), 1040-1044.

[6] Chiu, C. H., & Choi, T. M. (2010). Optimal pricing and stocking decisions for newsvendor problem with value-at-risk consideration. *IEEE Transactions on Systems, Man, and Cybernetics-Part A: Systems and Humans*, *40*(5), 1116-1119.

[7] Xu, M., Chen, Y. F., & Xu, X. (2010). The effect of demand uncertainty in a price-setting newsvendor model. *European Journal of Operational Research*, *207*(2), 946-957.

[8] Fichtinger, J., & Arikan, E. (2011). The Single Period Inventory and Pricing Problem with Spectral Risk Measures.

[9] Arcelus, F. J., Kumar, S., & Srinivasan, G. (2012). Risk tolerance and a retailer's pricing and ordering policies within a newsvendor framework. *Omega*, *40*(2), 188-198.

*Presenter

[10] Chiu, C. H., Zheng, J. H., & Choi, T. M. (2013). Optimal pricing and inventory decisions for fashion retailers under value-at-risk objective: applications and review. In *Industrial Engineering: Concepts, Methodologies, Tools, and Applications* (pp. 807-816). IGI Global.

[11] Rubio-Herrero, J., Baykal-Gürsoy, M., & Jaśkiewicz, A. (2015). A price-setting newsvendor problem under mean-variance criteria. *European Journal of Operational Research*, *247*(2), 575-587.

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DENTAL STUDENTS PROBLEM SOLVING SKILLS AND ATTITUDES TOWARDS BIOSTATISTICS

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We aimed to assess the problem solving skills and attitudes of dental students towards biostatistics course. The study involved 90 first year dental undergraduate students enrolled in a two-credit mandatory biostatistics course in 2014-2015 at the Faculty of Dentistry, Ege University. Problem solving skills were evaluated according to Polya's problem solving stages. The answers that the students have given to the problems have been analyzed by the researchers. Each problem has been evaluated according to four basic steps: understanding the problem, choosing the strategy, the implementation of the selected strategy and the evaluation of the solution. Attitudes of the students were determined by using the nine point likert type scale which validity and reliability have already been studied. Reliability analysis for pretest and posttest was conducted and Cronbach Alpha coefficients for the points of total scale, and scale sub-dimensions were obtained. Shapiro-Wilk test was used to check the normality of the attitude scores. Since students are asked to fill out the attitude scale without taking personal information, unpaired t-test was used for comparing attitude scores of pretest and posttest. The Cronbach's alpha coefficient was 0.67 and 0.68 for pretest and posttest, respectively. The students' attitude points increased at the end of the year, comparing the pretest and posttest attitude scores, a statistically significant difference was existed (p=0.019). Findings have revealed that students have no difficulty in understanding the problem and choosing the strategy. However, students had some trouble with the implementation of the selected strategy and the evaluation of the solution. Consequently, the biostatistics course was positively affected the attitudes of the students, and problem solving skills of the students are effective. In conclusion, the biostatistics course in dentistry faculty is successfully instructed.

Keywords: Dental Students; Biostatistics Course; Problem Solving Skills; Student Attitudes.

References

[1] Baloğlu, M. (2001). An application of structural equation modeling techniques in the prediction of statistics anxiety among college students [dissertation]. Texas: Texas A&M University.

[2] Onwuegbuzie, A. J. (1998). The dimensions of statistics anxiety: A comparison of prevalence rates among mid-southern university students. *J Louisiana Educ Research*, 23, 23-40.

[3] Onwuegbuzie, A. J. & Seaman, M. (1995). The effect of time and anxiety on statistics achievement. *J Exp Psychol*, 63, 115-124.

[4] Onwuegbuzie, A. J., Da Ros, D., Ryan, JM. (1997). The Components of Statistics Anxiety: A Phenomenological Study. *Focus Learn Probl Math*, 19(4): 11-35.

[5] Royse, D. & Rompf, E. L. (1992). Math anxiety: A comparison of social work and non social work students. *J Soc Work Educ*, 28(3): 270-278.

*Presenter

[6] Mills, J. D. (2004). Students' attitudes toward statistics: Implications for the future. *J Coll Stud*, 38(3): 349–361.

[7] Onwuegbuzie, A. J. (2000). Attitude toward statistics assessments. *Assess Eval High Educ*, 25(4): 321-339.

[8] Araki, L. T. & Shultz, K. S. (1995). Student attitudes toward statistics and their retention of statistical concepts. In annual meeting of the Western Psychological Association, Los Angeles, CA.

[9] Benson, J. (1989). Structural components of statistical test anxiety in adults: An exploratory model. *J Exp Educ*, 57(3): 247-261.

[10] Elmore, P. B., Lewis, E. L., Bay, M. L. G. (1993). Statistics Achievement: A Function of Attitudes and Related Experiences. In annual meeting of the the American Educational Research Association, Atlanta, GA.

[11] Onwuegbuzie, A. J., Wilson, V. A. (2003). Statistics Anxiety: Nature, etiology, antecedents, effects, and treatments--a comprehensive review of the literature. *Teach High Educ*, 8(2): 195-209.

[12] Roberts, D. M., Saxe, J. E. (1982). Validity of a statistics attitudes survey: A follow-up study. *Educ Psychol Meas*, 42(3): 907-912.

[13] Waters, L. K., Martelli, T., Zakrajsek, T., Popovich, P. (1988). Attitudes toward statistics: An evaluation of multiple measure. Educ Psychol Meas, 48: 513-516.

[14] Wise, S. L. (1985). The development and validation of a scale measuring attitudes toward statistics. *Educ Psychol Meas*, 45(2): 401-405.

[15] Ocakoğlu, G., Ercan, İ., Kaya, M. O., Uzabacı, E., Can, F. E. (2015). Investigating academic veterinarians' knowledge of biostatistics: a web-based survey. *Ankara Üniv Vet Fak Derg*, 62: 223-228.

[16] Nyirongo, V., Mukaka, M., Kalilani-Phiri, L. (2008). Statistical Pitfalls in Medical Research. *Malawi Med J*, 20: 15–18.

[17] Okeh, U. (2009). Statistical Problems In Medical Research. *East Afr J Public Health*, 6.

[18] Suner, A., Karakülah, G., Koşaner, Ö., Dicle, O. (2015). StatXFinder: a web-based self-directed tool that provides appropriate statistical test selection for biomedical researchers in their scientific studies. *SpringerPlus*, 4: 633.

[19] El Tantawi M. M. (2009). Factors affecting postgraduate dental students' performance in a biostatistics and research design course. *J Dent Educ*, 73(5): 614-623.

[20] Ambrosano, G. M. B., Reis, A. F., Giannini, M., Pereira, A. C. (2004). Use of statistical procedures in Brazilian and international dental journals. *Braz Dent J*, 15(3): 231-237.

[21] Holman, S. D., Wietecha, M. S., Gullard, A., Peterson, J. M. (2014). US Dental students' attitudes toward research and science: impact of research experience. *J Dent Educ*, 78(3): 334-348.

[22] IBM Corp. Released 2012. IBM SPSS Statistics for Windows, Version 21.0. Armonk, NY.

[23] Yaşar, M. (2014). İstatistiğe Yönelik Tutum Ölçeği: Geçerlilik ve Güvenirlik Çalışması. *Pamukkale Üniv Eğit Fak Derg*; 36(2): 59-75.

[24] Bland, J. M. & Altman, D. G. (1997). Statistics notes: Cronbach's alpha. *BMJ*, 314(7080): 572.

[25] Balnaves, M., Caputi, P. (2001). *Introduction to quantitative research methods: An investigative approach*, London: Sage; 2001.

[26] Özdamar, K. (2004). *Paket programlar ile istatistiksel veri analizi-1*, 5. Baskı. Eskişehir: Kaan Kitabevi.

[27] Batra, M., Gupta, M., Dany, S. S., Rajput, P. (2014). Perception of Dental Professionals towards Biostatistics. *Int Sch Res Notices*, vol. 2014, Article ID 291807, 6 pages.

*Presenter

[28] Polychronopoulou, A., Eliades, T., Taoufik, K., Papadopoulos, M. A., Athanasiou, A. E. (2011). Knowledge of European orthodontic postgraduate students on biostatistics.
Eur J Orthod; 33(4): 434-440.

[29] Ocakoglu, G., Ercan, I., Gunel Karadeniz, P. (2013). Knowledge of dentists about biostatistics: a worldwide survey. *e J Dent*; 3: 361-370.

[30] Bacanlı, H. (2003). *Gelişim ve Öğrenme*, 7. Baskı. Ankara: Nobel Yayın Dağıtım; 2003.

[31] Demirel Ö. (2003). *Kuramdan Uygulamaya Eğitimde Program Geliştirme*, 5. Baskı. Ankara: Pegema Yayıncılık.

[32] Sönmez V. (2007). *Program Geliştirmede Öğretmen El Kitabı*, 13. Baskı. Ankara: Anı Yayıncılık.

[33] Suner, A., & Ersoy, E. (2017). Diş hekimliği öğrencilerinin biyoistatistik dersine yönelik tutumları ve başarı durumlarının incelenmesi, *Ege Tıp Dergisi*, 56 (1): 17-23.

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METRICS AND OPERATORS ON (1,1) TENSOR BUNDLE

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The main purpose of the present paper is to study integrability conditions by calculating the Nijenhuis Tensors of almost paracomplex structure F on $(1,1)-$Tensor Bundle. Later, we obtain the Lie derivatives applied to Sasakian metrics with respect to the horizontal and vertical lifts of vector and kovector fields, respectively. Finally, we get the results of Tachibana and Vishnevskii operators applied to horizontal and vertical lifts according to structure F on $(1,1)-$Tensor Bundle $T_1^1(M)$.

Keywords: Integrability Conditions; Sasaki Metrics; Tachibana Operators; Almost Paracomplex Structure; (1,1)-Tensor.

References

[1] Çayır, H. (2015). Some Notes on Lifts of Almost Paracontact Structures, *American Review of Mathematics and Statistics*, 3(1), 52-60.

[2] Çayır, H. & Akdağ, K. (2016). Some notes on almost paracomplex structures associated with the diagonal lifts and operators on cotangent bundle , *New Trends in Mathematical Sciences.* 4(4), 42-50.

[3] Çayır, H. & Köseoğlu, G. (2016). Lie Derivatives of Almost Contact Structure and Almost Paracontact Structure With Respect to X^{C} and X^{V} on Tangent Bundle T(M). *New Trends in Mathematical Sciences*, 4(1), 153-159.

[4] Cengiz, N. and Salimov, A. A. (2002). Complete lifts of derivations to tensor bundles, *Bol. Soc. Mat. Mexicana*, 8 (2002). No. 3, 75-82 .

[5] Kobayashi, S. & Nomizu, K. (1963), *Foundations of Differential Geometry-Volume I*, John Wiley & Sons, Inc, New York.

[6] Lai, K. F.& Mok, K. P. (2002), On the differential geometry of the (1,1) tensor bundle, *Tensor (New Series)*, 63, 15-27.

[7] Salimov, A. A. (2013), *Tensor Operators and Their applications*, Nova Science Publ., New York.

[8] Salimov, A. A. & Gezer, A. (2011) On the Geometry of the (1,1)-Tensor Bundle with Sasaki Type Metric, *Chin. Ann. Math*., 32 , B(3), 369-386.

[9] Yano, K. & Ishihara, S. (1973). *Tangent and Cotangent Bundles*, Marcel Dekker, New York.

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SOME NOTES ON LIFTS OF THE MODIFIED RIEMANNIAN EXTENSION $\tilde{g}_{\nabla,c}$ ON COTANGENT BUNDLE

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In this paper, we define the modified Riemannian extension $\tilde{g}_{\nabla,c}$ in the cotangent bundle T^*M, which is completely determined by its action on vector fields of type X^H and ω^V. Later, we obtain the covarient and Lie derivatives applied to the modified Riemannian extension with respect to the horizontal and vertical lifts of vector and kovector fields, respectively.

Keywords: Covarient Derivative; Lie Derivative; Modified Riemannian Extension; Horizontal Lift; Vertical Lift.

References

[1] Afifi, Z. (1954). Riemann Extensions of Affine Connected Spaces. *Quart. J. Math., Oxford Ser.* 5, 312-320.

[2] Calvino-Louzao, E. & Garcia-Rio, E. (2010). Vazquez-Lorenzo, R.: Riemann Extensions of Torsion-Free Connections with Degenerate Ricci Tensor. *Can. J. Math.* 62(5), 1037-1057.

[3] Çayır, H. & Köseoğlu, G. (2016). Lie Derivatives of Almost Contact Structure and Almost Paracontact Structure With Respect to X^C and X^V on Tangent Bundle $T(M)$. *New Trends in Mathematical Sciences*, 4(1), 153-159.

[4] Çayır, H. & Akdağ, K. (2016). Some notes on almost paracomplex structures associated with the diagonal lifts and operators on cotangent bundle, *New Trends in Mathematical Sciences*. 4(4), 42-50.

[5] Gezer, A., Bilen, L. & Çakmak, A. (2015). Properties of Modified Riemannian Extensions, *Journal of Mathematical Physics, Analysis, Geom.* 11 (2), 159-173.

[6] Salimov, A.A.(2013). *Tensor Operators and Their applications*, Nova Science Publ., New York.

[7] Yano, K. & Ishihara, S. (1973). *Tangent and Cotangent Bundles Differential geometry*. Pure and Applied Mathematics. Mercel Dekker, Inc, New York.

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SOME NOTES ON METALIC RIEMANNIAN STRUCTURES

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In this paper firstly, some properties were given about metallic Riemannian structure on $(1,1)-$tensor bundle. Secondly, the Tachibana and Vishnevskii operators were applied to vertical and horizontal lifts with respect to the metallic Riemannian structure on $(1,1)-$tensor bundle, respectively.

Keywords: Metallic Riemannian Structure; $(1,1)-$Tensor Bundle; Tachibana Operators; Vishnevskii Operators; Horizontal Lift; Vertical Lift.

References

[1] Çayır, H. (2015). Some Notes on Lifts of Almost Paracontact Structures, *American Review of Mathematics and Statistics*, 3(1), 52-60.

[2] De Spinadel, V.W. (1999). The metallic means family and multifractal spectra. *Nonlinear Anal Ser B*, 36, 721-745.

[3] Gezer, A. & Karaman, Ç. (2015). On metallic Riemannian structures. *Turk J Math*, 39,954-962.

[4] Goldberg, S. I. & Yano, K. (1970). Polynomial structures on manifolds. *Kodai Math Sem Rep*, 22, 199-218.

[5] Salimov, A. A. (2013). *Tensor Operators and Their applications*, Nova Science Publ., New York.

[6] Salimov, A. A. & Çayır, H. (2013). Some Notes On Almost Paracontact Structures, *Comptes Rendus de 1'Acedemie Bulgare Des Sciences*, 66(3), 331-338.

[7] Salimov, A.A. & Gezer, A. (2011). On the geometry of the $(1,1)-$tensor bundle with Sasaki type metric. *Chinn Ann Math Ser B*, 32, 369-386.

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SOME PROBLEMS OF PERFORMANCE EVALUATION METHODS

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In recent years , great importance is attached to the assessment of performance of decision making units in all around the world. There exist some alternative ways of this evaluation. They can investigate under two titles: Subjective and Objective methods. There exist some alternative ways of this evaluation. They can be investigated under two titles: Subjective and Objective methods. Three of objective methods are Data Envelopment Analysis (DEA), Common Set of Weight (CSW) and Stochastic Frontier Analysis (SFA). Every one of them has strong and weak sides. In this study these strong and weak sides will be described. As an example DEA assign maximum/Minimum performance scores to the DMUs due to output and input oriented methods respectively. However, it evaluates the evaluation criteria with different weight points for each DMU. Some DMUs may disapproval to these different weights of criterias. At this point the CSWs can be presented as a solution method. Yes CSW method ranks all DMUs. But it has some defects:

1- How many of DMUs are efficient and 2- How it will compute excesses of inputs and shortfalls of outputs of every DMU for becoming as an efficient DMU. The strong side of DEA is to allow calculation of excesses of inputs and shortfalls of outputs of every DMU. Et cetera.

Keywords: Performance, Data Envelopment Analysis, Common Set Of Weights. Stochastic Frontier Analysis

References

[1] Alp, İ. (2016). Another Way To Determine Weights Of Balanced Performance Evaluations. Dumlupınar Ünversitesi Sosyal Bilimler Dergisi, 152–161.

[2] C. Kao, H.T. Hung, (2005), Data envelopment analysis with common weights: The compromise solution approach,Journal of the Operational Research Society, 56 (10) pp. 1196–1203.

[3] Makui, A., Alinezhad, A., KianiMavi, R., Zohrebandian, (M., 2008), "A Goal Programming Method for Finding Common Weights in DEA with an Improved Discriminating Power for Efficiency," Journal of Industrial and Systems Engineering, Vol. 1, pp.293-30

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SOME EXPRESSIONS FOR THE GROUP INVERSE OF THE BLOCK MATRICES WITH AN INVERTIBLE SUBBLOCK

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Let K be a skew field and K^{mxm} be the set of all mxm matrices over K. The purpose of this paper is to give some necessary and sufficient conditions for the existence and some expressions of the group inverse of the block matrix $M = \begin{bmatrix} A & B \\ C & D \end{bmatrix} \in K^{mxm}$ (A is square) under some conditions, where M be a square block matrix with an invertible subblock.

Key words: Skew Field; Block Partititoned Matrix; Group Inverse; Invertible Subblock; Drazin Inverse.

References

[1] S. L. Campbell, C.D. Meyer, Generalized inverses of linear transformations, Pitman, London, 1979, Dover, New York, 1991.

[2] A. Ben-Israel, T.N.E. Greville, Generalized Inverses: theory and applications, second ed., Wiley, New York, 1974, Springer-Verlag, New York, 2003.

[3] X. Chen, R.E. Hartwig, The group inverse of a triangular matrix, Linear Algebra Appl. 237/238 (1996) 97–108.

[4] D.S. Cvetkovic´ -Ilic´, A note on the representation for the Drazin inverse of 2 2 block matrices, Linear Algebra Appl. 429 (2008) 242–248.

[5] N. Castro-González, E. Dopazo, Representations of the Drazin inverse of a class of block matrices, Linear Algebra Appl. 400 (2005) 253–269.

[6] C. Bu, J. Zhao, J. Zheng, Group inverse for a class 2 2 block matrices over skew fields, Appl. Math. Comput. 204 (2008) 45–49.

[7] C. Bu, On group inverses of block matrices over skew fields, J. Math. 26 (1) (2006) 49–52.

[8] N. Castro-González, E. Dopazo, J. Robles, Formulas for the Drazin inverse of special block matrices, Appl. Math. Comput. 174 (2006) 252–270.

[9] C. Cao, Some results of group inverses for partitioned matrices over skew fields, J. Natural Sci. Heilongjiang Univ. 18 (3) (2001) 5–7.

[10] C. Cao, X. Tang, Representations of the group inverse of some 2 2 block matrices, Int. Math. Forum 31 (2006) 1511–1517.

[11] R. Hartwig, X. Li, Y. Wei, Representations for the Drazin inverse of 2 2 block matrix, SIAM J. Matrix Anal. Appl. 27 (2006) 757–771.

[12] Zhang, K., Bu, C.: Group inverses of matrices over right Ore domains. Appl. Math. Comput. 218, 6942–6953 (2012).

*Presenter

ON A CLASS OF DOUBLE SEQUENCES RELATED TO lp-SPACE BY ORLICZ FUNCTIONS

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In this work we introduce the $m^2(M,\varphi)$- class of double sequences related to p-absolute convergent double sequence space. We study some properties like solidity, simetricity of $m^2(M,\varphi)$ and obtain some inclusion relations involved $m^2(M,\varphi)$.

Keywords: Double Sequence; Orlicz Function; Simetricity; Solidity.

References

[1] Y. Altun and T. Bilgin, On New Class of Sequences Related to the l_{p} Space Defined by Orlicz Function, Taiwanese J. Mth. 13, 4 (2009), 1189-1196.

[2] A. Esi, On a class of new type difference sequence spaces related to the space l_{p}, Far East J. Math. Sci. 13(2) (2004), 167-172.

[3] V. A. Khan and S. Tabassum, On Some New Double Sequence Spaces of Invariant Means by Orlicz Functions, Commun. Fac. Sci. Univ. Ank. Series A1 V.60, No:2 (2011).

[4] B. V. Limaye and M. Zelstser, On the Pringsheim convergence of double series, Proc. Eston. Aca. Sci. 58,2 (2009), 108-121.

[5] J. Lindenstrauss and L. Tzafriri, On Orlicz sequence spaces, Israel J. Math., 10(1971), 379-390.

[6] W. L. C. Sargent, Some sequence spaces related to l_{p} spaces, J. Lond. Math. Soc. (35) (1960),161-171.

[7] B. C. Tripathy and S. Mahanta, On a class of sequences related to the l_{p} space defined by Orlicz Functions, Soochow J. Math. 29 (2003), 379-391.

*Presenter

RAYLEIGH WAVE FIELD ARISING FROM A DISTRIBUTED MOVING LOAD ON A COATED ELASTIC HALF SPACE

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The propagation of surface waves in elastic structures under the action of moving loads is an active area of research. It has received significant attention due to its applicability in modern engineering application ranging from dynamic response of bridges to dynamic loading of thin coatings, see [1], [2]. Usually these problems have been modelled using a two-dimensional (2D) setting. However, real life problems including problems of tribology of coated solids, require modelling and analysis of problems in a three-dimensional (3D) framework. Most of the works dealing with 3D problems either employ a numerical approach or leave the obtained solutions in integral forms both of which do not immediately yield to further physical analysis, see [3]. We study the problem using asymptotic approximation, namely the method introduced by Kaplunov et al. [4], that reduces the 3D problem to a pair of 2D plain problems.

An analysis of the distributed moving load along the surface of a coated half-space is presented. The formulation of the problem depends on the hyperbolic-elliptic asymptotic model developed earlier by the authors. The problem is scaled with respect to the thickness of the coating as well as the load speed, being closer to the surface wave speed. The integral solution of the longitudinal and transverse displacements along the surface for the sub and super-Rayleigh cases are obtained by using the uniform stationary phase method. Numerical comparisons of the exact and asymptotic solutions of the longitudinal displacement are illustrated for the certain cross-sections of the profile.

Keywords: 3D Elasticity; Asymptotic Model; Moving Load; Surface Wave; Thin Layer.

References

[1] Cao, Y., Xia, H., & Li, Z. (2012). A semi-analytical/FEM model for predicting ground vibrations induced by high-speed train through continuous girder bridge. Journal of Mechanical Science and Technology, 26(8), 2485-2496.

[2] Agostinacchio, M., Ciampa, D., Diomedi, M., & Olita, S. (2013). Parametrical analysis of the railways dynamic response at high speed moving loads. Journal of Modern Transportation, 21(3), 169-181.

[3] Achenbach, J. (2012). Wave propagation in elastic solids (Vol. 16). Elsevier.

[4] Kaplunov, J., Zakharov, A., & Prikazchikov, D. (2006). Explicit models for elastic and piezoelastic surface waves. IMA Journal of Applied Mathematics, 71(5), 768-782.

*Presenter

MIXED DOUBLE-RANKED SET SAMPLING: A MORE EFFICIENT AND PRACTICAL APPROACH

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A new modification of ranked set sampling (RSS) is investigated to estimate the mean of the study population. This modified approach is a double-stage approach and a kind of combination between RSS and median RSS (MRSS). It is shown that this new modification is more efficient than of RSS, MRSS, and simple random sampling. The Hellinger distance is used to show that the new approach is more practical than any other double-stage RSS.

Keywords: Efficiency; Hellinger Distance; Median; Practicality; Ranked Set Sampling.

References

[1] Al-Saleh, M.F., Al-Kadiri, M.A. (2000). Double-ranked set sampling. *Stat. Probabil. Lett. 48*(2), 205-212.

[2] Arnold, B., Balakrishnan, N., Nagaraja, H. (2008). *A First Course in Order Statistics*. Society for Industrial and Applied Mathematics.

[3] Chen, Z., Bai, Z., Sinha, B. (2004). *Ranked set sampling: theory and applications*, volume 176. Springer Science & Business Media.

[4] McIntyre, G. (2005). A method for unbiased selective sampling, using ranked sets. *Am. Stat. 59*, 230-232.

[5] Muttlak, H. (1997). Median ranked set sampling. *J. Appl. Statist. Sc. 6*, 245-255.

[6] Riaz, M., Mahmood, T., Abbasi, S.A., Abbas, N. (2017). Linear pro_le monitoring using EWMA structure under ranked set schemes. *Int. J. Adv. Manuf. Tech*. just-accepted:00-00.

[7] Samawi, H.M., Tawalbeh, E.M. (2002). Double median ranked set sample: comparing to other double ranked samples for mean and ratio estimators. *J. Mod. App. Stat. Meth. 1*(2), 428-442.

[8] Sarikavanij, S., Kasala, S., Sinha, B.K., Tiensuwan, M. (2014). Estimation of location and scale parameters in two-parameter exponential distribution based on ranked set sample. *Commun. Stat. B-Simul. 43*(1), 132-141.

[9] Takahasi, K., Wakimoto, K. (1968). On unbiased estimates of the population mean based on the sample strati_ed by means of ordering. *Ann. I. Stat. Math. 20*(1), 1-31.

*Presenter

ON HERMITE-HADAMARD TYPE INEQUALITIES VIA KATUGAMPOLA FRACTIONAL INTEGRALS

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In this paper, we give new definitons related to Katugampola fractional integral for two variables functions. We are interested to give the Hermite--Hadamard inequality for a rectangle in plane via convex functions on co-ordinates involving Katugampola fractional integral.

Keywords: Convex Function; Co-Ordinated Convex Function; Hermite-Hadamard Inequalities; Katugampola Fractional Integral.

References

[1] M. K. Bakula and J. Pecaric, On the Jensen's inequality for convex functions on the co-ordinates in a rectangle from the plane, *Taiwanese Journal of Mathematics*, 10(5), 2006, 1271-1292.

[2] H. Chen, U.N. Katugampola, Hermite-Hadamard and Hermite-Hadamard-Fejer type inequalities for generalized fractional integrals, *J. Math. Anal. Appl*., 446 (2017), 1274-1291.

[3] S.S. Dragomir, C.E.M. Pearce, Selected topics on Hermite--Hadamard inequalities and applications, *RGMIA Monographs*, Victoria University, (2000).

[4] U.N. Katugampola, New approach to a generalized fractional integrals, *Appl. Math. Comput*., 218 (4) (2011), 860-865.

[5] S. Miller and B. Ross, An introduction to the fractional calculus and fractional differential equations, *John Wiley & Sons*, USA, 1993, p.2.

[6] H. Yaldız, M. Z. Sarıkaya and Z. Dahmani, On the Hermite-Hadamard-Fejer-type inequalities for co-ordinated convex functions via fractional integrals, *An International Journal of Optimization and Control: Theories & Applications*, Vol.7, No.2, pp.205-215, 2017.

*Presenter

HIERARCHICAL MATHEMATICAL MODELING APPROACH FOR TIMETABLING PROBLEM

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Academic timetabling problems a class of NP-Hard type problem which cannot be solved in polynomial time. In literature, these problems are studied under two different main topics which are curriculum and post-enrollment based timetabling problems. In this paper, timetabling procedure of Atatürk University Engineering Faculty which is a curriculum based timetabling problem is analyzed. The problem which is handled in this paper is not only a lean lecture assigning problem but also including several constraints related to lecture given departments and classes (student groups). In this study a hierarchical mathematical modelling approach is proposed to optimize seven objectives. 2015-2016 spring term real life data of engineering faculty of Atatürk University is used to test proposed approach and timetables obtained from proposed approach is compared with timetables generated by coordinators with hand in terms of seven objectives.

Keywords: Academic Time Tabling Problem; Integer Programming

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References

[1] Akkoyunlu, E.A. (1972). A linear algorithm for computing the optimum university timetable. The Computer Journal, 16(4), 347-350.

[2]Burke, E.K., Mareck, J., Parkes, A.J., Rudova, H. (2010). Decomposition, reformulation, and diving in university course timetabling. Computers & Operations Research, 37, 582 -597.

[3] Cacchiani, V., Caprara, A., Roberti, R., and Toth, P. (2013). A new lower bound for curriculum-based course timetabling. Computers &Operations Research, 40, 2466–2477.

[4] Thepphakorn, T., Pongcharoen, P., and Hicks, C. (2014). An ant colony based timetabling tool." International Journal of Production Economics, 149, 131–144.

[5] Daskalaki, S., Birbas, T., and Housos, E. (2004). An integer programming formulation for a case study in university timetabling. European Journal of Operational Research, 153, 117-135.

[6] Dimopoulou, M., Miliotis, P. (2004). An automated university course timetabling system developed in a distributed environment: A case study. European Journal of Operational Research, 153, 136–147.

[7] Martin, C.H. (2004). Ohio University's College of Business Uses Integer Programming to Schedule Classes. Interfaces, 34(6), 460-465.

[8] MirHassani, S.A. (2006). A computational approach to enhancing course timetabling with integer programming. Applied Mathematics and Computation, 175, 814–822.

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A NEW PERFORMANCE CRITERION FOR HYPOTHESIS TESTING

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Power of the test and type 1 error rate are the most common criteria for comparing the performance of the statistical methods in hypotheses testing. Researchers have many methods available, the most well known approach that they choose one with the highest power when type 1 error rates are close to each other. However, this is not always possible because type 1 error rates of the methods might be different. Zhang and Boos proposed adjusted power estimate to cope with this problem. The critical test value is recalculated to obtain the nominal level with bootstrap samples in this estimation method. By this way, type 1 error rate of the methods become equal among themselves and comparison can be made by power of the test. When the number of methods increase, calculation of the adjusted power is getting harder. In this study, a new performance criterion is proposed. In proposed criterion, we penalized the power with respect to degree of deviation from the nominal level of the type 1 error rate. There is no recalculation of the critical test value so it can be calculated easily. Since the proposed criterion use both power of the test and type 1 error rate, it can be used as an adequate measure. Comparisons with Zhang and Boos's method are given in simulation part of the study.

Keywords: Power Of The Test; Type 1 Error Rate; Adjusted Power; Size Corrected Power; Size Adjusted Power.

References

[1] Dominguez, M. A., & Lobato, I. N. (2000). Size corrected power for bootstrap tests. Instituto Technologico Autonomo de Mexico, Technical Notes.

[2] Zhang, J., & Boos, D. D. (1994). Adjusted power estimates in Monte Carlo experiments. *Communication in Statistics*, *23*(1), 165-173.

[3] Çavuş, M., & Yazıcı, B., & Sezer, A. (2017). Modified tests for comparison of group means under heteroskedasticity and non-normality caused by outlier(s). *Hacettepe Journal of Mathematics and Statistics*, *46*(3), 492-510.

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PERMUTATION TESTS FOR TWO-SAMPLE LOCATION PROBLEM UNDER EXTREME RANKED SET SAMPLING

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In this paper, permutation test of comparing two-independent samples in terms of some measure of location is investigated in the context of extreme ranked set sampling. Three test statistics are proposed. The statistical power of these new test statistics are evaluated numerically. The results are compared with the statistical power of the classical independent two-sample t-test and the usual two-sample permutation test under simple random sampling.

Keywords: Permutation Test; Extreme Ranked Set Sampling; Power Level; Type I Error Probability.

References

[1] Amro L., Samuh M. H. (2016). More powerful permutation test based on multistage ranked set sampling. *Communications in Statistics-Simulation and Computation* (just-accepted).

[2] Arnold, B., Balakrishnan, N., Nagaraja, H. (2008). *A First Course in Order Statistics*. Society for Industrial and Applied Mathematics.

[3] Chen, Z., Bai, Z., Sinha, B. (2004). *Ranked set sampling: theory and applications*, volume 176. Springer Science & Business Media.

[4] Fisher R. A. (1934). *Statistical Methods for Research Workers*. Oliver and Boyd, Edinburgh.

[5] McIntyre, G. (2005). A method for unbiased selective sampling, using ranked sets. *Am. Stat. 59*, 230-232.

[6] Muttlak, H. (1997). Median ranked set sampling. *J. Appl. Statist. Sc. 6*, 245-255.

[7] Pesarin F., Salmaso L. (2010). *Permutation Tests for Complex Data: Theory, Application and Software*. John Wiley & Sons, Ltd., Chichester.

[8] Samawi H. M., Ahmed M. S., Abu-Dayyeh W. (1996). Estimating the population mean using extreme ranked set sampling. *Biometrical Journal 38*(5), 577-586.

[9] Takahasi, K., Wakimoto, K. (1968). On unbiased estimates of the population mean based on the sample stratified by means of ordering. *Ann. I. Stat. Math. 20*(1), 1-31.

*Presenter

FINDING COMBINATIONS OF FOUR OPERATIONS WITH TYPE-2 SEARCH METHOD

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The four operations problem is an intelligence game which is tried to reach target number by applying four operations between given numbers. This game first started broadcasting in 1972 on French television titles "*des chiffres et des lettres*". Later, it appeared on British television with the name "*countdown*" in 1982. In addition, it is called as "*bir kelime bir işlem*" in Turkey.

The countdown game is played six numbers. Five of these numbers are randomly selected from 1 to 9, and another is randomly selected from the cluster $\{25, 50, 75, 100\}$. The contestants try to reach a randomly selected target number (from 101 to 999) using the basic arithmetic operations $(+ - * /)$, applied to six numbers. The selected six numbers can only be used once and the result of each operation performed with them once. When performing this operation, operators can be used as many times as desired, provided that each number issued can be used once.

In this problem, finding possible of all four operations combinations include operation blocks consisting of two numbers and an operator. These blocks are generated by using the intersection of three different clusters. Therefore, a new tree structure, called as "*Type-2* Tree", has been improved to model this intersection, accurately. The deterministic search methods (depth-first and breadth-first searches) are performed on the *Type-2* tree structure. The operation blocks are stored as strings in order to keep the *Type-2* tree structure in conventional data structures. Different conversions have been applied to process the operation blocks in string structure.

Simulation studies were performed to test the performance of the proposed algorithm for the four-operations combination problem. The simulation parameters are randomly selected from 1 to 9 and the average calculation times are obtained according to the amount of selected number (n). The computational complexity was calculated theoretically according to the parameter n and compared with the computation time.

Keywords: Combination; Four Operations; *Type-2* Tree Structure; Operation Block.

*Presenter

References

[1] Alliot, J.-M. (2015). The (Final) countdown. *CoRR, abs/1502.05450*.

[2] Colton, S. (2014). Countdown numbers game: Solved, analysed, extended. *Proceedings of the AISB symposium on AI and Games.*

[3] Defays, D. (1990). Numbo: A study in cognition and recognition. *CCAI(J. Integrated Study Artificial Intelligence Cognitive Sci. Appl. Epistemol.), 7*(2), 217-243.

[4] Hutton, G. (2002). The countdown problem. *Journal of Functional Programming*, *12*(06), 609-616.

[5] Jones, M. (2015). *Artificial Intelligence: A Systems Approach: A Systems Approach.* Jones & Bartlett Learning.

[6] Mogos, A.-H., & Florea, A. (2008). Solving the Countdown Problem Using Automatic Composition of Semantic Web Services. *Symbolic and Numeric Algorithms for Scientific Computing, 2008. SYNASC'08. 10th International Symposium on*, (s. 310-315).

[7] Nilsson, N. (2014). *Principles of artificial intelligence.* Morgan Kaufmann.

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OPERATOR P-PREINVEX CLASS FOR CONTINUOUS FUNCTIONS OF SELFADJOINT OPERATORS

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In this paper, firstly we define a new class of functions for continuous functions of selfadjoint operators, i.e. operator P-preinvex function. Secondly, we research some properties of this class. Finally we obtain new inequalities via Hermite-Hadamard Type for operator P-preinvex function.

Keywords: Invex Set; Preinvex Function; Hilbert Space; Operator Preinvex Function; Operator P-Preinvex Function.

References

[1] Mohan S. R., Neogy S. K., (1995). Note: On Invex Sets and Preinvex Functions, *Journal of Mathematical Analysis and Applications*. 189, 901-908.

[2] Yang, X. M. (2001). On Properties of Preinvex Functions, *Journal of Mathematical Analysis and Applications.* 256, 229-241.

[3] Fujii, J. I., Kian, M., Moslehian M. S., (2010). Operator Q-class functions, *Scientiae Mathematicae Japonicae Online*. e-2010, 571-576.

[4] Ghazanfari, A. G., Shakoori, M., Barani, A., Dragomir, S. S., (2013). Hermite-Hadamard type inequalities for operator preinvex functions. https://arxiv.org/abs/1306.0730.

[5] Bakherad, M., Abbas, H., Mourad, B., Moslehian M. S., (2014). Operator P-class functions. *Journal of Inequalities and Applicaitons*. 2014:451.

[6] Wang, S. H, Liu, X. M, (2015). Hermite-Hadamard type inequalities for operator s-preinvex functions. *Journal of Nonlinear Science and Applications.* 8, 1070-1081.

[7]Wang, S. H., Sun X. W., (2017). Hermite-Hadamard type inequalities for operator alpha-preinvex functions. *Journal of Analysis & Number Theory*. 5(1), 13-17.

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OPERATOR Q-PREINVEX CLASS FOR CONTINUOUS FUNCTIONS OF SELFADJOINT OPERATORS

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In this paper, firstly we define a new class of functions for continuous functions of selfadjoint operators, i.e. operator Q-preinvex function. Secondly, we research some properties of this class. Finally we obtain new inequalities via Hermite-Hadamard Type for operator Q-preinvex function.

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References

[1] Mohan S. R., Neogy S. K., (1995). Note: On Invex Sets and Preinvex Functions, *Journal of Mathematical Analysis and Applications*. 189, 901-908.

[2] Yang, X. M. (2001). On Properties of Preinvex Functions, *Journal of Mathematical Analysis and Applications*. 256, 229-241.

[3] Fujii, J. I., Kian, M., Moslehian M. S., (2010). Operator Q-class functions, *Scientiae Mathematicae Japonicae Online*. e-2010, 571-576.

[4] Ghazanfari, A. G., Shakoori, M., Barani, A., Dragomir, S. S., (2013). Hermite-Hadamard type inequalities for operator preinvex functions. https://arxiv.org/abs/1306.0730.

[5] Bakherad, M., Abbas, H., Mourad, B., Moslehian M. S., (2014). Operator P-class functions. *Journal of Inequalities and Applicaitons*. 2014:451.

[6] Wang, S. H, Liu, X. M, (2015). Hermite-Hadamard type inequalities for operator s-preinvex functions. *Journal of Nonlinear Science and Applications*. 8, 1070-1081.

[7]Wang, S. H., Sun X. W., (2017). Hermite-Hadamard type inequalities for operator alpha-preinvex functions. *Journal of Analysis & Number Theory*. 5(1), 13-17.

*Presenter

COMPARISON OF VARIOUS BIOLOGICAL NETWORK CONSTRUCTIONS

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Modeling complex biological network is one of the interesting topics in systems biology. Because the mathematical description of these complex systems enables us to better understand the actual activation of the networks and produce drug targets towards systems diseases. Hereby, there are a number of modeling approaches which represent the steady-state activation of these networks. In this study, we compare the performance of frequentist and Bayesian inference methods which are used for the Gaussian graphical models [1]. In the analyses, we apply the reversible jump Markov chain Monte Carlo method [2] and the Gibbs sampling [3] to estimate the structure of the system under the Bayesian settings. On the other hand, as the frequentist approach to infer the model parameters, we perform the modified maximum likelihood estimators [4], which have explicit expressions, and the graphical lasso, i.e., glasso, estimators [5], which are derived from the penalized likelihood expressions and are obtained via iterative methods. We evaluate the performance of all these estimators via real and simulated datasets and compute the accuracies of the estimates.

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Keywords: Gaussian Graphical Model; Bayesian Algorithms; Modified Maximum Likelihood Estimators; Biological Networks.

References

[1] Whittaker, J. (1990). *Graphical models in applied multivariate statistics*. John Wiley & Sons.

[2] Dobra, A., & Lenkoski, A. (2010). Copula Gaussian graphical models and their application to modeling functional disability data. *Annals of Applied Statistics*, 5 (2A), 969-993.

[3] Purutçuoğlu, V., & Farnoudkia, H. (2017). Gibbs sampling in inference of the copula Gaussian graphical model adapted to biological networks. *Acta Physica Polonica Series A*, 1-12 (accepted).

[4] Ağraz, M., & Purutçuoğlu, V. (2017, January). Inference of the Gaussian graphical model via the modified maximum likelihood approach. In *Proceeding of Istanbul International Conference on Progress in Applied Science*, 234-238.

[5] Friedman J, Hastie T, & Tibshirani R. (2008). Sparse inverse covariance estimation with the graphical lasso. *Biostatistics*, 9, 432- 441.

*Presenter

INVESTIGATION OF LOCAL ASSOCIATIONS IN ANIMAL RESEARCH MULTIWAY CROSS TABULATED COUNT DATA

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In many animal researches mostly two way cross-tabulated data were evaluated by calculating a simple chi-squared test to see if the whole table deviated from the expected pattern. Such approaches to multiway frequency tables are mostly dissatisfying. Configural frequency analysis a general multipurpose tool and revolutionizes how we examine the cross-tabulation of two or more count variables (1). CFA is a useful inferential tool used to evaluate the expected configural patterns in two-way to multiway cross tabulations of frequencies. The results are possible types/antitypes depending on whether the observed cell frequencies are significantly lower/higher with respect to the base model (2).

One of the goals of this study is to put into practice the application of configural frequency analysis technique to investigate local associations for animal research count data which was exemplified by cause of mortality of calves. The mortality data were not very well recorded in in Turkish cattle farming systems. Because of the difficulties of obtaining such risk data for calves' mortality (3), we used simulated data to evaluate the implementation of configural frequency analysis in calves' mortality. We have seen that it is very powerful technique to investigate local configural associations, and CFA analysis approaches must be evaluated for animal researches in the future researches to evaluate local relations.

Keywords: Local Associations; Configural Frequency Analysis; Count Data Analysis; Animal Data Analysis.

References

[1] von EYE, A., Gutierrez-Pena, E., 2004. Configural frequency analysis - The search for extreme cells. *Journal of Applied Statistics.* 2004, Vol. 31, pp. 981-997.

[2] Funke, S., Mair, P., von Eye, A. 2007. *Analysis of configural frequencies. Program module in R.* s.l. : [http://cran.r-project.org/], 2007.

[3] Wymann, M.N., 2005. Calf mortality and parasitism in periurban livestock production in Mali, Universitat Basel, doctoral dissertation. (Dairy Calf & Heifer Association: http://www.calfandheifer.org/?page=goldstandarts., September, 2013).

*Presenter

GENERAL CLASS OF ASYMMETRIC BIMODAL DISTRIBUTIONS

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This paper discusses the asymmetry and bimodality at the same time for distributions. The asymmetric distributions are proposed by means of an asymmetrization from symmetric probability density function. Many asymmetric bimodal distributions have been considered. Examining asymmetry and bimodality at same time is few and there is a deficiency of the proposed distributions. The main role in statistical inference is the determining of the fitting competence of the considered distributions. To test the fitting competence, many goodness of fit tests (GOFTs) have been proposed. Some of these tools are required to have an explicit form of cumulative distribution function (CDF). The CDFs of the proposed distributions are not in an explicit form, which makes a computational issue while getting the values of GOFTs. However, we need to have an evaluation that is free from a computational error. In this study, the aim is to propose a general class for the distributions harmonized with asymmetry and bimodality together and also we will have CDF to use the GOFTs. Thus, the proposed distributions have a property on checking their modeling competence via GOFTs. The examples from real data are provided. The previously proposed distributions are compared with the general class via these examples.

Keywords: Asymmetric Bimodal; Distributions; Modeling; Goodness Of Fit Test.

References

[1] Arellano-Valle, R. B., Gomez, H. W., Quintana F. A. (2005). Statistical inference for a general class of asymmetric distributions. *Journal of Statistical Planning and Inference* 128, 427-443.

[2] Andrade B.B., Rathie P.N., (2016). Fitting asymmetric bimodal data with selected distributions, *Journal of Statistical Computation and Simulation* 86(16), 3205-3224.

[3] Balakrishnan, N. Basu, A.P. (1995). *The Exponential Distribution: Theory, Methods and Applications*. Gordon and Breach, Newark, NJ.

[4] Johnson, N.L., Kotz, S., Balakrishnan, N. (1994). *Continuous Univariate Distributions* - Volume 1, Second edition. John Wiley & Sons.

[5] Johnson, N.L., Kotz, S., Balakrishnan, N. (1995). *Continuous Univariate Distributions* - Volume 2, Second edition. John Wiley & Sons.

*Presenter

CONFIDENCE INTERVAL OF SYSTEMATIC SAMPLINGS ON REAL LINE AND CIRCULAR

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The quantitative values of geometrical objects that are in irregular forms, such as tumour, blood filled in brain or a part of body, are important to set a decision about the neurosurgical procedures, the pathological treatments, etc. Stereology from probabilistic geometry is used to get the quantitative results from these objects. The probes, such as lines, a regular grid on geometrical objects are used to construct a sampling version of an object. The different designs can be constructed by means of different probes. In one dimensional systematic sampling, the forms of geometrical objects and a design used affect the performance of variance approximation formula based on covariogram model proposed by Matheron intuitively. In this study, we examine the covariogram model for the different covariogram functions. In addition to, we construct the confidence interval for the estimated value of the object. We observed that the covariogram model cannot fit all kind of covariogram functions constructed via one-dimensional systematic sampling principle (real line and circular). The proposed coefficient of confidence interval helps us to construct a narrowed interval for the estimated value of object if the variance approximation formula based on the covariogram model gives the best fitting on the different covariogram functions.

Keywords: Stereology; Systematic Sampling; Modeling; Inference.

References

[1] Cruz-Orive, L.M. (1989). On the Precision of Systematic Sampling: A Review of Matheron's Transitive Methods. J. Microsc., 153, 315–333.

[2] Çankaya, M.N. (2016). Propositions for Confidence Interval in Systematic Sampling on Real Line. Entropy, 18, 352.

[3] García-Fiñana, M.; Cruz-Orive, L.M. (2004). Improved Variance Prediction for Systematic Sampling on R. Statistics, 38, 243–272.

[4] García-Fiñana, M. (2006). Confidence intervals in Cavalieri Sampling. J. Microsc., 222, 146–157.

[5] Gundersen, H.J.G.; Jensen, E.B. (1987). The Efficiency of Systematic Sampling in Stereology and its Prediction. J. Microsc., 147, 229–263.

*Presenter

CONTROL OF UNMANNED GROUND VEHICLES ON TIME SCALES

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In this paper, we study the control of unmanned mobile robots which are modeled by three-dimensional systems of first order dynamic equations on time scales. A time scale, denoted by $\mathbb{T}$, is a nonempty closed subset of real numbers, see [1-2]. The stability theory on time scales has been taken too much attention recently, see [4]. Our goal is to show the asymptotic stability of the zero solution (equilibrium point) of the system on all time scales including the continuous case, see [3]. The basic approach includes the Lyapunov Stability and the La Salle Invariance principle. Examples and simulation results are also given in order to validate our theoretical claims.

Keywords: Stability; Stability On Time Scales; Lyapunov; Invariance Principle.

References

[1] Bohner, M., & Peterson, A. *Dynamic Equations on Time Scales: An Introduction with Applications*. Birkhauser, Boston, 2001.

[2] Bohner, M., & Peterson, A. *Advances in Dynamic Equations on Time Scales.* Birkhauser, Boston, 2003.

[3] Guinaldo, M., Lehmann D., Sanchez, J., Dormido, S., & K. H. Johansson. Distributed event-triggered control with network delays and packet losses. *IEEE 51st Annual Conference on Decision and Control (CDC),* December, pp. 1–6, 2012.

[4] Hoffacker, J., & Tisdell, C. Stability and Instability for Dynamic Equations on Time Scales. *Computers and Mathematics with Applications*, 49 1327–1334, 2005.

*Presenter

COMPARISON OF FUZZY AND NONFUZZY STRUCTURAL EQUATION MODELS

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Structural Equation Model (SEM) is used by scientists working in many fields such as sociology, psychology, economics, engineering, medicine and statistics. It is one of the multivariate statistical methods that define the causal relationships between observed and unobserved variables with a model and based on a theory. Sem, which can be called as a research method alone is a powerful statistical technique that combines statistical techniques such as variance analysis, regression analysis and factor analysis. Bollen begin by identifying three components present in today's general structural equation models: (1) path analysis, (2) the conceptual synthesis of latent variable and measurement models, and (3) general estimation procedures [1].

Some of the behaviors and decisions of human beings cannot be defined as exact true. To measure the relations among variables, SEM applications by the help of fuzzy logic can give much meaningful results. The direct and indirect effects of human behaviors may be defined much truly via fuzzy logic. In this study the relations among the variables which effect the Wikipedia users perceptions about quality and benefit are analyzed via fuzzy structural equation modeling by using Technology Acceptance Model (TAM). The results of the study showed that some of the coefficients of the structural equation model which is applied by no fuzzy data set are statistically nonsignificant however when the data set became fuzzy via triangular membership function, all the coefficients became significant. Finally it can be one of the indicator that if there will be a study about modeling the attitudes and behaviors of the human beings, fuzzy techniques may give better results.

Keywords: Fuzzy Logic; Structural Equation Modeling; Technology Acceptance Model.

References

[1] Bollen, K. A. (1989). *Structural Equation with Latent Variables*. New York: John Wiley Sons.

[2] https://archive.ics.uci.edu/ml/datasets/wiki4HE (Data provided link)

[3] https://www.mathworks.com/help/fuzzy/what-is-fuzzy-logic.html

[4] Agresti, A. (2010). *Analysis of Ordinal Categorical Data*: John Wiley Sons.

[5] Grace, J. B. (2006). *Structural Equation Modelling and Natural Systems.* New York: Cambridge University press.

*Presenter

[6] Jörekog, K. G., Sörbom, D. (1993). *" LISREL 8: Structural Equation Modelling with the Simples Command Language.* Scientific Sofware International.

[7] Jöreskog, K. G. (1973). *A Generel Method For Estimation A Linear Structural Equation Systems* . New York: Seminar Press.

[8] Kaplan, D., (2000). Structural Equation Modeling: Foundations and Extensions. Sage Publications, Advanced Quantitative Techniques İn The Social Science(10). 272.

[9] Kline, R. B. (2011). *Principles and Practice of Structural Equation Modelling.* London: Guilford Press.

[10] Lee, S. Y. (2007). *Structural Equation Modeling A Bayesian Approach.* England: John Wiley Sons.

*Presenter

ON ALMOST A-COSYMPLECTIC MANIFOLDS WITH M-PROJECTIVE CURVATURE TENSOR

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In this paper, we study almost $\alpha-$cosymplectic manifolds with $M-$projective curvature tensor and we obtain the relation between different curvature tensors.

Keywords: First Keyword; Second Keyword; Third Keyword; Fourth Keyword.

References

[1] T. W. Kim, H. K. Pak. (2005). *Canonical foliations of certain classes of almost contact metric structures*. Acta Math. Sinica, Eng. Ser.

[2] K. Kenmotsu. (1972). *A class of almost contact Riemannian manifolds*. Tohoku Math. J.

[3] Z. Olszak. (1998). *Locally conformal almost cosymplectic manifolds*. Coll. Math. Univ. Pol. Torino.

[4] D. E., Blair. (2002). *Riemannian geometry of contact and symplectic manifolds*. Progress in Mathematics, 203. Birkhâuser Boston.

[5] I. Vaisman. (1980). *Conformal changes of almost contact metric manifolds*. Lecture Notes in Math. Berlin-Heidelberg-New York

[6] K. Yano, M. Kon. (1984). *Structures on manifolds*. Coll. 3. World Scientific Publishing Co. Singapore

[7] S.K. Chaubey and R.H. Ojha. (2010). *On the m-projective curvature tensor of a Kenmotsu manifold*. Geometry Balkan Press.

*Presenter

CLASSIFICATION OF EEG SIGNALS FOR DETECTION OF EPILEPTIC SEIZURES USING MULTIVARIATE LOGISTIC REGRESSION BASED ON WAVELET TRANSFORMS AND PCA

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This study presents an efficient approach that ensures an accurate classification of Electroencephalogram (EEG) signals for detection of epileptic seizures. Essentially, this approach is based on discrete wavelet transforms (DWT's), Principal Component Analysis (PCA) and multivariate logistic regression (MLR). While DWT's and PCA provide feature extraction and reduction processes, respectively; MLR is used to classify EEG signals in respect of cases of subjects. In order to improve the accuracy ratios at the classification process, the proposed algorithm utilizes the specific levels of DWT's for different bandwidths in EEG signals. To control complexity, the features obtained from DWT's are reduced by PCA bringing out orthogonal variables called as principal components. Lastly, MLR classifies EEG signals using these reduced features. In analysis, the proposed procedure is applied to a benchmark data set related to epileptic seizures. As a result, the proposed algorithm ensures better performances than the other approaches in the literature in context of detection of epileptic seizures. In addition, this approach allows estimating more reliable and robust models in terms of reliability and complexity.

Keywords: Epileptic Seizures; Discrete Wavelet Transform; Principal Component Analysis; Multivariate Logistic Regression.

References

[1] Bozdogan, H. (2000). Akaike's Information Criterion and Recent Developments in Information Complexity, *Journal of Mathematical Psychology*, *44(1),* 62-91.
[2] Gao, R. X. & Yan, R. (2011). *Wavelets: Theory and Applications for Manufacturing*, Springer.
[3] Hosmer, D. W. & Lemeshow, S. (2000). *Applied Logistic Regression,* John Wiley & Sons.
[4] Jolliffe, I. T. (2002). *Principal Component Analysis, Second Edition,* Springer.
[5] Mallat, S. (1999). *A Wavelet Tour of Signal Processing, Second Edition*, Academic Press.
[6] Moon, T. K. & Stirling, W. C. (2000). *Mathematical Methods and Algorithms for Signal Processing*, Prentice Hall.
[7] Sanei, S. & Chambers, J. A. (2007). *EEG Signal Processing*, Wiley.
[8] Sharma, S. (1996). *Applied Multivariate Techniques*, John Wiley & Sons.
[9] Walker, J. S. (1999). *A Primer on Wavelets and Their Scientific Applications*, Chapman & Hall/CRC.
[10] Zaki, M. J. & Jr, W. M. (2014). *Data Mining and Analysis: Fundamental Concepts and Algorithms*, Cambridge University Press.

*Presenter

ON THE DIAGONAL LIFTS OF AFFINOR FIELDS ALONG A CROSS-SECTION ON $T_q^p(M)$.

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In this paper firstly, operators were applied to vertical and horizontal lifts with respect to the diagonal lift φ^D of tensor fields of type $(1,1)$ from manifold to its tensor bundle of type (p,q) along the cross-section, respectively. Secondly, we get the conditions of almost holomorfic vector field with respect to φ^D on $T_q^p(M)$.

Keywords: Cross-Section; Tachibana Operators; Vishnevskii Operators; Diagonal Lift; Horizontal Lift; Vertical Lift.

References

[1] Çayır, H. (2015). Some Notes on Lifts of Almost Paracontact Structures, *American Review of Mathematics and Statistics*, 3(1), 52-60.

[2] Çayır, H. & Akdağ, K. (2016). Some notes on almost paracomplex structures associated with the diagonal lifts and operators on cotangent bundle , *New Trends in Mathematical Sciences.* 4(4), 42-50.

[3] Çayır, H. & Köseoğlu, G. (2016). Lie Derivatives of Almost Contact Structure and Almost Paracontact Structure With Respect to X^{C} and X^{V} on Tangent Bundle T(M). *New Trends in Mathematical Sciences*, 4(1), 153-159.

[4] Cengiz, N. and Salimov, A. A. (2002). Complete lifts of derivations to tensor bundles, *Bol. Soc. Mat. Mexicana*, 8 (2002). No. 3, 75-82 .

[5] Gezer, A & Salimov, A.A. (2008). Diagonal lifts of tensor fields of type (1,1) on cross-sections in tensor bundles and its applications, *J. Korean Math. Soc*. 45(2008), no.2, 367-376

[6] Kobayashi, S. & Nomizu, K. (1963), *Foundations of Differential Geometry-Volume I*, John Wiley & Sons, Inc, New York.

[7] Lai, K. F.& Mok, K. P. (2002), On the differential geometry of the (1,1) tensor bundle, *Tensor (New Series)*, 63, 15-27.

[8] Salimov, A. A. (2013), *Tensor Operators and Their applications*, Nova Science Publ., New York.

[9] Salimov, A. A. & Gezer, A. (2011) On the Geometry of the (1,1)-Tensor Bundle with Sasaki Type Metric, *Chin. Ann. Math*., 32 , B(3), 369-386.

[10] Yano, K. & Ishihara, S. (1973). *Tangent and Cotangent Bundles*, Marcel Dekker, New York.

*Presenter

INVESTIGATION ON THE FACTORS AFFECTING AIR POLLUTION BY CLUSTERED PANEL DATA ANALYSIS

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Air pollution has an adverse effect on societies. Despite many preventive measures, increased air pollution has become one of the most important and dangerous problem in the world. There are many factors that are directly related to the air pollution such as factories, chemical wastes and motor vehicles. The purpose of this study is to examine the factors affecting air pollution by clustered panel data analysis. In line with this purpose, a panel data set was designed for 28 countries over the period 2007-2013 from Eurostat in which air pollution is taken as dependent variable, the others such as industrial production, greenhouse gas emissions, waste disposal, investment in the environment and European Union membership are taken independent variables. Using the Gower distance, the panel data set is clustered by Wards method and the countries are homogeneously divided into 3 clusters. Cross sectional dependence, heteroscedasticity and autocorrelation assumptions were tested for each cluster and the deviations from assumptions are seen. For this reason, Parks-Kmenta (GEKK), Beck-Katz (PCSE) and Driscoll-Kraay estimators, which are robust methods for the deviations from the assumptions, have been applied for parameter estimation by using Stata program. The results of analysis showed that air pollution is effected by different factors in each cluster. As a conclusion, it can be said that applying cluster analysis before panel data analysis causes more accurate results.

Keywords: Panel Data; Cluster Analysis; Air Pollution.

References

[1] Bermudez, C., Dabus, C., D., Gonzalez, G., H. (2015). Reexamining the Link between Instability and Growth in Latin America: A Dynamic Panel Data Estimation Using K- Median Clusters. *Journal of Economics.* 52(1): 1-24.

[2] Göçer, I., Akın, T., Alatas, S. (2016). The Effects of Saving-Invesment Gap on Economic Growth in Developing Countries: A clustering and panel data analysis. *Theoretical and Applied Economics*. 2(607): 157-172.

[3] Konstantakis, K. N., Papageorgiou, T., Michaelides, P. G., Tsionas, E.G. (2015). Economic Fluctutions and Fiscal Policy in Europe: A Political Business Cycles Approach Using Panel and Clustering. *Open Econ Rev*. 26(1): 971-998

*Presenter

SOME COMPACTNESS THEOREMS ON COMPLETE RIEMANNIAN MANIFOLDS

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In this paper we prove some extensions of the theorem of Ambrose (or Myers) on the complete Riemannian manifolds. We observe that the problem of finding conditions on the Ricci curvature to ensure the compactness of manifold is reduced to the problem of finding the proper oscillation conditions of second order linear differential equations. The proof of theorems is based on the Riccati comparison theorem and some related oscillation conditions.

Keywords: Oscillation; Riccati Comparison Theorem; Ricci Tensor.

References

[1] Ambrose, W. (1957). A theorem of Myers. *Duke Math J.,24(3),* 345-348.

[2] Cavalcante, M.P., & Oliveira, J.Q., & Santos, M.S. (2015). Compactness in weighted manifolds and applications. *Results. Math., 68 (1),* 143-156.

[3] Galloway, G.J. (1982). Compactness criteria for Riemannian manifolds. *Proc. Amer. Math. Soc., 84,* 106-110.

[4] Mastrolia, P., & Rimoldi, M., & Veronelli, G. (2012). Myers-type theorems and some related oscillation results. *J. Geom. Anal., 22 (3),* 763-779.

[5] Moore, R.A. (1955). The behavior of solutions of a linear differential equation of second order. *Pasific J. Math., 5 (1),* 125-145.

[6] Myers, S.B. (1941). Riemannian manifolds with positive mean curvature. *Duke Math J., 8 (2),* 401-404.

[7] Swanson, C.A. (1968). *Comparison and oscillation theory of linear differential equations*. New York and London: Academic Press.

[8] Zhang, S. (2014). A theorem of Ambrose for Bakry-Emery Ricci tensor. *Ann. Glob. Anal. Geom., 45 (3),* 233-238.

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ON OPERATOR h-PREINVEX FUNCTIONS

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In this paper, Firstly we define a new class of inequality, namely, operator h-preinvex function. Secondly, we give some properties of this class. Finally we obtain new inequalities via Hermite-Hadamard Type for operator h-preinvex function.

Keywords: Hermite-Hadamard Type Inequality, Hilbert Space, Operator H-Preinvex Function.

References

[1] Mohan S. R., Neogy S. K., (1995), Note: On Invex Sets and Preinvex Functions, Journal of Mathematical Analysis and Applications, 189, 901-908.

[2] Yang X. M. (2001) On Properties of Preinvex Functions, Journal of Mathematical Analysis and Applications 256, 229-241.

[3] Dragomir, S.S., (2011) *Hermite-Hadamard's type inequalities for operator convex functions*, App. Math. and Comp., 218, 766-772.

[4] Wang S-H, Liu X-M, (2015)Hermite-Hadamard type inequalities for operator s-preinvex functions, J. Nonlinear Sci. Appl., 8 1070-1081.

[5]Wang S-H, Sun X-W, (2017) Hermite-Hadamard type inequalities for operator alpha-preinvex functions J. Ana. Num. Theor. 5, No. 1, 13-17.

[6] Unluyol E, Salaş S, Erdaş Y,(2015) *The Hermite-Hadamard type inequalities for operator h-convex functions in Hilbert Space*, International Conference On Applied Analysis And Mathematical Modeling, ICAAMM, Istanbul.

[7] Unluyol E, Salaş S, Erdaş Y, (2015) *Some new Hermite-Hadamard Type Inequalities and Applications for Two Oparator ES_hO-Convex Functions in Hilbert Space*, International Conference on Advancement in Mathematical Sciences, 05-07 November, Porto Bello Hotel Resort, Spa, Antalya, Turkey, 190.

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In this paper, Firstly we define a new class of inequality, namely, operator m-preinvex function. Secondly, we give some properties of this class. Finally we obtain new inequalities via Hermite-Hadamard Type for operator m-preinvex function.

Keywords: Hermite-Hadamard Type Inequality;Hilbert Space, Operator;M-Preinvex Function.

References

[1] Mohan S. R., Neogy S. K., (1995), Note: On Invex Sets and Preinvex Functions, Journal of Mathematical Analysis and Applications, 189, 901-908.

[2] Yang X. M. (2001) On Properties of Preinvex Functions, Journal of Mathematical Analysis and Applications 256, 229-241.

[3] Dragomir, S.S., (2011) *Hermite-Hadamard's type inequalities for operator convex functions*, App. Math. and Comp., 218, 766-772.

[4] Wang S-H, Liu X-M, (2015)Hermite-Hadamard type inequalities for operator s-preinvex functions, J. Nonlinear Sci. Appl., 8 1070-1081.

[5]Wang S-H, Sun X-W, (2017) Hermite-Hadamard type inequalities for operator alpha-preinvex functions J. Ana. Num. Theor. 5, No. 1, 13-17.

[6] Erdaş, Y., Unluyol, E., Salaş, S., ., (2015) *The Hermite-Hadamard type inequalities for operator m-convex functions in Hilbert Space*, Journal of New Theory, 5, 80-91.

*Presenter

BOOTSTRAP BASED ON TESTS FOR THE DIFFERENCE BETWEEN TWO POPULATION MEANS UNDER RANKED SET SAMPLING

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Ranked Set Sampling (RSS) can be used when it is very difficult or expensive to measure the sampling units but they can easily be ranked. The original form of RSS was designed by McIntytre (1952) to estimate pasture yields. The technique has also many different applications in many fields such as medicine, ecology and environmental studies.

For statistical inference about parameters under RSS, distributional information of the statistics is generally quite difficult to obtain. When a large sample is used, some asymptotic techniques can be utilized to obtain distributional information. However, since RSS is a technique that uses small sample sizes, asymptotic techniques are not valid for RSS in most of the cases. To obtain distributional information of the statistics under RSS, some resampling techniques such as Bootstrap can be used instead of asymptotic techniques. Bootstrap, first introduced by Efron in 1979, is a statistical method that is especially useful when the sample size is small. It is a commonly used method for hypothesis test and confidence interval for parameters.

Modarres et al. (2006) studied Bootstrap technique under RSS and proposed three different sampling techniques with it for the confidence interval of the population mean. Since especially one of this echniques is not valid in almost every considered problem [5], the other two resampling techniques suggested by Modarres et al. (2006) were adapted for the hypothesis test of two population means difference in this study. A simulation study was conducted to obtain type I error rates and the power of tests for the difference of two population means under different set and cycle sizes using different type of distributions.

Keywords: Ranked Set Sampling; Bootstrap; Type I Error Rates.

References

[1] McIntyre, G.A., (1952). A method of unbiased selective sampling using ranked sets. Australian Journal of Agricaltural Research, 3, 385-390.

[2] Efron, B.,(1979). Bootstrap methods: another look at Jackknife, Institute Of Mathematical Statistics, 7, 1-26.

[3] Hui, T.P., Modarres, R., Zheng, G., (2005). Bootstrap confidence interval estimation of mean via ranked set sampling linear regression. Journal of the Statistical Computation and Simulation. Vol. 75 Issue:7 Pages:543-553.

[4] Modarres, R.,Hui, T.P., Zheng, G., (2006). Resampling methods for ranked set samples, Computational Statistics and Data Analysis, 51, 1039-1050.

[5] Yeniay, N., Özdemir, Y.A., Gökpınar, F., (2017). Sıralı Küme Örneklemesi Altında Farklı Bootstrap Yöntemleri ile Yığın Ortalaması İçin Güven Aralığı. Sakarya University Journal of Science. In press

*Presenter

A DISCUSSION ON LOSS FUNCTIONS: TO ACHIEVE THE CORRECT LOSS, WHAT SHOULD BE CONSIDERED?

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Traditionally, the role played by loss functions is fundamental in every quality engineering and management approach. In statistics, a loss function represents the monetary loss associated with deviations of quality characteristic from the target. Poorly operated manufacturing facilities and poorly designed products result in major incidents involving financial and social losses. A loss includes both company costs such as rework, repair, scrap and administrative costs, and any loss to the customer through unsatisfactory product performance and customer service. The whole concept of 'loss' usually refers to the 'loss to society'. Quality loss function is a method of measuring losses that are incurred due to not perfect, however compliant production.

A loss function can takes many different forms, i.e., may be a *symmetric* or *asymmetric* shape. And, different kinds of loss functions have different ability to measure the process loss. This paper takes into account the loss functions and investigates the behavioral patterns of them. Additionally, the common loss functions and their abilities will be discussed with graphical representations. Especially, for the asymmetric loss functions, the importance of the location of the target of a given process is investigated using the new two asymmetric loss functions.

This study tries to give the answer of the question "To achieve the correct loss, what should be considered?" with actual examples and graphical representations. Therefore, this study offers a useful reference to practitioners in terms of providing more engineering understanding about the process.

Keywords: Robust Parameter Design; Response Surface Methodology; Asymmetric Loss Functions.

References

[1] Taguchi, G. (1986) Introduction to Quality Engineering: Designing Quality into Products and Processes, Asian Productivity Organization, Tokyo.

[2] Spiring, F. (1993). The reflected normal loss function. *The Canadian Journal of Statistics*, 21(1), 321-330.

[3] Sun. F. & Laramee, J. & Ramberg, J.S. (1996). On Spiring's normal loss function. *The Canadian Journal of Statistics*, 24(2), 241-249.

[4] Drain, D. & Gough, A.M. (1996). Applications of the up-side down normal loss function. *IEEE Transactions on Semiconductor Manufacturing*, 9(1), 413-145.

[5] Zeybek, M. (2015). Kayıp fonksiyonlarına dayalı süreç-dışı geliştirmeyaklaşımları. Ph. D. Thesis, Ege University.

[6] Ergen, P. (2017). Ters normal dağılımın diğer yakın dağılımlarla uygulamali karşilaştirilmasi. Master Thesis, Ege University.

*Presenter

TESTING INDEPENDENCE FOR ARCHIMEDEAN COPULAS BY BERNSTEIN POLYNOMIAL APPROXIMATION

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In this study, we introduce a nonparametric test of independence between random variables for Archimedean Copula family. The test is based on Cramer-Von–Mises distance of Kendall's dependence function (K(t)) of Archimedean copula by Bernstein polynomial approximation. The performance of the test is investigated by Monte Carlo simulation study. We also investigate the power and the size of the test statistic and compare the results with the classical empirical estimator of K(t).

Keywords: Copula; Archimedean; Kendall Tau; Bernstein Polynomial.

References

[1] Genest C, Mackay J (1986) The joy of copulas: bivariate distributions with uniform marginals. Am Stat 40:280–283

[2] Genest C, Rivest L (1993) Statistical inference procedures for bivariate Archimedean copulas. J Am Stat Assoc 88:1043–1043

[3] Genest C, Rémillard B, Beaudoin D (2007) Goodness-of-fit tests for copulas: a review and a power study. Insur Math Econ 1:2

[4] Belalia M, Bouezmarni T. Taamouti A. (2016) Testing Independence Based on Bernstein Empirical Copula and Copula Density.

[5] A. Sklar. (1959). Fonctions de r´epartition `a n dimensions et leurs marges. Publ. Inst. Statist. Univ.Paris, 8, 229–231.

[6] Xue L, Wang J.(2010) Distribution function estimation by constrained polynomial spline regression. Journal of Nonparametric Statistics

[7] Genest, C., J.-F. Quessy, and B. Rémillard. 2006a. Goodness-of-fit procedures for copula models based on the probability integral transform. Scandinavian Journal of Statistics 33: 337–66.

[8] Nelsen, R.B. 1999. *An introduction to copulas*. NewYork: Springer Verlag.

[9] Joe, H. 1997. Multivariate models and dependence concepts. London: Chapman & Hall.

*Presenter

[10] Feller, W., 1965. An Introduction to Probability Theory and its Applications, Vol. II. Wiley, New York.

[11] Babu,G. J., Canty, A. J., Chaubey,Y. P. (2002).Application of Bernstein polynomials for smooth estimation of a distribution and density function. Journal of Statistical Planning and Inference, 105, 377–392.

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THE TIME LIKE MANNHEIM B-PAIR CURVES ACCORDING TO BISHOP TYPE-2 IN MINKOWSKI 3-SPACE

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In this paper, we introduce timelike Mannheim B-pair in the Minkowski 3- space using the type-2 Bishop frame. The relations between the type-2 Bishop vectors and Frenet vectors of these curves are given. Also, we give some new theorems related to be the timelike Mannheim B-pair.

Keywords: Mannheim Partner Curves; Bishop Frame; Minkowski Space

References

[1] Bishop L. R., There is More Than One Way to Frame a Curve. Amer. Math. Monthly, Vol.82 (3) (1975), 246-251.

[2] Liu, Huili, and Fan Wang. "Mannheim partner curves in 3-space."*Journal of Geometry* 88.1 (2008): 120-126.

[3] Masal, Melek, and Ayse Z. Azak. "Mannheim B-Curves in the Euclidean 3-Space E^ 3." *Kuwait Journal of Science* 44.1 (2017).

[4] Savci, Umit Z. "Spherical Images & Characterizations of Time-like Curve According to New Version of The Bishop Frame in Minkowski 3-Space."*Prespacetime Journal* 7.1 (2016).

*Presenter

OBTAINING FOR THE LIPSCHITZIAN FUNCTIONS OF FRACTIONAL INTEGRAL INEQUALITIES OBTAINED FOR HARMONICALLY CONVEX FUNCTIONS

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In this study, some New General Hermite-Hadamard and Bullen Type Inequalities for Lipschitzian Functions via Riemann-Liouville Fractional Integral are obtained. In these inequalities by taking some special values, some new Ostrowski and Simpson type inequalities which are given in literature are reached.

Keywords: Hermite-Hadamard Type Inequality; Bullen Type Inequality; Riemann-Liouville Fractional Integral; Convexity; Harmonically Convexity

References

[1] Pečarić, J., Proschan, F. and Tong, Y. L. *Convex Functions, Partial Orderings and Statistical Applications*. Academic Press, Inc., 469 pp, Boston (1992).

[2] Roberts, A. W., Varberg, D. E., *Convex Functions*. Academic Press, 300pp, New York, (1973).

[3] İşcan, İ., Hermite-Hadamard type inequalities for harmonically convex functions, *Hacettepe Journal of Mathematics and Statistics*, Volume 43 (6), 935 – 942 (2014).

[4] Dragomir S. S., Cho Y. J., Kim, S. S., Inequalities of Hadamard's type for Lipschitzian mappings and their applications. *J. Math. Anal. Appl. 245*, 489–501 (2000).

[5] Tseng K. L., Hwang, S. R., Hadamard-type and Bullen-type inequalities for Lipschitzian functions and their applications. *Computers and Mathematics with Applications 64 (4)*, 651-660 (2012).

[6] İşcan, İ., Wu, S., Hermite-Hadamard Type Inequalities for Harmonically Convex Functions via Fractional Integrals. *Applied Mathematics and Computation 238*, 237-244 (2014).

*Presenter

[7] İşcan, İ., Hadamard-type and Bullen-type inequalities for Lipschitzian functions via fractional integrals, Mathematical Sciences and Applications E-Notes, 4 (1), 77-87 (2013).

[8] İşcan,İ., Kunt, M., Gozutok, N. Y., and Koroglu, T., New General Integral Inequalities for Lipschitzian Functions via Riemann-Liouville Fractional Integrals and Applications. *Journal of Inequalities and Special Functions*, *7*(4), 1-12 (2016).

*Presenter

APPLICATION OF MULTIVARIATE STATISTICAL METHODS ON KANSEI ENGINEERING FOR WEBSITES

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Today every university has a website to endorse their programs and encourage students around the world to join one of their faculties. However, universities give much priority to the functionality and usability of their websites and they give less attention to meet user's demand for visually attractive websites that satisfy student's emotions.

The paper proposes Factor Analysis, PLS regression Statistical methods and Kansei Engineering to identify items and categories of website design that are emotionally appealing to 18 - 37 age students in Turkey universities. 22 Kansei words and 9 sample websites of Turkey universities are selected to investigate. A 5-point semantic differential scale is used to evaluate the relationship between website elements and KW.

Using the Kaiser's criteria of eigenvalues greater than or equal to 1, the first two factors have eigenvalues greater than 1. Factor 1 explains 91.65% of the total variability of the data, which represents the majority of the main factor contribution and have the dominant effect of Kansei words. Factor 2 explains 4.84% of the data and has the second largest contribution, that means, the first two factors only explain 96.49% of total variability of the data.
In addition, using PLS regression we found that websites with White header color, logo on the left side of the page, and have a large font title are most attractive on student's Kansei towards university websites. We picked websites 1, 4, and 6, which have these categories that highly influenced student's Kansei.

Keywords: Factor Analysis; PLS Regression; Kansei Engineering; Visual Design; Kansei Words.

References

[1] Al-salebi, F. A. (2010). The Important Characteristics to Make a Good Website (Graduate Research Paper and Evaluation of Three Good Websites and Three Bad website), 1–19.

[2] Anitawati Mohd Lokman, Nor Laila Md Noor, and Mitsuo Nagamachi. (2009). EXPERTKANSEIWEB – A Tool to Design Kansei Website.

[3] A, R., Johnson, D. W., & Wichern. (2007). *Applied Multivariate Statistical Analysis* (6th ed.).

[4] Bakaev, M., Gaedke, M., Heil, S., Bakaev, M., Gaedke, M., & Heil, S. (2016). Research with University Websites Chemnitzer Informatik-Berichte, (April).

[5] Frank, I.E., & Friedman, J.H. (1993). A Statistical View of Chemometrics Regression Tools. *Technometric*, 109-148.

[6] Geladi, P., and Kowlaski B. (1986). Partial Least Square regression: A tutorial. *Analytica Chemica Acta*, 1-17.

*Presenter

[7] Laila, N., & Sciences, Q. (2007). Kansei Engineering: a Study on Perception of Online Clothing Websites. *10th QMOD Conference. Quality Management and Organiqatinal Development.*, 8.

[8] Lokman, A. M., & Noor, N. L. (2006). Kansei Engineering Concept in E-Commerce Website. *Proceedings of the International Conference on Kansei Engineering and Intelligent Systems 2006 (KEIS '06).*, *2006*, 117–124.

[9] Lokman, A. M., Noor, N. L. M., & Nagamachi, M. (2008). Kansei Database System For Emotional Interface Design Of E-Commerce Website. *The Fourth International Cyberspace Conference on Ergonomics (Cyberg 08)*, (October 2015).

[10] Nagamachi, M. (1988). Kansei engineering.

[11] Nagamachi, M. (2008). Perspectives and the new trend of *Kansei* /affective engineering. *The TQM Journal*, *20*(4), 290–298. https://doi.org/10.1108/17542730810881285

[12] Nagasawa, S. (2004). Present State of Kansei Engineering in Japan *, 333–338.

[13] Noor, N. L., Lokman, A. M., & Nagamachi, M. (2008). Applying Kansei Engineering To Determine Emotional Signature of Online Clothing. *Tenth International Conference on Enterprise Information Systems*, 142-.

[14] Mamaghani, N. K., Rahimian, E., & Mortezaei, S. (2014). Kansei Engineering Approach for Consumer's Perception of the Ketchup Sauce Bottle, 8. Retrieved from http://dqi.id.tue.nl/keer2014/programme.php

[15] Parush, A., Shwarts, Y., Shtub, A., & Chandra, J. M. (2005). The Impact of Visual Layout Factors on Performance in Web Pages: A Cross-Language Study. *Human Factors: The Journal of the Human Factors and Ergonomics Society*, *47*(1), 141–157. https://doi.org/10.1518/0018720053653785

[16] Qin, S. J. (1998). Recursive {PLS} Algorithms for Adaptive Data Modeling. *Computers Chem. Eng.*, *22*(4), 503–514.

[17] Song, Z., Howard, T. J., Achiche, S., & Özkil, A. G. (2012). Kansei Engineering and Web Site Design. *Volume 2: 32nd Computers and Information in Engineering Conference, Parts A and B*, *2*(PARTS A AND B), 591–601. https://doi.org/10.1115/DETC2012-70543

[18] Zhai, L. Y., Khoo, L. P., & Zhong, Z. W. (2009). A dominance-based rough set approach to Kansei Engineering in product development. *Expert Systems with Applications*, *36*(1), 393–402. https://doi.org/10.1016/j.eswa.2007.09.041

*Presenter

MODEL SELECTION IN HYBRID REGRESSION MODEL USING GENETIC ALGORITHM AND INFORMATION COMPLEXITY AS A FITNESS FUNCTION

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In traditional statistics, it is assumed that the number of samples which are available for study is more than number of variables. Nowadays, in many fields, while the number of samples expressed in tens or hundreds, the single observation may have thousands even millions dimensions. The classical statistical techniques are not designed to be able to cope with this kind of data sets. Many of multivariate statistical techniques such as principal component analysis, factor analysis, classification, cluster analysis and the prediction of regression coefficients need estimation of the sample variance-covariance matrix or its inverse. When the number of observations is much smaller than the number of features (or variables), the usual sample covariance matrix degenerates and it can not be inverted. This is one of the biggest encountered obstacle into the classical statistical methods. To remedy the manifestation of the singular covariance matrices in high dimensional data, Hybrid Covariance Estimators (HCE) has been developed by Pamukcu et al.(2015). HCE has overcome the singularity problem of the covariance matrix and, thus, the multivariate statistical analysis for high dimensional data sets has been made possible. One of the most important process in statistical analysis using HCE is to select an appropriate covariance structure for the data set since HCE can in fact be obtained with many different covariance structures. It can be selected by using the information criteria such as Akaike Information Criterion and Information Complexity Criteria which are well known as model selection criteria. The purpose of this study is to introduce a new regression model with HCE using genetic algorithm with model selection criteria as a fitness function for n<<p undersized high dimensional data and compare the results with classical regression analysis.

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Keywords: Hybrid Covariance Estimator (Hce); Hybrid Regression Model (Hrm); Information Complexity (Icomp); Genetic Algorithm

References

[1] Pamukcu, E. (2017). Aşırı derecede küçük örneklem problem için hibrit regresyon modeli. *Celal Bayar Üniversitesi Fen Bilimleri Dergisi.*13 (3), 803-813

[2] Pamukcu, E., Bozdogan H. and Calik, S. (2015) A novel hybrid dimension reduction technique for undersized high dimensional gene expression data sets using information complexity criterion for cancer classification. *Computational and mathematical methods in medicine*. Volume(2015),Article ID: 370640

[3] Bozdogan, H. (1988) ICOMP: A new model selection criterion. *Classification and Related Methods of Data Analysis.* 599-608

*Presenter

GENE CO-EXPRESSION NETWORK ANALYSIS WITH PARTIAL LEAST SQUARE REGRESSION

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The advent of next generation sequencing (NGS) has permitted monitoring the expression levels of thousands of genes at once. Gene co-expression network (GCN) analysis is a commonly used technique in bioinformatics for uncovering the hidden patterns and associations in high-throughput gene expression data sets. NGS based studies usually consists of small number of observations and large number of variables, and identification of complex interactions among genes and their products through GCN requires simple, realistic, informative and inexpensive method. In these cases, Partial Least Squares Regression (PLSR) method is the simplest and one of the most commonly used approaches. PLSR method, unlike the classical regression method, is handy even the investigated data have noise, missing values and multi collinearity in both independent and dependent variables. Herein, we present an application of PLSR method to construct GCN of the developing mouse brain. The data set was collected from the Encyclopedia of DNA Elements (ENCODE) public database, and the GCNs for different parts of developing brain, including fore-, mid- and hindbrain were successfully created and putative gene-gene interactions studied.

Keywords: Partial Least Square Regression; NIPALS; Gene Network; Next Generation Sequence.

References

[1] Afanador, N., L. (2013). Use of Botstrap and Permutation Methods for a Robust Variable Importance in the Projection Metric for PLS. *Analytica Chimica Acta, 768*, 49-56

[2] Berglund, A. & Wold, S. (1997). INLR, implicit non-linear latent variable regression. *Journal of Chemometrics, 11*, 141-156.

[3] Clancy, B. & Darlington, R., B. & Finlay, B., L. (2001). Translating Developmental Time Across Mammalian Species. *Neuroscience, 105(1)*, 7-17.

[4] Datta, S. (2001). Exploring Relationships in Gene Expressions: A Partial Least Square Approach. *Gene Expression, 9(6)*, 249-255.

[5] Efron, B. (2004). Large-Scale Simulation Hypothesis Testing: The Choice of a Null Hypothesis. *Journal of the American Statistical Association, 99*, 96-104.

*Presenter

[6] Finlay, B., L. & Darlington, R., B. (1995). Linked Regularities in the Development and Evolution of Mammalian Brains. *New Series, 268(5217)*, 1578-1584.

[7] MacLean, P., D. (1990). The Triune Brain in Evolution: Role in Paleocerebral Function. *Plenum Press*, New York.

[8] Pihur, V. & Datta, S. & Datta, S. (2008). Reconstruction of genetic association network from microarray from microattay data: a partial least square approach. *Bioinformatics, 24*, 561-598.

[9] Shao, J. (1993). Linear model selection by cross-validation. *Journal of the American Statistical Association, 88*, 486-494.

[10] Wold, S. & Sjostrom, M. & Eriksson, L. (2001). PLS-regression: a basic tool of chemometrics. *Chemometrics and Intelligent Laboratory Systems, 58*, 109-130.

*Presenter

BAYESIAN META-ANALYSIS of PREVALENCE: HEPATITIS B PREVALENCE IN TURKEY

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A standard classical meta-analysis comprise a series of studies to estimate effect size. The effect size, a value which reflects the magnitude of effect or the strength of a relationship between two variables. To perform a meta-analysis, an effect size and variance for each study and the weighted average of these effect sizes are computed, respectively. Fixed-effect and random-effect model are the main two statistical models used in meta-analysis. Under the fixed-effect model the effect size is assumed to be same for all studies and all differences in observed effects are due to sampling error. By contrast, under the random-effects model true effect could be change from study to study [1]. The effect size and heterogeneity are the two main parameters in a meta-analysis.

In the Bayesian approach, all unknown parameters are treated as random variables, and these have a joint probability distribution specified prior to observation data [2]. Besides direct probability statements on different scales and predictions, the conflict between fixed- and random-effects meta-analysis are handled by Bayesian approach [3].

Bayesian and classical meta-analysis applied to Toy et al. (2011) data to determine Hepatitis B prevalence in Turkey [4]. As a result of the analysis, the Bayesian approach is given a narrower confidence interval than the classical approach. Hence, more accurate prevalence estimates are derived from the Bayesian approach.

Keywords: Meta-Analysis; Bayesian Approach; Prevalence; Prevalence Hepatitis B.

References

[1] Borenstein, M., Hedges, L.V., Higgins, J.P.T., & Rothstein, H.R. (2009). *Introduction to meta-analysis*. John Wiley & Sons.

[2] Whitehead, A. (2002). *Meta-analysis of controlled clinical trails*. John Wiley & Sons.

[3] Spiegelhalter, D. J., Abrams, K. R., & Myles, J. P. (2004). *Bayesian approaches to clinical trials and health-care evaluation*. John Wiley & Sons.

[4] Toy, M., Onder, F. O., Wörmann, T., Bozdayi, A. M., Schalm, S. W., Borsboom, G. J., Rosmalen, J., Richardus, J. H., & Yurdaydin, C. (2011). Age- and region-specific hepatitis B prevalence in Turkey estimated using generalized linear mixed models: a systematic review. *BMC Infectious Diseases*, 11(337), 1-12.

*Presenter

ASYMMETRIC RELATIONSHIP BETWEEN EXCHANGE RATE VOLATILITY AND STOCK MARKET INDEX VOLATILITY

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In the literature of economics, there are two approaches for the relationship between exchange rates and stock prices: traditional and portfolio balance approaches. According to traditional approach, there is a one-way causality from exchange rates to stock prices. In the portfolio balance, there is also a one-way causality but from stock prices to exchange rates. In the empirical literature, there are many studies investigating the relationship between exchange rates and stock prices especially in terms of causality. However, in most of studies the symmetrical effect has been assumed in the relationship between the two variables. Therefore, unlike the previous studies in literature, the purpose of this study is to investigate whether the relationship between exchange rate volatility and stock market index volatility is symmetric or asymmetric. For this purpose, USD dollar was used as the foreign exchange rate, and İstanbul Stock Exchange 100 (BIST 100) index was used as stock market index. In the first-stage of the study which covers the period of January 2007-May 2017 for the Turkish economy, monthly volatility series were produced from the daily data. In the second-stage, the volatility series were decomposed into positive and negative volatility to determine whether the relationship between variables is symmetric or asymmetric. In the fourth-stage, stationarity properties of series were examined by employing Augmented Dickey-Fuller test procedure. Finally, Granger causality test was employed to detect the causal links between the variables. The results of causality test indicate that there exists a one-way causality from positive exchange rate volatility to stock market index volatility; also there exists a two-way causality between exchange rate volatility and negative stock market index volatility.

Keywords: Exchange Rate Volatility; Stock Market Index Volatility; Causality; Asymmetry.

References

[1] Aggarwal, R. (1981). Exchange Rates and Stock Price: A Study of the US Capital Markets under Floating Exchange Rates, *Akron Business and Economic Review, 12*, 7-12.

[2] Ayvaz, Ö. (2006). Döviz Kuru ve Hisse Senedi Fiyatları Arasındaki Nedensellik İlişkisi, *Gazi Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi, 8(2),* 1-14.

*Presenter

[3] Berke, B. (2012). Döviz Kuru ve İMKB100 Endeksi İlişkisi: Yeni Bir Test, *Maliye Dergisi, 163,* 243-257.

[4] Ceylan, S., & Şahin, B.Y. (2015). Hisse Senedi Fiyatları ve Döviz Kuru İlişkisi, *International Journal of Social Science, 37,* 399-408.

[5] Dickey, D.A, & Fuller, W.A. (1979). Distribution of the Estimators for Autoregressive Series with a Unit Root, *Journal of the American Statistical Association, 74,* 427-431.

[6] Dickey, D.A, & Fuller, W.A. (1981). Likelihood Ratio Statistics for Autoregressive Time Series with a Unit Root, Econometrica, *49,* 1057-1072.

[7] Dornbusch, R., & Fischer, S. (1980). Exchange Rates and the Current Account, *American Economic Review, 70,* 960-971.

[8] Granger, C.W.J., Huang, B.N. & Yang, C.W. (2000). A Bivariate Causality between Stock Prices and Exchange Rates: Evidence from Recent Asia Flu, *The Quarterly Review of Economics and Finance, 40(3),* 337-354.

[9] Kasman, S. (2003). The Relationship between Exchange Rates and Stock Prices: A Causality Analysis, *Dokuz Eylül Üniversitesi Sosyal Bilimler Enstitüsü Dergisi, 5(2),* 70-79.

*Presenter

ON SOME APPLICATIONS OF GRAPH COLORING PROBLEMS

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Graph theory is becoming increasingly significant as it is applied to other areas of mathematics, science and technology. It is being actively used in fields as varied as biochemistry (genomics), electrical engineering (communication networks and coding theory), computer science (algorithms and computation) and operations research (scheduling). The powerful combinatorial methods found in graph theory have also been used to prove fundamental results in other areas of pure mathematics. Graph coloring and its generalizations are useful tools in modeling a wide variety of scheduling and assignment problems. In this study, we give some basic terminologies about of graphs. We also introduce concept of graph coloring and present greedy algorithm for graph coloring problems. Moreover, some specific applications of graph coloring problems and simulation technologies are discussed.

Keywords: Graph; Graph Coloring; Vertex Coloring; Edge Coloring.

References

[1] Bertram, E., & Horak, P. (1996). Some applications of graph theory to other parts of mathematics, *The Mathematical Intelligencer*, 21(3), 6-11.

[2] Dharwadker, A. (2006). *The Vertex Cover Algorithm*, Createspace.

[3] Karp, R. M. (1972). Reducibility among combinatorial problems, *Complexity of Computer Computations*, *The IBM Research Symposia Series*, 85-103.

[4] Pirzada, S., & Dharwadker, A. (2007). *Graph Theory*, Orient Longman and Universities Press of India.

[5] Roberts, F. S. (1978). Graph theory and its applications to the problems of society, *CBMS-NSF Regional Conference Series in Applied Mathematics, SIAM Publications, Philadelphia.*

[6] Toft, B., & Jensen, T. R. (1995). *Graph Coloring Problems*, John Wiley & Sons.

[7] Vince, A. (1988). Star chromatic number, *Journal of Graph Theory*, 12(4), 551-559.

[8] Yegnanarayanan, V. (2001). Graph colouring and partitions, *Theoretical Computer Science*, 263, 59-74.

*Presenter

ON INEQUALITES FOR STRONGLY M_{φ}A-S- CONVEX FUNCTIONS

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In this paper, it is given a new concept which is a generalization of the concepts s-convexity, M_{φ}A-convexity, M_{φ}A-s-convexity and obtained some theorems for Hermite-Hadamard type inequalities for this class of functions. Some natural applications to special means of real numbers are also given.

Keywords: M_{φ}A-S-Convex Function; Hermite-Hadamard Type Inequality.

References

[1] Avci, M., Kavurmaci, H. and Özdemir, M. E., 'New inequalities of Hermite-Hadamard type via s-convex functions in the second sense with applications', Appl. Math. Comput., vol. 217,pp. 5171-5176 (2011).

[2] Anderson, G.D., Vamanamurthy, M.K. and Vuorinen, M., 'Generalized convexity and inequalities', Journal of Mathematical Analysis and Applications 335 (2) 1294-1308 (2007).

[3] Dragomir, S.S., Agarwal, R.P., 'Two Inequalities for Differentiable Mappings and Applications to Special Means of Real Numbers and to Trapezoidal Formula', Appl. Math. Lett. 11 (5) 91-95 (1998).

[4] Dragomir, S. S. Fitzpatrick, S., The Hadamard's inequality for s-convex functions in the second sense, Demonstr. Math., 32 (4) 687-696 (1999).

[5] Hudzik, H., Maligranda, L., 'Some remarks on s-convex functions, Aequationes', Math., 48, 100-111 (1994).

[6] İşcan, İ., 'New estimates on generalization of some integral inequalities for s-convex functions and their applications', International Journal of Pure and Applied Mathematics, 86 (4), 727-746 (2013).

[7] Kirmaci, U. S., Bakula, M. K., Özdemir M. E. and Pecaric J., 'Hadamard-type inequalities for s-convex functions', Applied Mathematics and Computation, 26-35 (2007).

[8] Maden, S., Demirel, A.K., Turhan, S. and İşcan İ., 'Some Integral Inequalities for The New Convex Functions', International Conference on Applied Analysis and Mathematical Modeling, July 3-7, Istanbul-Turkey (2017).

*Presenter

[9] Turhan, S., İşcan, İ. and Kunt, M., 'Hermite-Hadamard ineqaulities for M_{φ} -A convex functions', Doi: 10.13140/RG.2.2.14526.28486, (2016).

[10] Turhan, S., İşcan İ., Maden, S. and Demirel, A.K., 'Some Integral Inequalities for The New Convex Functions', International Conference on Applied Analysis and Mathematical Modeling, July 3-7, Istanbul-Turkey (2017).

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ON SOME APPLICATIONS OF GRAPH COLORING PROBLEMS

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Graph theory is becoming increasingly significant as it is applied to other areas of mathematics, science and technology. It is being actively used in fields as varied as biochemistry (genomics), electrical engineering (communication networks and coding theory), computer science (algorithms and computation) and operations research (scheduling). The powerful combinatorial methods found in graph theory have also been used to prove fundamental results in other areas of pure mathematics. Graph coloring and its generalizations are useful tools in modeling a wide variety of scheduling and assignment problems. In this study, we give some basic terminologies about of graphs. We also introduce concept of graph coloring and present greedy algorithm for graph coloring problems. Moreover, some specific applications of graph coloring problems and simulation technologies are discussed.

Keywords: Graph; Graph Coloring; Vertex Coloring; Edge Coloring.

References

[1] Bertram, E., & Horak, P. (1996). Some applications of graph theory to other parts of mathematics, *The Mathematical Intelligencer*, 21(3), 6-11.

[2] Dharwadker, A. (2006). *The Vertex Cover Algorithm*, Createspace.

[3] Karp, R. M. (1972). Reducibility among combinatorial problems, *Complexity of Computer Computations*, *The IBM Research Symposia Series*, 85-103.

[4] Pirzada, S., & Dharwadker, A. (2007). *Graph Theory*, Orient Longman and Universities Press of India.

[5] Roberts, F. S. (1978). Graph theory and its applications to the problems of society, *CBMS-NSF Regional Conference Series in Applied Mathematics, SIAM Publications, Philadelphia.*

[6] Toft, B., & Jensen, T. R. (1995). *Graph Coloring Problems*, John Wiley & Sons.

[7] Vince, A. (1988). Star chromatic number, *Journal of Graph Theory*, 12(4), 551-559.

[8] Yegnanarayanan, V. (2001). Graph colouring and partitions, *Theoretical Computer Science*, 263, 59-74.

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ON INEQUALITES FOR STRONGLY M_{φ}A-S- CONVEX FUNCTIONS

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In this paper, it is given a new concept which is a generalization of the concepts s-convexity, M_{φ}A-convexity, M_{φ}A-s-convexity and obtained some theorems for Hermite-Hadamard type inequalities for this class of functions. Some natural applications to special means of real numbers are also given.

Keywords: M_{φ}A-S-Convex Function; Hermite-Hadamard Type Inequality.

References

[1] Avci, M., Kavurmaci, H. and Özdemir, M. E., 'New inequalities of Hermite-Hadamard type via s-convex functions in the second sense with applications', Appl. Math. Comput., vol. 217,pp. 5171-5176 (2011).

[2] Anderson, G.D., Vamanamurthy, M.K. and Vuorinen, M., 'Generalized convexity and inequalities', Journal of Mathematical Analysis and Applications 335 (2) 1294-1308 (2007).

[3] Dragomir, S.S., Agarwal, R.P., 'Two Inequalities for Differentiable Mappings and Applications to Special Means of Real Numbers and to Trapezoidal Formula', Appl. Math. Lett. 11 (5) 91-95 (1998).

[4] Dragomir, S. S. Fitzpatrick, S., The Hadamard's inequality for s-convex functions in the second sense, Demonstr. Math., 32 (4) 687-696 (1999).

[5] Hudzik, H., Maligranda, L., 'Some remarks on s-convex functions, Aequationes', Math., 48, 100-111 (1994).

[6] İşcan, İ., 'New estimates on generalization of some integral inequalities for s-convex functions and their applications', International Journal of Pure and Applied Mathematics, 86 (4), 727-746 (2013).

[7] Kirmaci, U. S., Bakula, M. K., Özdemir M. E. and Pecaric J., 'Hadamard-type inequalities for s-convex functions', Applied Mathematics and Computation, 26-35 (2007).

[8] Maden, S., Demirel, A.K., Turhan, S. and İşcan İ., 'Some Integral Inequalities for The New Convex Functions', International Conference on Applied Analysis and Mathematical Modeling, July 3-7, Istanbul-Turkey (2017).

[9] Turhan, S., İşcan, İ. and Kunt, M., 'Hermite-Hadamard ineqaulities for M_{φ} -A convex functions', Doi: 10.13140/RG.2.2.14526.28486, (2016).

*Presenter

[10] Turhan, S., İşcan İ., Maden, S. and Demirel, A.K., 'Some Integral Inequalities for The New Convex Functions', International Conference on Applied Analysis and Mathematical Modeling, July 3-7, Istanbul-Turkey (2017).

*Presenter

POWER ANALYSIS IN COMMUNITY TRIALS AND AN APPLICATION

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Community trials, which have been widely used in epidemiological surveys, especially in the 1980s and 90s, are large screening studies that are composed of extensive and applied complex surveys. In these random experiments, also called community surveys, communities are intact groups determined by clustering analysis. The numbers of individuals in these groups are generally different from each other. Although a large number of individuals are studied in total in community trials, differences in the sizes of the compared groups can affect the power of the analyzes. Despite the fact that the analyzes applied in the community trials are very well documented in the literature, no prospective or retrospective power analysis is found. David Jacobs (Mayo Professor of Public Health, Division of Epidemiology and Community Health from University of Minnesota), the coordinator of the "Minnesota Heart Health Program" conducted between 1980 and 1990, indicated that a prospective power analysis had not been applied in his work but that a possible retrospective analysis could provide the desired outcome (personal interview 24.05.2017). In this context, power analyzes were performed for the "Minnesota Heart Health Program" and the results were given.

Keywords: Community Trials; Power Analysis.

References

[1] Jacobs, D. R., and others (1986). Community-Wide Prevention Strategies:Evaluation Design of Minnesota Hearth Health Program. *Pergamon Journals Ltd*., 39(10), 775-788.

[2] Luepker L. V., and others (1996). Community Education for Cardiovascular Disease Prevention Morbidity and Mortality Results from The Minnesota hearth Health Program. *American Journal of Epidemiology*, *144*(4).

*Presenter

DYNAMICS ABOUT THE IMPULSIVE PREDATOR –PREY SYSTEMS ON TIME SCALE ANALYSIS

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Many studies have been done on the two dimensional predator-prey system with Beddington-DeAngelis type functional response with impulses in a periodic environment. Some of them are can be seen in the reference part. In this type of dynamic systems for the periodic solution necessary condition have been given. Nevertheless, in this study we will give the necessary and sufficient condition for the periodic solution. Especially, this analysis is done by using time scales calculus.

Keywords: Time Scales Calculus; Predator-Prey Systems; Impulse; Periodic Solutions.

References

[1] A.F. Guvenilir, B. Kaymakcalan, N. N. Pelen, *Impulsive Predator-Prey Dynamic Systems with Beddington-DeAngelis Type Functional Response on the Unification of Discrete and Continuous Systems*, Applied Mathematics, 8 / 2015, 10.4236/am.2015.69147

[2] W. Wang, J. Shen, J. Nieto, *Permanence and Periodic Solution of Predator-Prey System with Holling Type Functional Response and Impulses Discrete Dynamics in Nature and Society*, Volume 2007, Article ID 81756, 15 pages.

[3] C. Wei, L. Chen, *Periodic Solution of Prey-Predator Model with Beddington-DeAngelis Functional Response and Impulsive State Feedback Control* Journal of Applied Mathematics Volume 2012, 2012, 17 pages.

*Presenter

A FIXED POINT THEOREM IN MODULAR A-METRIC SPACES

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Many mathematical problems require one to find a distance between two or more object is not easy to measure precisely in general. There exist different approaches to obtaining the appropriate concept of a metric structure. One of the them is modular A −metric. In this study, we give some properties of this metric space and also investigate the existence of fixed point of Banach contraction mapping in modular A −metric space.

Keywords: Modular Metric; Modular A −metric; Fixed Point

References

[1] Chistyakov, V. V. (2010). Modular metric spaces, I: Basic concepts. *Nonlinear Analysis, 72(1),* 1-14.

[2] Aydın, E. & Kütükcü, S. (2017). Modular A-metric spaces. *Journal of Science and Arts, 3(40),* 423-432.

[3] Abbas, M., Ali, B. & Suleiman, Y. I. (2015). Generalized coupled common fixed point results in partially ordered A-metric spaces. *Fixed Point Theory and Applications, 2015*(1), 64.

[4] Banach, S. (1922). Sur les opérations dans les ensembles abstraits et leur application aux équations intégrales. *Fund. math, 3*(1), 133-181.

*Presenter

MODULES THAT HAVE A WEAK δ-SUPPLEMENT IN EVERY COFINITE EXTENSION

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In this paper, we study on modules that have a weak (ample) δ-supplement in every extension which are adapted Zöschinger's modules with the properties (E) and (EE). It is shown that: (1) Direct summands of modules with the property δ-(CWE) have the property δ-(CWE); (2) For a module M, if every submodule of M has the property δ-(CWE) then so does M; (3) For a ring R, R is δ-semilocal iff every R-module has the property δ-(CWE); (4) Every factor module of a finitely generated module that has the property δ-(CWE) also has the property δ-(CWE) under a special condition; (5) Let M be a module and L be a submodule of M such that $L \ll_{\delta} M$. If the factor module M/L has the property δ-(CWE), then so does M; (6) On a semisimple module the concepts of modules that have the property δ-(CE) and δ-(CWE) coincide with each other.

Keywords: Cofinite Extension; Δ-Supplement; Weak Δ-Supplement; δ-Semilocal Ring.

References

[1] Çalışıcı, H. & Türkmen, E. (2012). Modules that have a supplement in every cofinite extension. *Georgian Mathematical Journal*, 19(2), 209-216.

[2] Öztürk Sözen, E. & Eren, Ş. (2017). Modules that have a δ-supplement in every extension. Europen Journal of Pure and Applied Mathematics, 10(4), 730-738.

[3] Zöschinger, H. (1975). Moduln die in jeder erweiterung ein komplement haben. Mathematica Scandinavica, 35, 267-287.

*Presenter

DETERMINATION OF THE FACTORS AFFECTING SUCCESS IN LESSON OF EXPERIMENTAL DESIGN AND ANALYSIS

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The purpose of this study was to determine the factors that affect their success in the lesson of experimental design and analysis for undergraduate students in the applied fields. For this purpose, a study was conducted with 105 students taking the lesson of Experimental Design and Analysis at the Faculty of Agriculture of Ondokuz Mayis University during the fall period of 2016-2017. During the period, students were given homework assignments regarding all the experimental designs. All homework were evaluated over 100 points. At the end of the period, a survey study was conducted with all the students entering the exam. Logistic regression analysis was used to determine the factors that affect the success status at the end of the period. Relations between homework and exam grades were determined by canonical correlation analysis. For the analysis of the data, Ondokuz Mayis University licensed SPSS package program was used. According to the results of the research, it was determined that only the ability of liking lessons had a significant effect on the success of the students exceptage, gender, marital status, child status, work status, income, income sufficiency, average expense, sheltering status, smoking, breakfast status, number of attending lesson. According to this, the students of the lesson liking were 6.7 times more successful than those who did not like it. It has been determined that assigning homework about Latin square designs and posthoc tests were effective on the success in the experimental design lessons. It has also been found that the achievement may be increased by 65 times if at least three homeworks were made. The canonical correlation coefficient between homework grades and exam grades was 0.76. As a result, the students who take this course should be informed at the beginning of the semester why they should take the lesson and break the prejudices. In addition, to be successful this course should be concentrated on posthoc tests and Latin square design and the period should be terminated by giving at least three homework.

Keywords: Experimental Designs; Undergraduate; Student, Success; Homework

References

[1] Grodner, A., & Rupp, N. G. (2013). The role of homework in student learning outcomes: Evidence from a field experiment. *The Journal of Economic Education*, *44*(2), 93-109.

[2] Bembenutty, H., & White, M. C. (2013). Academic performance and satisfaction with homework completion among college students. *Learning and Individual Differences*, *24*, 83-88.

[3] Kalenkoski, C. M., & Pabilonia, S. W. (2017). Does high school homework increase academic achievement?. *Education Economics*, *25*(1), 45-59.

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DETERMINATION OF EFFECTIVE PLACENTAL TRAITS ON BIRTH WEIGHT IN AKKARAMAN SHEEP BREED WITH PATH ANALYSIS

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This study was examined direct and indirect effect of some placental traits on birth weight (BW) of Akkaraman sheep breed using path analysis. For this aim, relationship between birth weight and five traits [placenta weight (PW), cotyledon volume (CV), cotyledon surface area (CSA), cotyledon efficiency (CE) and cotyledon density (CD)] were studied in 38 singleton - bearing sheep. The direct effects of PW, CSA and CE on birth weight were found statistically significant. While CSA was found with highest direct effect (0.934) on BW, the highest total indirect effect (-0,988) on BW was found CD variable. Also the highest indirect effect (0.701) was found between CSA and CV. Although the direct effect (-0.092) of CV was lowest on BW, the total indirect effect (0.792) of CV fairly high. The results showed that CSA was the most explanatory variable for birth weight of Akkaraman lambs.

Keywords: Akkaraman; Direct Effect; Indirect Effect; Path Analysis; Plasental Traits.

References

[1] Çankaya S., & Abacı SH. (2012). Path Analysis for determination of relationships between some body measurements and live weight of German Fawn x Hair crossbred kids. *Kafkas Univ Vet Fak Derg*. *18*(5), 769-773.

[2] Önder H., & Abacı SH. (2015). Path analysis for body measurements on body weight of Saanen kids. *Kafkas Univ Vet Fak Derg*. *21*(3): 351-354.

*Presenter

PRIMARY PRINCIPLES IN DEVELOPING SCALE WITH RASCH ANALYSIS: PORTFOLIO ANXIETY ASSESSMENT

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The Rasch model is a useful method for developing a new scale. This study aims to determine the fitting between data obtained from answers for a portfolio anxiety scale and the Rasch model and describes how the scale can be modified to increase the fitting through different steps.

A portfolio scale was applied to 171 students of the Faculty of Medicine, Ondokuz Mayis University. The partial credit model was used, and the fit statistics were assessed to determine the fitting of the data to the Rasch model. The person separation index was used for reliability. For a satisfaction subscale, the average item fit residual value was 0.47 and average person fit residual value was -0.29. For the item-trait χ^2 interaction, p = 0.655 and PSI = 0.81. For a writing anxiety subscale, the average item fit residual value was 0.08 and average person fit residual value was -0.24. For the item-trait χ^2 interaction, p = 0.698 and PSI = 0.73. For a reflection anxiety subscale, the average item fit residual value was 0.64 and average item fit residual value was 0.64. For the item-trait χ^2 interaction, p = 0.195 and PSI = 0.73.

The validity and reliability of the Rasch analysis portfolio scale were analyzed, and items that worked well were included in the study. The results show that the Rasch model provides a more accurate analysis for developing and adapting scales. Both the fit statistics and fit graphs help to improve the analyses.

Keywords: Rasch Model; Partial Credit Model; Scale Development; Portfolio.

References

[1] Allen, D.D. (2012). Validity and reliability of the movement ability measue: A self-report instrument proposed for assessing movement across diagnoses and ability levels. *Physical Thearapy 87*(7), 899-916.
[2] Alagumalai, S., Curtis, D.D., & Hungi, N. (2005). *Applied Rasch measurement: A book of exemplars: Papers in honour of John P. Keeves*. The Netherlands: Springer.
[3] Das Nair, R., Moreton, B.J., & Lincoln, N.B. (2011). Rasch analysis of the Nottingham extended activities of daily living scale. *J Rehabil Med, 43*(10), 944-50.
[4] Demars, C. (2010). *Item Response Theory*. New York: Oxford University.
[5] Driessen, E., Van Tartwijk, J., Van Der Vleuten, C., & Wass, V. (2007). Portfolios in medical education: Why do they meet with mixed success? A systematic review. *Medical Educ, 41*(12), 1224–33.
[6] Edelen, M.O., & Reeve, B.B. (2007). Applying item response theory (IRT) modeling to questionnaire development, evaluation, and refinement. *Qual*

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ESTIMATION OF PARAMETERS BASED ON RECORD VALUES FOR THE TRANSMUTED WEIBULL DISTRIBUTION

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In this study, we considered point estimation of unknown parameters based on upper record values for Transmuted Weibull (μ,σ,λ) distribution suggested by Aryal and Tsokos (2011). Maximum likelihood estimators of parameters are derived for this distribution. Also, Bayes estimators of parameters are obtained using Tierney-kadane approximation under squared error loss function. Finally, mean square errors of these estimators are compared with Monte Carlo simulation method.

Keywords: Upper Record Values ; Maximum Likelihood Estimator; Transmuted Weibull Distribution; Bayesian Estimation; Tierney-Kadane Approximation.

References

[1] Aryal, G. R., & Tsokos, C. P. (2011). Transmuted Weibull distribution: A generalization of theWeibull probability distribution. *European Journal of Pure and Applied Mathematics*, *4*(2), 89-102.

[2] Khan, M. S., & King, R. (2013). Transmuted modified Weibull distribution: A generalization of the modified Weibull probability distribution. *European Journal of Pure and Applied Mathematics*, *6*(1), 66-88.

[3] Shaw, W. T., & Buckley, I. R. (2007). The alchemy of probability distributions: Beyond gram-charlier & cornish-fisher expansions, and skew-normal or kurtotic-normal distributions. *Submitted, Feb*, *7*, 64.

[4] Shaw, W. T., & Buckley, I. R. (2009). The alchemy of probability distributions: beyond Gram-Charlier expansions, and a skew-kurtotic-normal distribution from a rank transmutation map. *arXiv preprint arXiv:0901.0434*.

*Presenter

SKEW CYCLIC CODES OVER THE RING $Z_4 + uZ_4$

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In this paper, skew cyclic codes over the family of finite rings $Z_4 + uZ_4$ with $u^2 = 1$ are studied. A nontrivial automorphism θ on the ring $Z_4 + uZ_4$ is determined. The structural properties of skew cyclic codes over $Z_4 + uZ_4$ are investigated. The Gray image of skew cyclic codes over $Z_4 + uZ_4$ are obtained.

Keywords: Skew Cyclic Codes; Cyclic Codes; Finite Rings; Gray Image.

References

[1] Abualrub, T., Aydın, N., & Seneviratne, P. (2012). On θ-cyclic codes over $F_2 + vF_2$, *Australasian Journal of Combinatorics*, *54*, 115-126.

[2] Boucher, D., Geiselmann, W., & Ulmer, F. (2007). Skew cyclic codes. *Appl. Algebra Eng. Comm. Comput*, *18*(4), 379-389.

[3] Boucher, D., & Ulmer, F. (2009). Coding with skew polynomial ring. *J. Symb. Comput*, *44*(12), 1644-1656.

[4] McDonald, B. R. (1974). Finite Rings with Identity, *Marcel Dekker Inc.*, New York.

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CUBIC RANK TRANSMUTED KUMARASWAMY DISTRIBUTION

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In this study, we suggest a new distribution called "Cubic rank transmuted kumaraswamy distribution" using cubic rank transmutation map introduced by Granzotto et. al. (2017). The various statistical properties of this new distribution is obtained. Then, the maximum likelihood estimation (MLE) of parameters of this distribution is derived. Also a simulation study based on MSE criteria for MLEs of unknown parameters of this distribution is performed. Finally, data analysis is presented.

Keywords: Cubic Rank Transmuted Kumaraswamy Distribution; Cubic Rank Transmutation Map; Maximum Likelihood Estimation; Monte-Carlo Simulation.

References

[1] Afify, A. Z., Cordeiro, G. M., Yousof, H. M., Alzaatreh, A., & Nofal, Z. M. (2016). The Kumaraswamy transmuted-G family of distributions: properties and applications. *Journal of Data Science*, *14*(2), 245-270.

[2] D. C. T. Granzotto, F. Louzada & N. Balakrishnan (2017) Cubic rank transmuted distributions: inferential issues and applications, Journal of Statistical Computation and Simulation, 87:14, 2760-2778, DOI: 10.1080/00949655.2017.1344239.

[3] Khan, M. S., King, R., & Hudson, I. L. (2016). Transmuted Kumaraswamy Distribution. *Statistics in Transition new series*, *17*(2), 183-210.

[4] Kumaraswamy, P. (1980). A generalized probability density function for double-bounded random processes. *Journal of Hydrology*, *46*(1-2), 79-88.

[5] Shaw, W. T., & Buckley, I. R. (2007). The alchemy of probability distributions: Beyond gram-charlier & cornish-fisher expansions, and skew-normal or kurtotic-normal distributions. *Submitted, Feb*, *7*, 64.

[6] Shaw, W. T., & Buckley, I. R. (2009). The alchemy of probability distributions: beyond Gram-Charlier expansions, and a skew-kurtotic-normal distribution from a rank transmutation map. *arXiv preprint arXiv:0901.0434*.

*Presenter

CYCLIC DNA CODES OVER RINGS

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In this study, the cyclic DNA codes over the finite ring $R = F_2 + uF_2 + vF_2 + wF_2 + uvF_2 + uwF_2 + vwF_2 + uvwF_2$, where $u^2 = 0, v^2 = v, w^2 = w, uv = vu, uw = wu, vw = wv$ are designed. The cyclic codes of arbitrary length over R satisfy the reverse constraint and reverse complement constraint are studied. A one to one correspondence between the elements of the ring R and S_{256} is established, where $S_{256} = \{AAAA, TTTT, \dots, AGCT, GGCC\}$.

Keywords: DNA Codes; Cyclic Codes; Finite Rings.

References

[1] Abualrub, T., Ghrayeb, A., & Zeng, X. N. (2006). Construction of cyclic codes over $GF(4)$ for DNA computing, *J. Franklin Inst.*, *343*(4), 448-457.

[2] Guendda, K., & Gulliver, T. (2013). Construction of cyclic codes over $F_2 + uF_2$ for DNA computing. *AAECC*, *24*(6), 445-459.

[3] Leonard, A. (1994). Molecular computation of the solutions to combinatorial problems. *Science*,. *266*, 1021-1024.

[4] McDonald, B. R. (1974). Finite Rings with Identity, *Marcel Dekker Inc.*, New York.

*Presenter

ANALYZING THE HEALTH SATISFACTION OF TURKISH METROPOLITANS WITH DATA ENVELOPMENT ANALYSIS

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This study adres the health satisfaction of Turkish metropolitans in 2015 by applying a non-parametric method DEA (Data Envelopment Analysis) which is used to measure relative efficiency of decision making units in multiple input – multiple output processes, and the metropolitans are ranked according to their health satisfaction. In this study, as input variables; infant mortality rate,number of applications per physician, as output variables; life expectancy at birth,health satisfaction rate, satisfaction rate of public health services was used.

Keywords: Data Envelopment Analysis; Healthperformance; Turkish Metropolitan

References

[1] Bal H, Örkcü HH, Çelebioglu S.(2008). A new method based on thedispersion of weights in Data Envelopment Analysis, Computers&IndustrialEngineering, 54: 502-512.

[2] Alvydas B, Tomas B. (2011). Framework of strategicmanagement model for strategy Europe 2020: Diachronicanalysis and proposedguielines, InzinerineEkonomika-EngineeringEconomics, 22(3): 271-282.

[3] Bal H, Örkcü HH, Çelebioglu S. (2010). Improvingthediscriminationpower and weightsdispersion in thedataenvelopmentanalysis. Computers& Operations Research, 37(1):99-107.

*Presenter

THE WEIGHTING ADJUSTMENT TECHNIQUES FOR INTERNET SURVEYS: AN APPLICATION

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Internet surveys have become popular in last many years. Now, one of the most widely utilized surveys methods, an Internet survey is done over World Wide Web in such a way that invited respondents complete the questionnaire by themselves. As Internet use has been increased among residents of developing, least develop and developed countries for development of especially smart phone this why internet surveys have become more viable and valid.

Internet-based surveys have been a faster way of data collection from respondents in market or scientific research in recent years as compared to other survey methods such as paper-and-pencil method and personal interviews, because their usage is simple and cheap and they also give quick access to a targeted large group of respondents [1]. No doubt, this type of survey methods are achieving more importance overnight. Use of statistical techniques requires for implementing such types of surveys. In the sampling process these statistical techniques or tools are used in the preparation stage of the internet surveys and assessment stage of the surveys. In the internet surveys, bias may arise due to improper use of these statistical techniques. Sampling holds a significant in selection bias and in terms of sample selection, the type of access to internet surveys has several limitations [2]. However, in internet surveys, bias may arise mainly due to limited coverage and self-selection. Restricted access based internet surveys and voluntary participation of respondents and these are characterized by their application affording to this type of survey. We can use probability and non-probability based internet sampling both of which may lead to biased estimates [3].

This paper appraisals characteristics and problems of internet surveys to identify the bias of the internet surveys and refers to some weighting adjustment techniques for reducing the bias. Those bias reduction techniques will be explored by comparing census survey (reference survey) results with internet survey results which was conducted on students of Anadolu University in Open Education System.

Keywords: Internet Surveys; Sampling; World Wide Web; Bias; Weight Adjustment Techniques.

*Presenter

References

[1] Bethlehem, J. (2010). Selection Bias in Web Survey. *International Statistical Review* 78 (2), 161-188.

[2] Bethlehem, J. & Biffignandi S. (2012). *Handbook of Web Surveys*. John Wiley & Sons.

Couper, M. P. (2000). Review: Web surveys: *A review of issues and approaches. Public Opinion Quarterly*, 64(4), 464–494.

[3] Fricker, R. & Schonlau, M. (2002). Advantages and disadvantages of internet research surveys: Evidence from the literature. *Field Methodology*, 15, 347–367.

*Presenter

SURFACE FAMILY WITH A COMMON NATURAL LINE OF CURVATURE LIFT

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We construct a surface family possessing a natural lift of a given curve as a line of curvature. We obtain necessary and sufficient condition for the given curve such that its natural lift is a line of curvature on any member of the surface family. Finally, we present some illustrative examples.

Keywords: Surface Curve; Line Of Curvature; Lift; Differential Geometry.

References

[1] Wang, G. J., Tang, K., & Tai, C. L. (2004). Parametric representation of a surface pencil with a common spatial geodesic. *Comput. Aided Des.*, 36(5), 447-459.

[2] Li, C. Y., Wang, R. H. & Zhu, C. G. (2011). Parametric representation of a surface pencil with a common line of curvature. *Comput. Aided Des.*, 43, 1110-1117.

[3] Bayram, E., Güler, F. & Kasap, E. (2012). Parametric representation of a surface pencil with a common asymptotic curve. *Comput. Aided Des.*, 44, 637-643.

*Presenter

WHICH METHOD TO USE ON POOLING ALPHA COEFFICIENTS FOR RELIABILITY GENERALIZATION: A SIMULATION STUDY

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Reliability Generalization (RG) as a method of which meta-analytic procedures take place for reliability coefficients has become more popular in recent years. However, the dominant use of Cronbach's alpha as an estimation of internal consistency leads the almost same domination on RG studies regarding this coefficient in literature. As a result, many researchers proposed and/or used different methods to fulfill the required purposes (pooling, sourcing variability, etc.) of an RG study when the issued reliability estimate is alpha. Therefore, this study intends to compare the effectiveness of these methods on pooling practice of RGs with a simulation process. Four methods and two weighting schema were considered while combining the estimates of alpha. The results showed that no matter which weighting schema is used, all of the methods over or under estimate the population actual alpha with a small amount of bias which is negligible. This happens if the shape of the simulated data is fixed to be all symmetrical or all skewed on the same side. However to be more realistic and having different shape of simulated data Charter's (2003) proposed formula in which the value of means and standard deviations of the scores are also required outperformed on estimating the actual alpha while other methods provided this time a relatively big amount of negative bias. Therefore, researchers are strongly advised to use this formula on reporting pooled alpha in their future RG studies when all of those required data is available.

Keywords: Reliability Generalization; Simulation; Coefficient Alpha.

References

[1] Hakstian, A. R., & Whalen, T. E. (1976). A k-sample significance test for independent alpha coefficients. *Psychometrika*, 41(2), 219-231.

[2] Vacha-Haase, T. (1998). Reliability generalization: Exploring variance in measurement error affecting score reliability across studies. Educational and Psychological Measurement, 58 (1), 6-20.

[3] Bonett, D. G. (2002). Sample size requirements for testing and estimating coefficient alpha. Journal of educational and behavioral statistics, 27(4), 335-340.

[4] Charter, R. A. (2003). Combining reliability coefficients: Possible application to meta-analysis and reliability generalization. Psychological reports, 93(3), 643-647.

[5] Rodriguez, M. C. ve Maeda, Y. (2006). Meta-analysis of coefficient alpha. Psychological methods, 11(3), 306-322.

[6] López-López, J. A., Botella, J., Sánchez-Meca, J., & Marín-Martínez, F. (2013). Alternatives for mixed-effects meta-regression models in the reliability generalization approach: A simulation study. Journal of Educational and Behavioral Statistics, 38(5), 443-469.

*Presenter

USE OF ANOVA TEST IN ANALYSIS OF FUNCTIONAL DATA: AN APPLICATION

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In this study, an analysis of a functional data consisting of k independent samples was examined. The ANOVA test can be used to compare the mean functions of the subjects in question. Because the data order to be obtained from k independent samples is similar to that of the classical single factor variance analysis model. For this reason, a functional test similar to the test statistic used in the analysis of classical variance was used when this functional data was examined according to group averages. The validity of the asymptotic distribution of this test statistic, which is a modification of the classical F statistic, is shown on the ISE stocks.

Keywords: Functional Data; Functional ANOVA; Comparison of Mean Functions; Test Statistic.

References

[1] Fraiman, R., Muniz, G. (2001). *Trimmedmeans for functional data*. Test 10, 419–440.

[2] Pezzulli, S., Silverman, B.W. (1993). *Some properties of smoothed principal components analysis for functional data*. Comput. Statist. 8, 1–16.

[3] Ramsay, J.O., Dalzell, C.J. (1991). *Some tools for functional data analysis*). J. Roy. Statist. Soc. B 52, 539–572.

[4] Ramsay, J.O., Silverman, B.W. (1997). *Functional Data Analysis.. Springer,* New York.

[5] Ramsay, J.O., Silverman, B.W. (2002). *AppliedFunctional Data Analysis. Springer,* New York.

[6] Silverman, B.W. (1996). *Smoothed functional principal components analysis by choice of norm. Ann. Statist*. 24, 1–24.

*Presenter

COMPARING THE EFFICIENCY OF THE ESTIMATORS FOR THE POPULATION PROPORTION UNDER DIFFERENT DESIGNS OF RANKED SET SAMPLING

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Ranked Set Sampling (RSS) procedure is used where sample units can be easily ranked, but where the exact measurement of sample units is costly in time or effort. Ranked set sampling is an alternative to simple random sampling (SRS) that has been shown to improve on the simple random sampling in many situations by reducing the variance of an estimator, thereby providing the same accuracy with a smaller sample size than is needed in simple random sampling.

In this study, estimation of the population proportion where the binary variable in rank set sampling procedure is investigated. The ranking process is based on a concomitant variable. The simulation study is constructed to evaluate the proportion estimator for different sets and cycle sizes. The bias and relatively efficiency of the population proportion are investigated. The results indicate that the proportion estimator for different designs of RSS is more efficient than the proportion estimator of SRS.

Keywords: Ranked Set Sampling; Concomitant Variable; Proportion Estimator; Relative Efficiency.

References

[1] Al-Saleh, M. F., & Al-Kadiri, M. A. (2000) Double ranked set sampling, *Statistics and probability letters, 48(2),* 205–212.

[2] Chen, H., Stansy, E.A., & Wolfe, D.A. (2005) Ranked set sampling for efficient estimation of a population proportion. *Statistics in Medicine, 24,* 3319-3329.

[3] Chen, H., Stansy, E.A., & Wolfe, D.A. (2005) Unbalanced ranked set sampling for estimating a population proportion. *Biometrics, 62,* 150-158.

[4] Dell, T.R., & Clutter, L. (1972) Ranked set sampling theory with order statistics background. *Biometrics, 28,* 545-553.

[5] McIntyre, G.A. (1952) A method of unbiased selective sampling using ranked sets. *Australian Journal of Agricultural Research, 3,* 385-390.

[6] Muttlak, H.A. (1996) Pair rank set sampling. *Biometrical Journal*. *38,* 879–885.

[7] Muttlak, H.A. (1997) Median ranked set sampling. *Journal of Applied Statistical Sciences. 6*, 245–255.

*Presenter

[8] Muttlak, H.A., & Al-Sabah, W.S. (2003a) Statistical quality control based on pair and selected ranked set sampling. *Pakistan Journal of Statistics, 19(1),* 107-128.

[9] Takahasi, K., & Wakimoto, K. (1968) On the unbiased estimates of the population mean based on the sample stratified by means of ordering. *Annals of the Institute of Statistical Mathematics, 20*, 1-31.

[10] Terpstra, J.F., & Liudahl, L.A., (2004) Concomitant-based rank set sampling proportion estimates. *Statistics in Medicine 23*, 2061–2070.

[11] Terpstra, J.T., & Nelson, E.J. (2005) Optimal rank set sampling estimates for a population proportion. *Journal of Statistical Planning and Inference, 127,* 309-321.

[12] Terpstra, J.T. (2004) On estimating a population proportion via ranked set sampling. *Biometrical Journal, 46(2),* 264-272.

[13] Wolfe, D.A. (2004) Ranked Set Sampling: an Approach to More Efficient Data Collection. *Statistical Science, 19(4),* 245-255.

[14] Zamanzade E., & Mahdizadeh M. (2017) Estimating the population proportion in pair ranked set sampling with application to air quality monitoring. *Journal of Applied Statistics*, DOI: 10.1080/02664763.2017.1279596

*Presenter

NON-NEWTONIAN IMPROPER INTEGRALS

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In this study, non-Newtonian improper integrals were examined and their convergence conditions were investigated.

Firstly, the information about the studies that are done until today and its applications and the point of origin of non-Newtonian calculus, was briefly given. Basic definitions, theorems and properties related to subject was handled. Then, basic definitions, theorems and properties needed for non-Newtonian improper integrals was given..Improper integrals in the non-Newtonian sense was defined and tests on their convergence were given. Furthermore, because of its neccessity, basic theorems such as intermediate value theorem, mean value theorem at non-Newtonian real numbers were examined.

Keywords: Non-Newtonian Improper Integrals; Non-Newtonian Calculus; Convergence Tests.

References

[1] Grossman, M. & Katz R. (1972). *Non-Newtonian Calculus*. Lee Press, Massachusetts.

[2] Meginniss, J. R. (1980). Non-Newtonian calculus applied to probability, utility, and Bayesian Analysis., *American Statistical Assoiation: Proceedings of the Business and Economic Statistics Section*, 405-410.

[3] Rybaczuk, M. & Stoppel, S. (2000).The fractal growth of fatigue defects in materials., *Springer*, vol. 103(1), 71-94.

[4] Aniszewska, D. & Rybaczuk, M. (2005). "Analysis of the multiplicative Lorenz system", *Chaos, Solitons and Fractals.* 25(1), 79-95.

[5] Uzer, A. (2010). "Multiplicative type complex calculus as an alternative to the classical calculus", *Computers and Mathematics with Applications*, 60, 2725-2737.

[6] Bashirov, A. E. & Riza M. (2011). "On complex multiplicative differentiation", *TWMS Journal of Applied and Engineering Mathematics*, 1(1). 75-85.

[7] Florack, L. & van Assen, H. (2012). "Multiplicative calculus in biomedical image analysis", *Journal of Mathematical Imaging and Vision*, 42(1), 64-75.

[8] Çakmak, A. F. & Başar, F. (2012). "Some new results on sequence spaces with respect to non-Newtonian calculus", *Journal of Inequalities and Applications*, 228(1), 1-17.

[9] Tekin, S. & Başar, F. (2013) "Certain sequence spaces over the non-Newtonian complex field",*Abstract and Apllied Analysis*, 2013, 1-11.

*Presenter

[10] Duyar, C., Sagir, B. & Ogur, O. (2015). "Some basic topological properties on non-newtonian real line", *British Journal of Mathematics & Computer Science*, 9(4), 300-307.

[11] Duyar, C., & Erdogan, M. (2016). "On non-Newtonian real number series", *IOSR Journal of Mathematics*, 12(6),IV, 34-48.

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ON THE FUNCTION SEQUENCES AND SERIES IN THE NON-NEWTONIAN CALCULUS

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The purpose of this study is to examine the function sequences and series in the non-Newtonian real numbers.

Firstly, the information about the studies that are done until today and the application areas, was briefly given. Non-Newtonian calculus was introduced which is an alternative to the classical calculus, definitions, theorems and properties were given. *-Function sequence, *-function series, *-pointwise convergence and *-uniform convergence were introduced and theorems were proven which are exposed important differences between *-pointwise convergence and *-uniform convergence. In addition, *-convergence tests such as *-Cauchy criterion and *-Weierstrass M-criterion were obtained. The relationship between *-uniform convergence of the *-continuity, *-integral and *-derivative was examined respectively.

Keywords: Function Sequences; Function Series; Pointwise Convergence; Uniform Convergence; Continuity.

References

[1] Grossman, M., & Katz R. (1972). *Non-Newtonian Calculus*. Lee Press, Massachusetts.

[2] Grossman J., (1981). *Meta-Calculus: Differantial and Integral*, 1st ed., Archimedes Foundation, Rockport Massachussets.

[3] Grossman M., (1983). *Bigeometric Calculus: A System with a Scale Free Deriative*, 1st ed., Archimedes Foundation, Rockport Massachussets.

[4] Bashirov A. E., Misirli Kurpinar E., Ozyapici A., (2008). Multiplicative calculus and its applications, *Journal of Mathemtical Analysis and Applications*, 337, 36-48.

[5] Uzer A., (2010). Multiplicative type complex calculus as an alternative to the classical calculus, *Computers and Mathematics with Applications*, 60, 2725-2737.

[6] Türkmen C., Başar F., (2012). Some basic results on the sets of sequences with geometric calculus, *First International Conference on Analysis and Applied Mathematics*, Gumushane, Turkey, 18-21 Ekim.

[7] Çakmak A. F., Başar F., (2012). Some new results on sequence spaces with respect to non-Newtonian calculus, *Journal of Inequalities and Applications*, 228, 1-12.

*Presenter

[8] Tekin S., Başar F., (2013). Certain sequence spaces over the non-Newtonian complex field, *Abstract and Applied Analysis*, 2013, 1-11.

[9] Çakmak A. F., Başar F., (2012). Space of continuous functions over the field of non-Newtonian real numbers, *Algerian-Turkish International Days on Mathematics*, Algeria, Kasım.

[10] Çakmak A. F., Başar F., (2014). On line and double integrals in the non-Newtonian sense, *International Conference on Analysis and Applied Mathematics*, Shymkent, Kazakhstan, 11-13 Eylül.

[11] Binbaşıoğlu D., Demiriz S., Türkoğlu D., (2015). Fixed points of non-Newtonian contraction mappings on non-Newtonian metric spaces, *Journal of Fixed Point Theory and Applications*,

[12] Duyar C., Sağır B., Oğur O., (2015). Some basic topological properties on non-Newtonian real line, *British Journal of Mathematics and Computer Science*, 9(4), 300-307.

[13] Musayev B., Alp M., Mustafayev N., Ekincioğlu İ., (2003). *Teori ve Çözümlü Problemlerle Analiz Cilt I*, 1. baskı, Tekağaç Eylül Yay., Kütahya.

[14] Duyar, C., & Erdogan, M. (2016). "On non-Newtonian real number series", *IOSR Journal of Mathematics*, 12(6),IV, 34-48.

[15] W. Rudin, (1953). *Principles of Mathematical Analysis*, 3th ed., Mc Graw-Hill, Inc., New York.

[16] Bayraktar M., (2010). *Analiz*, 1. baskı, Nobel Yayınları., Ankara.

*Presenter

ANALYTIC HIERARCHY PROCESS USING TRAPEZOIDAL FUZZY NUMBER BASED WEIGHTS FOR PORTFOLIO SELECTION

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Decision-making processes are primary solutions proposed for the problems which have ever-increasing importance for human life. The rapidly changing environmental conditions and the increasing complexity of real-life problems, creates need for quickly identification of the most appropriate solution for decision makers to achieve the solution of the problem. In such cases, Multi-Criteria Decision Making (MCDM) methods are used to make the right choice. The portfolio selection process that includes multiple goals, criteria and alternatives is one of the areas where the MCDM methods are used. One of the most important topics of portfolio management is the modeling of the relationship between risk and return. However, the fact that financial markets are impress by political, financial and social events and the estimation of the risk / return factors that are effective in portfolio selection are cause uncertainty in the portfolio selection process. In the case of uncertainty, the fact that the investment is not planned correctly can be encounter with unexpected losses to the investor. This leads investors to avoid risk. But investments with less risk can prevent large profits. The aim of this study is to suggest a portfolio selection model based on the analytic hierarchy process that will help about making the right investment to savers who are planning to invest in the face of uncertainty in the financial markets.

In this study, as an alternative to the Enea and Piazza's portfolio selection model, which uses the triangular fuzzy numbers for criteria weighting, a new model that uses the symmetric trapezoidal fuzzy numbers for the same aim was proposed. In order to investigate the effectiveness of the model, the results obtained from the existing methods and the results obtained from the proposed model were compared by based on the data in the literature.

Keywords: Multi-Criteria Decision Making; Analytic Hierarchy Process; Trapezoidal Fuzzy Numbers; Portfolio Selection.

References

[1] Saaty, T. L. (1980). *The Analytic Hierarchy Process*. New York: McGraw-Hill.

[2] Zimmermann, H. J. (1978, January). Fuzzy programming and linear programming with several objective functions. *Fuzzy Sets Syst.*, vol. 1, no. 1, pp. 45–55.

[3] Nakamura, K. (1984, December). Some extensions of fuzzy linear programming. *Fuzzy Sets Syst.*, vol. 14, no. 3, pp. 211–229.

[4] Tanaka, H. & Asai, K. (1984, May). Fuzzy linear programming problems with fuzzy numbers. *Fuzzy Sets Syst.*, vol. 13, no. 1, pp. 1–10.

[5] Enea, M. (2004). Project Selection by Constrained Fuzzy AHP. *Fuzzy optimization and decision*

*Presenter

making, 3(1), pp. 39–62.

[6] Tiryaki, F. & Ahlatcioglu, B. (2009) Fuzzy portfolio selection using fuzzy analytic hierarchy process. *Information Sciences*, vol. 179, no. 1–2, pp. 53–69, 2009.

[7] Çevik, O. & Yıldırım, Y. (2010). An Application in Milk Products Factory with Fuzzy Linear Programming, *Karamanoglu Mehmetbey Univ. J. Soc. Econ. Res.*, vol. 12, no. 18, pp. 15–26.

[8] Ghaffari-Nasab, N., Ahari, S., & Makui, A. (2011). A portfolio selection using fuzzy analytic hierarchy process: A case study of Iranian pharmaceutical industry. *International Journal of Industrial Engineering Computations*, 2(2), 225-236.

[9] Rahmani, N., Talebpour, A., & Ahmadi, T. (2012). Developing aMulti criteria model for stochastic IT portfolio selection by AHP method. *Procedia-Social and Behavioral Sciences*, 62, 1041-1045.

[10] Gomede, E., & De Barros, R. M. (2014, June). A multicriteria approach to project portfolio selection: Using multi objective optimization and Analytic Hierarchy Process. *In Information Systems and Technologies (CISTI)*, 2014 9th Iberian Conference on (pp. 1-7). IEEE.

[11] Yue, W., & Wang, Y. (2017). A new fuzzy multi-objective higher order moment portfolio selection model for diversified portfolios. *Physica A: Statistical Mechanics and its Applications*, 465, 124-140.

*Presenter

THE LONG-RUN RELATIONSHIP BETWEEN HEDONIC HOUSE PRICES AND CONSUMER PRICES: ARDL BOUNDS TESTING APPROACH

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The aim of this study is to test the long-run relationships between consumer prices index and hedonic house prices index for five regions of Turkey. The data are monthly and cover the period of 2010:01-2017:07. All data come from the Electronic Data Delivery System of the Central Bank of the Republic of Turkey. The data cover five regions of Turkey that include İstanbul; Ankara; Izmir; Samsun, Çorum, Amasya, Tokat and Artvin, Giresun, Gümüşhane, Ordu, Rize, Trabzon. In this study, the Autoregressive Distributed Lag (ARDL) bounds testing approach developed by Pesaran and Shin (1999) was used to examine the long-run relationships between consumer prices index and hedonic house prices index. The ARDL approach does not require prior knowledge on the order of integration of the variables. It can be easily used for the variables with different orders of integration. At this point, it should be noted that all variables must be I(0) or I(1), but not higher than I(1). The ARDL approach has some certain advantages in comparison with other conventional co-integration methods such as Engle-Granger and Johansen-Juselius methods. Among others, the most important advantage of this technique is that it gives the possibility of short and long run parameters of the model simultaneously by using the unrestricted ARDL error correction model. As the result of the study, it was found that there were long-run relationships between consumer prices and hedonic house prices for five regions of Turkey and also whole Turkey.

Keywords: ARDL; Consumer Price Index; Hedonic Price Index; Turkish Economy.

References

[1] Engle, R.F. & Granger, C.W.J. (1987). Cointegration and error correction: representation, estimation and testing. *Econometrica*, 55(2), 251-76.

[2] Johansen, S. & Juselius, K. (1990). Maximum likelihood estimation and inference on cointegration with applications to the demand for money. *Oxford Bulletin of Economics and Statistics*, 52(2), 169-210.

[3] Pesaran, M.H. & Pesaran, B. (1997). *Working with microfit 4.0: interactive econo-metric analysis.* Oxford University Press, Oxford.

[4] Pesaran, M.H. & Shin, Y. (1999). *Autoregressive distributed lag modelling approach to cointegration analysis*. In: Storm S, editor. Econometrics and Economic Theory in the 20th Century: the Ragnar Frisch Centennial Symposium. Cambridge University Press; [chapter 1].

*Presenter

INFLATION-OUTPUT TRADEOFF IN TURKEY: KALMAN FILTER ESTIMATION

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The relationship between the slope of the short-run Phillips curve, which is the inflation-output tradeoff, and the variance of the aggregate demand disturbances has been subject to intensive empirical investigation in recent years. On the theoretical framework within the rational expectations, the pioneering work of Lucas (1973) has showed that inflation-output tradeoff parameter is inversely associated with the variance of the aggregate demand disturbances. The aim of this paper is to test the inverse relationship between inflation-output tradeoff and variances of aggregate demand disturbances for the case of Turkey. The data are quarterly and cover the period of 1998:Q1-2017:Q2. All data come from the Electronic Data Delivery System of the Central Bank of the Republic of Turkey. In this study, *firstly*, the variances of aggregate demand disturbances were estimated by moving standard deviation technique. *Secondly*, Kalman Filter Technique was used to estimate inflation-output tradeoff parameters. This technique is chosen as the major analytical tool in this study because of the many advantages that it has over all other procedures such as moving OLS regressions, splitting whole period into two or three sub-periods, and stochastically varying estimation technique in terms of the optimal estimates. By using Kalman Filter, in this study, inflation-output tradeoff parameters were estimated as time varying parameters. *Finally*, the correlation coefficient between the variances of aggregate demand disturbances and inflation-output tradeoff parameters was estimated. As the result of the study, the variances of aggregate demand disturbances were found to be negatively and, significantly correlated with the inflation-output tradeoff parameters, as expected. According to the empirical findings, Lucas Variability Hypothesis is valid for the Turkish economy.

Keywords: Inflation-Output Tradeoff; Kalman Filter Technique; Lucas Variability Hypothesis; Turkish Economy.

References

[1] Kalman, R. E. (1960). A new approach to linear filtering and prediction problems. *Journal of Basic Engineering*, 82, 34-45.

[2] Lucas, R. E. (1973). Some international evidence on output-inflation tradeoffs. *American Economic Review*, 63, 326-34.

[3] Lucas, R. E. (1977). Some international evidence on output-inflation tradeoffs: reply. *American Economic Review*, 67, 731.

[4] Yamak, R. (1994). Further intra-country evidence on the Lucas variability hypothesis. *Southwestern Economic Proceedings*, Southwestern Society of Economics, 183-187.

[5] Yamak N., & Koçak S. (2016, Haziran). Lucas değişkenlik hipotezi: Türkiye örneği. *17. Uluslararası Ekonometri, Yöneylem Araştırması ve İstatistik Sempozyumu*, 240-249.

*Presenter

STATISTICAL ESTIMATION FOR THE PARAMETERS OF GENERALIZED INVERTED EXPONENTIAL DISTRIBUTION BASED ON PROGRESSIVELY TYPE-I INTERVAL CENSORED SAMPLE WITH PART TIME OPERATOR

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In this study, "progressive type-I interval censoring with part time operator" is introduced which is a new modification of progressive type-I interval censoring. This new scheme is constructed on the idea of part-time working. Suppose that *n* units are simultaneously placed on a life test at time $t_0 = 0$ and *k* is even. The experimenter will observe the exact times of the d_1 failed units until t_1 and will randomly remove r_1 surviving units from the test at time t_1. Experimenter will have a break to rest from t_1 to t_2 . At the time t_2, the experimenter will come back to test and count the number of failed units d_2 between (t_1, t_2) and will randomly remove r_2 surviving units from the test. The experimenter will observe the exact times of the d_3 failed units from t_2 to t_3 and will randomly remove r_3 surviving units from the test at time t_3. Experimenter will have a break to rest from t_3 to t_4. At the time t_4, the experimenter will come back to test and count the number of failed units d_4 between (t_3, t_4) and will randomly remove r_4 surviving units from the test. And so on until t_k. Thus, $\{d_i, r_i, x_j;\ i = 1,2,...,k;\ \ j = 1,2,...,d_1 + d_3 + ... + d_{k-1}\}$ are the observed data. Note that the number of failed units d_i and the number of removed units r_i and exactly failure time x_j are random variables. In general, the values of r_i, $i = 1,2,...,k$, be computed by the pre-specified percentages of the remaining live units $p_1, p_{2,...,} p_k$ (with $p_k = 1$). That is $r_i = [|(m_i - d_i)p_i|]$, where $m_i = n - \sum_{j=1}^{i-1} d_j - \sum_{j=1}^{i-1} r_j$, $i = 1,2,...,k,$ are the number of non-surviving units at the beginning of the i^{th} stage. Maximum likelihood and Bayes estimators obtained for parameters of generalized inverted exponential distribution under complete data, progressive type-I interval censoring and progressive type-I interval censoring with part time operator censoring. A simulation study is conducted to investigate the bias, variance and MSE (Mean Squared Error) of estimates. The comparison between Bayes and maximum likelihood estimates in point of estimated risks for various situations through the simulation study is provided. According to the simulation results, progressive type-I interval

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censored sampling with part time operator's estimators biases, variances and MSE's smaller than progressive type-I interval censored estimators. Second simulation study is performed to investigate the performance Bayes estimators under squared error loss function and general entropy loss function in terms of their risks for different sample size and interval range are considered. Simulation study indicated that the progressive type-I interval censored sampling with part time operator's estimators risks smaller than progressive type-I interval censoring risks.

Keywords: Generalized Inverted Exponential Distribution; Interval Censoring; Part-time Operator; Bayes Estimates; Maximum Likelihood Estimates.

References

[1] Abouammoh, A. M., & Alshingiti, A. M. (2009). Reliability estimation of generalized inverted exponential distribution. *Journal of Statistical Computation and Simulation*, 79(11), 1301-1315.

[2] Aggarwala, R. (2001). Progressive interval censoring: Some mathematical results with applications to inference. *Communications in Statistics-Theory and Methods*, 30(8-9), 1921-1935.

[3] Ashour, S., & Afify, W. (2007). Statistical analysis of exponentiated Weibull family under type I progressive interval censoring with random removals. *Journal of Applied Statistics Sciences Research*, 3(12), 1851-1863.

[4] Casella, G., & Berger, R. L. (2002). *Statistical Inference (Second Edition)*. Duxbury.

[5] Chen, D. G., & Lio, Y. L. (2010). Parameter estimations for generalized exponential distribution under progressive type-I interval censoring. *Computational Statistics & Data Analysis*, 54(6), 1581-1591.

[6] Lin, C.-T., Wu, S. J. S., & Balakrishnan, N. (2009). Planning life tests with progressively type-I interval censored data from the lognormal distribution. *Journal of Statistical Planning and Inference*, 139(1), 54-61.

[7] Lin, Y. J., & Lio, Y. L. (2012). Bayesian inference under progressive type-I interval censoring. *Journal of Applied Statistics*, 39(8), 1811-1824.

[8] Ng, H. K. T., & Wang, Z. (2009). Statistical estimation for the parameters of Weibull distribution based on progressively type-I interval censored sample. *Journal of Statistical Computation and Simulation*, 79(2), 145-159.

[9] Peng, X. Y., & Yan, Z. Z. (2013). Bayesian estimation for generalized exponential distribution based on progressive type-I interval censoring. *Acta Mathematicae Applicatae Sinica-English Series*, 29(2), 391-402.

[10] Roussas, G. G. (1973). *A first course in mathematical statistics.* Addison-Wesley.

[11] Singh, S., & Tripathi, Y. M. (2016). Estimating the parameters of an inverse Weibull distribution under progressive type-I interval censoring. *Statistical Papers*, 1-36.

*Presenter

[12] Singh, S. K., Singh, U., & Kumar, D. (2011). Bayesian estimation of the exponentiated Gamma parameter and reliability function under asymmetric loss function. *Revstat-Statistical Journal*, 9(3), 247-260.

[13] Singh, S. K., Singh, U., & Sharma, V. K. (2014). Bayesian estimation and prediction for the generalized Lindley distribution under asymmetric loss function. *Hacettepe Journal of Mathematics and Statistics*, 43(4), 661-678.

[14] Tierney, L., & Kadane, J. B. (1986). Accurate approximations for posterior moments and marginal densities. *Journal of the American Statistical Association*, 81(393), 82-86.

[15] Xiang, L. M., & Tse, S. K. (2005). Maximum likelihood estimation in survival studies under progressive interval censoring with random removals. *Journal of Biopharmaceutical Statistics*, 15(6), 981-991.

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PERFORMANCE, PROPERTIES AND POTENTIAL OF ATA AS A NEW FORECASTING TECHNIQUE

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In this paper, the forecasting performance of the new forecasting method ATA on the M3-competition data set will be given in detail by comparing the main forms of ATA to the existing exponential smoothing counters. In addition to the performance, its properties that separate it from existing models will be discussed case by case comparisons to exponential smoothing. It will be verified that will small modifications ATA can be generalized to higher order smoothing scenarios and its performance can be improved by employing simple combinations and model selection procedures.

Keywords: Time Series; Exponential Smoothing; Box-Jenkins ARIMA; M3-Competition

References

[1] Hyndman, R. J., Koehler, A. B., Snyder, R. D., Grose, S., (2002). A state space framework for automatic forecasting using exponential smoothing methods. International Journal of Forecasting 18 (3), 439-454.

[2] Makridakis, S., Hibon, M., 2000. The m3-competition: results, conclusions and implications. International journal of forecasting 16 (4), 451-476.

[3] Yapar, G., (2016). Modified simple exponential smoothing. Hacettepe University Journal of Mathematics and Statistics, Early access.

[4] Yapar, G., Capar, S., Selamlar, H. T., Yavuz, I., (2016). Modified holt's linear trend method. Hacettepe University Journal of Mathematics and Statistics, Early access.

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OPTIMUM AGRICULTURAL PRODUCTION PLANNING: A CASE STUDY OF AYDIN

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In the world, agricultural sector keeps its economic and social industry-specific properties with its impact on manpower, its contribution to the national income and with the raw materials that it supplies to the industry sector. The productivity of the agriculture sector in Turkey has yet to reach an acceptable level. The significance of production planning intended for the growth of productivity provided from the cultivation areas is gradually increasing. At that point, the most important thing for the manufacturers is to decide to which product to direct the limited resources in terms of production. In this study, a production planning model was developed based on Modern Portfolio Theory for the production of vegetables in Aydın, which has a significant agricultural production potential for the Aegean region. The optimum production portfolios in different risk levels were specified for summer and winter vegetables in Aydın by analyzing the data. This study gives as a guide way to the farmers for the cultivation plans in future terms.

Keywords: Agriculture Economy; Vegetable Growing; Markowitz Mean-Variance Model

References

[1] Aygören, H. & Akyer, H. (2013). Etkin Portföylerin Belirlenmesinde Veri Aralığı, Hisse Senedi Sayısı ve Risk Düzeyi Faktörlerinin Etkisi. *Uluslararası Alanya İşletme Fakültesi Dergisi,* Vol.5(2):9-17.

[2] Blank, C. (2002). Is agriculture a "Way of Life" Or A Business?. *Choices*, Vol.17(3):26-30.

[3] Chow, G, Jacquier, E, Kritzman, M. & Lowry, K. (1999). Optimal Portfolios in Good Times and Bad. *Financial Analysts Journal*, Vol.55(3):65-73.

[4] Cologne, E. G. (1992). Investment Policy in Industrial Enterprises. *Management International Review,* Vol.32:17-28.

[5] Freund, R. (1956). The Introduction of Risk into a Programming Model. *Econometrica*, Vol.24(3):253-263.

[6] Johnson, S.R. (1967). A Re-examination of the Farm Diversification Problem. *American Journal Of Agricultural Economics*, Vol.49(3):610-621.

[7] Lıbbın, J. D., Kohler, J. D. and Hawkes, J. (2004). Does Modern Portfolio Theory Apply to Agricultural Land Ownership Concepts for Farmers and Farm Managers. *Journal Of The ASFMRA*, s:85-96.

*Presenter

[8] Markowitz, H. (1952). Portfolio Selection. *Journal of Finance*, Vol.7(1):77-91.

[9] Markowitz, H. (1990). Foundations of Portfolio Theory *Nobel Lecture, Economic Sciences*, December 7 :279-287.

[10] Newbery, D. M. G. & Stıglıtz, J.E. (1981). The Theory of Commodity Price Stabilization, *Oxford University Press*, London.

[11] Segoıva, J., Rambaud, S. & Garcıa, C. (2005). A model For Determining Efficient Portfolio Cropping Plans In Organic Farming. *Spanish Journal of Agricultural Research*, Vol.3(2):159-167.

[12] Sharpe, W. F. (1964). Capital asset prices: A theory of market equilibrium under conditions of risk. *Journal of Finance*, Vol.19(3):425-442.

[13] Sharpe, W. F. (1963). A Simplified Model for Portfolio Analysis. *Management Science*, Vol.9(2):277-293.

*Presenter

RANKING OF EFFICIENT DECISION MAKING UNITS USING TOPSIS VIA OBJECTIVE WEIGHTS

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Data Envelopment Analysis (DEA), a nonparametric method based on Linear Programming model, has wide use in ranking and classification of decision making units (DMUs). Although there is no problem in ranking the inefficient DMUs obtained according to the analysis results, it is necessary to use different methods for ranking effecient DMUs. TOPSIS, one of the multi-criteria decision making (MCDM) methods, has an important role in ranking efficient DMUs. In this study, DEA and TOPSIS methods were combined to assess the energy and environmental performance of OECD countries. TOPSIS method was applied to the efficient countries and the entropy, the method of calculating the objective weights, was used to determine the weights used in this method. According to the result obtained, OECD countries in the north are the best countries on average in terms of performance about energy and environmental performance.

Keywords: Data Envelopment Analysis; Entropy Method; TOPSIS

References

[1] Bian Y., He, P., & Xu, H. (2013). Estimation of potential energy saving and carbon dioxide emission reduction in China based on an extended non-radial DEA approach. *Energy Policy, 63*, 962-971.

[2] Charnes A., Cooper W.W., & Rhodes E.L. (1978). Measuring the efficiency of decision making unit. *European Journal of Operational Reserach 2(6)*, 429-444.

[3] Paksoy T., Pehlivan N.Y., & Özceylan E. (2013). *Bulanık Küme Teorisi.* Nobel Akademik Yayıncılık.

[4] Rakhshan S.A. (2017). Efficiency ranking of decision making units in data envelopment analysis by using TOPSIS-DEA method. *Journal of the Operational Research Society, 68*, 906-918.

[5] Ramanathan R. (2003). *An Introduction to Data Envelopment Analysis-A Tool for Performance Measurement.* Sage Publications.

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MARS TOUCH UPON MULTIPLE REGRESSION MODEL

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The purpose of the study is to predict children's pulmonary function (measured by forced expiratory volume, FEV) in terms of observations on smokers of various age, height and sex using multivariate adaptive regression splines (MARS). The data used in the study are taken from the previously published article by the present author (Kahn, M. (2003). Data Sleuth. *STATS*, 37, 24). Multiple Regression Model is compared with two MARS models which designed with and without interaction. It has been found that the MARS model which discovered interactions between independent variables is efficient in predicting the forced expiratory volume than others model. It has also been determined that MARS models are more efficient than Multiple Regression Model. As a consequence, the technique of MARS is an innovative modeling tool that excels at finding suitable transformations in order to convert into a linear structure and determining interactions between independent variables.

Keywords: Multivariate Adaptive Regression Splines; Multiple Regression; Forced Expiratory Volume; Data Mining.

References

[1] Dey, P., & Das, A. K. (2016). Application of Multivariate Adaptive Regression Spline-Assisted Objective Function on Optimization of Heat Transfer Rate Around a Cylinder. *Nuclear Engineering and Technology*, 1315-1320.

[2] Kahn, M. (2005). An Exhalent Problem for Teaching Statistics. *Journal of Statistics Education, 13*(2), 1-10.

[3] Tager, I. B., Weiss, S. T., Rosner, B., & Speizer, F. E. (1979). Effect of Parental Cigarette Smoking on Pulmonary Function in Children. *American Journal of Epidemiology*, 15-26.

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DOES DISTANCE LEARNING MEET THE LIFE GOALS AND EXPECTATIONS?

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As it has been emphasized in different economic growth theories from past to present, savings, physical capital, human capital, knowledge accumulation, technological advances and R&D are of crucial importance for economic growth and for development. For one of the most crucial factors among them, namely human capital, education and investments and all kinds of activities for education are essential. In the meantime, open and distance education does its part of carrying education to large masses and adding happy graduates to society. With college education, individuals aim to graduate successfully from their departments while meeting goals and realizing life expectations. College life expectations and satisfaction levels of the huge mass of open and distance learners in Anadolu University Open Education System are the main items in this study.

Keywords: Open and Distance Learning System; Life Targets; Life Expectations

References

[1] Aderinoye, R. & Ojokheta K. (2004). Open-Distance Education as a Mechanism for Sustainable Development: Reflections on the Nigerian Experience, *The International Review of Research in Open and Distance Learning*, Vol. 5, No.1, April.

[2] Altaş, D. [2006]. Üniversite Öğrencileri Memnuniyet Araştırması, *Marmara Üniversitesi, İ.İ.B.F. Dergisi*, Cilt: XXI, Sayı 1, s. 439-458.

[3] Baykal, Ü.; Sökmen, S.; Korkmaz, Ş. & Akgün, E. (2002). Öğrenci Memnuniyeti Ölçeği Geliştirme Çalışması, *İ. Ü., F. N., H. Y.O. Hemşirelik Dergisi*, Cilt: XII, Sayı: 49, s.23-32.

*Presenter

[4] Deshields, W.; Kara, A. & Kaynak, E. (2005). Determinants of Business Student Satisfaction and Retention in Higher Education: Applying Herzberg's Two-Factor Theory, *International Journal of Educational Management*, Vol. 19, Iss. 2, s. 128-139.

[5] Eygü, H. & Karaman, S. (2013). Uzaktan Eğitim Öğrencilerinin Memnuniyet Algıları Üzerine Bir Araştırma, *Sosyal Bilimler Dergisi*, Cilt: 3, Sayı: 1, Ocak, s. 36-59.

[6] Gündoğar , Duru; Gül, Songül S.; Uskun, Ersin; Demirci, Serpil; Keçeci, Dilijin. (2007). "Üniversite Öğrencilerinde Yaşam Doyumunu Yordalayan Etkenlerin İncelenmesi", Klinik Psikiyatri, 10, s. 14-27.

[7] Hakan, A. [1996]. *Uzaktan Öğretim Yöntemiyle Eğitim Veren Anadolu Üniversitesi Fakültelerinin Tanıtımı ve Batı Avrupa Açıköğretim Programlarının Değerlendirilmesi*, Anadolu Üniversitesi Yayınları, No:915. Eskişehir.

[8] İçli, G. E. & Vural, B. B. [2010]. Toplam Kalite Yönetimi ve Uygulamaları Çerçevesinde Kırklareli Üniversitesi Meslek Yüksekokulları Öğrenci Memnuniyeti Araştırması, *Marmara Üniversitesi İ.İ.B.F. Dergisi*, Cilt:XXVIII, Sayı:1, Yıl:2010, ss. 335-349.

[9] Kane, D.; Williams, J. & Cappuccini-Ansfield, G. (2008). Student Satisfaction Survey: The Value in Taking an Historical Perspective, *Quality in Higher Education*, Vol. 14, No: 2, July, s.: 135-155.

[10] Kantoğlu, B.; Torkul, O. & Altunışık, R. (2013). E-öğrenmede Öğrenci Memnuniyetini Etkileyen Faktörlerin İncelenmesine Yönelik Model Önerisi, *Business and Economics Research Journal*, Volume 4, Number 1, s. 121-141.

[11] Naralan, A. & Kaleli, S. S. (2012). Üniversite Öğrencilerinin Üniversiteden Beklentileri ve Bölüm Memnuniyeti Araştırması: Atatürk Üniversitesi Örneği, *Organizasyon ve Yönetim Bilimleri Dergisi*, Sayı:1, s. 1-11.

[12] Sökmen, A. (2011). Öğrenci Memnuniyetine Yönelik Ankara'daki Bir Meslek Yüksekokulunda Araştırma, *İşletme Araştırmaları Dergisi*, 3/4, s. 66-79.

[13] Şahin, İ.; Zoraloğlu, Y. R. & Fırat, N. Ş. (2011). Üniversite Öğrencilerinin Yaşam Amaçları, Eğitsel Hedefleri, Üniversite Öğreniminden Beklentileri ve Memnuniyet Durumları, *Kuram ve Uygulamada Eğitim Yönetimi*, Cilt: 17, Sayı: 8, s. 429-452.

[14] Şahin, İ.; Zoraloğlu, Y. R. & Fırat, N. Ş. (2010). University Student' Opinions About Factors Affecting Their Achievement of Educational Goals, *İnönü University Journal of The Faculty of Educational*, Volume: 11, Issue: 2, s. 135-154.

[15] Tütüncü, Ö. & İpekgil D., Ö. (2003). Müşteri Tatmini Kapsamında Öğrenci Memnuniyetinin Ölçülmesi ve Dokuz Eylül Üniversitesi, Sosyal Bilimler Enstitüsü Uygulaması, *Dokuz Eylül Üniversitesi, Sosyal Bilimler Enstitüsü Dergisi*, Cilt: 5, Sayı: 4, s. 130-151.

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GRAPHICAL VIEW OF RESULTS OF DATA ENVELOPMENT ANALYSIS

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The purpose of this study is to preliminarily review the data set to be used in the Data Envelopment Analysis with the Robust CoPlot technique. Obtain a graphical representation of the analysis results; To investigate the relationship between Decision Making Units and variables; In Data Envelopment Analysis applications where a large number of input and output variables are involved, it is possible to reduce the number of variables by detecting variables having a high correlation with each other, and to remove the effect on the variable vectors of the outliers. In addition, the obtained graph is to visually investigate which variables are more effective on Decision Making Units. As data set, health indicators belonging to some were used. As input variables; total number of physicians, number of dentists, number of pharmacists, number of nurses, number of midwives, number of hospitals, number of beds, the number of family physician units, 112 the number of stations and 112 ambulances were used. As output variables; primary number of applications, second and third digit application number, the number of dental applications, number of hospitalized patients, number of operations and rough death rate was used.

Keywords: Data Envelopment Analysis; Health Performance; Robust Coplot.

References

[1] Atilgan, Y. K. (2016). Robust Coplot Analysis, *Communication in Statistics-Simulation and Computation*, 45, 1763-1775.

[2] Bravata, D. M., Shojania,K.G., Olkin, I., Raveh,A. (2008). CoPlot:Atool for visualizing multivariate data in medicine. *Statistics in Medicine* 27:2234–2247.

[3] Banker, R.D., Charnes A., Cooper, W.W. (1984)., Some models for estimating technical and scale inefficiencies in data envelopment analysis", *Management Science*, 30 (9): 1078-1092

[4] Charnes, A., Cooper,W.W., Rhodes, E.,(1978). Measuring The Efficiency Of Decision Making Units, *European Journal of Operational Research*, 2, 429–444.

[5] Forero, P. A., Giannakis, G. B. (2011). Robust multi-dimensional scaling via outlier sparsity control. *In: 45th Asilomar Conference on Signals, Systems, and Computers, Pacific Grove*, CA. pp.1183–1187.

*Presenter

SPATIAL INTERACTION ANALYSIS RELATED TO INSTITUTIONAL READING WRITING RATE PERFORMANCE

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In general, the region is defined as a homogeneous part of space in terms of certain criteria. Geographical ethnic, cultural, industrial, urban or administrative criteria are used to define the region. The common problem of all developed and developing countries is the problem of underdeveloped regions. It can be said that regional development is important not only in our country but also in European countries and this problem is observed more clearly especially in crisis periods. Since the political approaches maintained by each country are different, the policy tools used for regional development also differ. In our country, it can be said that when the indicators such as GDP per capita, unemployment rate, schooling rate, literacy rate among regions are very regional, there are very serious developmental differences. Spatial data analysis is the analysis of data that explains the interaction, structure and processes of data present in the space and the possible relationships of these to other spatial events. In this study, we investigated whether illiteracy is a spatial effect on literacy performance. East provinces and was observed to be a significant difference between western provinces.

Keywords: Data Envelopment Analysis; Spatial Interaction Analysis; Reading Writing Rate.

References

[1] Baller, R. D., Anselin, L., Messner, S.F., Deane, G. and Hawkins, D.F. (2001). Structural Covariates of U.S. County Homicide Rates:Incorporat,ng Spatial Effects. *Criminology, 39(3),* 561-590.

[2] Zeren, F. (2010). Mekansal Etkileşim Analizi. *İstanbul Üniversitesi İktisat Fakültesi Ekonometri ve İstatistik Dergisi,* 12, 18-39.

[3] Banker, R.D., Charnes A., Cooper, W.W. (1984)., Some models for estimating technical and scale inefficiencies in data envelopment analysis", *Management Science,* 30 (9): 1078-1092

[4] Charnes, A., Cooper,W.W., Rhodes, E.,(1978). Measuring The Efficiency Of Decision Making Units, *European Journal of Operational Research,* 2, 429–444.

*Presenter

INVESTIGATION OF FACTORS AFFECTING HEALTH SYSTEM EFFECTIVENESS IN OECD COUNTRIES BY PATH ANALYSIS

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All democratic systems and organizations in the world are basically aimed at realizing a society composed of healthy individuals and healthy individuals. The Organization for Economic Cooperation and Development (OECD) is an organization in which 34 countries with democratic structures and market economies work jointly to solve economic, social and management problems of globalization and to benefit from this process opportunities. OECD countries emphasize on the efficiency of health in this vision. The aim of this study is to examine the factors that influence the health system effectiveness of OECD member countries. In accordance with this purpose, the technical efficiency scores of health systems are thought to be a component of the healthcare sector's development in OECD countries. Stochastic Frontier Analysis (SFA), which is a parametric method, is used for efficiency measurement. Path Analysis has been applied as an alternative to classical statistical techniques in order to determine the factors that are considered to have an impact on health system effectiveness of OECD countries. The main reason for the selection of the path analysis technique is to examine the existence of indirect relationships as well as direct relationships between variables. With this analysis assessed the impact of indirect factors as well as direct factors affecting the health system of OECD countries. In this study, data from OECD countries in 2013 were used. Health system efficiency scores of OECD countries are calculated by applying the SFA. Then, Path analysis was performed to determine the direct and indirect factors affecting these efficiency scores. According to the analysis results, we has been recommended remedial steps for OECD countries to improve their health system performance.

Keywords: OECD; Stochastic Frontier Analysis; Technical Efficiency; Path Analysis.

References

[**1**] Aigner, D., Lovell, C. K., & Schmidt, P. (1977). Formulation and estimation of stochastic frontier production function models. *Journal of Econometrics*, *6*(1), 21-37.

[**2**] Oktay, E., & Özer, H. (2003). The relation effect between expanding and some social and economic ındicators of the European Union. *Journal of Faculty of Economics and Administrative Sciences*, 5(2), 1-22.

[**3**] Özel, G., & Altun, İ. (2015). Factors affectıng welfare level of EU member countrıes: Path analysıs approach. *Journal of Nevşehir Science and Technology*, 4(1), 97-107.

*Presenter

[**4**] Şenel, T., & Cengiz, M. A. (2016). A bayesian approach for evaluation of determinants of health system efficiency using stochastic frontier analysis and beta regression. *Computational and Mathematical Methods in Medicine*.

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BAYES ESTIMATORS OF TOPP LEONE PARAMETER UNDER DIFFERENT LOSS FUNCTIONS

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In this paper, the parameter estimation of Topp Leone distribution in Bayesian approach has been studied in case of complete data. Bayes estimators of the shape parameter is obtained with non-informative and informative priors under squared error, linear exponential (LINEX), general entropy, and K-loss functions. Besides Bayes estimators, maximum likelihood and minimum variance unbiased estimators are obtained in order to make the comparisons. A Monte Carlo simulation has been conducted to compare the performance of the estimators in terms of mean squared error (MSE) and bias. Based on the simulation results, Bayesian estimator using LINEX loss function is more efficient than the other estimators with regards to MSE in most of the considered cases.

Keywords: Topp-Leone Distribution; Bayesian Estimation; Linear Exponential Loss Function; Mean Squared Error

References

[1] Kotz. S, & Nadarajah. S. (2006). J-shaped distribution, Topp and Leone's. *Encyclopedia of statistical sciences*, vol 6, 2nd edn. Wiley, New York, 3786.

[2] Sultan. H, & Ahmad S.P. (2016), Bayesian analysis of Topp-Leone distribution under different loss functions and different priors, *Journal of Statistics Applications & Probability Letters*, 3, 109-118

[3] Sultan. H, & Ahmad S.P. (2015), Bayesian approximation techniques of Topp-leone distribution, *Int. J. Stat. Math.*,2(1): 066-070.

[4] Topp, C. W., & Leone, F. C. (1955). A family of J-shaped frequency functions, *J. Amer. Statist. Assoc*. 50, 209-219.

[5] Wasan, M. T. (1970). Parametric estimation. McGraw-Hill

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FUZZY(m,n)- Γ-IDEALS IN LA-Γ-SEMIGROUPS

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In this paper, we introduce fuzzy (m,n)-Γ-ideals as generalization of the related concepts in LA-Γ-semigroups and provide some relevant properties of fuzzy (m,n)-Γ-ideals.

Keywords: LA-Γ-Semigroup; Fuzzy (m,n)-Γ-ideals

References

[1] Abbasi, M.Y., & Basar, A. (2015). On Generalizations of Ideals in LA-Γ-Semigroups. *Southeast Asian Bulletin of Mathematics, 39,* 1-12.

[2] Akram, M., & Yaqoob, N., & Khan, M. (2013). On (m, n)-ideals in LA-semigroups, *Applied Mathematical Sciences, 7 (44),* 2187–2191.

[3] Jun Y. B., & Lee, C.Y. (1981). Fuzzy Γ-rings, *Pusan Kyongnam Math. J., 84,* 264-269.

[4] Kazim, M.A., & Naseeruddin, M. (1972). On almost semigroups, *The Alig. Bull. Math. 2,* 1–7.

[5] Lajos S. (1961). Generalized ideals in semigroups, *Acta Sci. Math. 22,* 217–222.

[6] Sen, M. K. (1981). On Γ-semigroups, In *proceeding of International Symposium on Algebra and Its Applications. Decker Publication, New York, 30, 1-8.*

[7] Sen, M. K., & Saha, N.K. (1986). *On Γ-semigroups I,* Bull. Cal. Math. Soc., 78, 180-186.

[8] Shah T., & Rehman, I. (2010). On Γ-ideals and bi-Γ-ideals in Γ-AG-groupoid, *Int. J. Algebra 4,* 267–276.

[9] Shah T., & Rehman, I., & Khan, A. (2014). Fuzzy Γ -ideals in Γ -AG-groupoids, *Hacettepe Journal of Mathematics and Statistics 43 (4),* 625-634.

[10] Zadeh, L.A. (1965) Fuzzy sets, *Information and Control, 8,* 338-353.

*Presenter

SHIFT DETECTION IN MULTIVARIATE PROCESS CONTROL USING BLIND SIGNAL SEPARATION

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There may be many situations that require the monitoring or control of two or more quality characteristics simultaneously. Process monitoring problems involving two or more variable are generally known as Multivariate Statistical Process Control (MSPC). MSPC is one of the fastest developing and the most important issue in Statistical Quality Control (SQC). One of the aim of the MSPC approaches is detection of any shift in the process as early as possible. There are many methods to detect the shift of a process in the literature. However, these methods do not provide any information about the variable(s) causing these shifts. In this study, the blind signal separation techniques are demonstrated to overcome this problem. The performance of the proposal approaches are illustrated using experimental data. The experimental study shows that the blind signal separation performs well to determine the source of shift.

Keywords: Multivariate Statistical Process Control; Blind Signal Separation; Process Monitoring; Signal Processing.

References

[1] CHEN, G.J., LIANG, J. & QIAN, J.X. (2003, December). Application of Blind Source Analysis To Multivariate Statistical Process Monitoring. In *IEEE International Conference Neural Networks & Signal Processing*.

[2] LEE, J.M., YOO, C.K., & LEE, I.B. (2003). Statistical process monitoring with independent component analysis. *Journal of Process Control*, 14(2004), 467-485.

[3] MANABU, K., SHINJI, H., & IORI, H. (2003). Monitoring Independent Components for Fault Detection. *AIChE Journal*, 49(4), 969-976.

[4] MANABU, K., SHOUHEI, T., SHINJI, H., IORI, H., & OHNO, H. (2003). Evolution of Multivariate Statistical Process Control: Application of Independent Component Analysis and External Analysis. In *Proceeding Foundations of Computer-Aided Process Operations (FOCAPO2003).*

[5] NGUYEN, V. H., & GOLINVAL, J.C. (2011). Damage Detection Using Blind Source Separation Techniques. *Sensors, Instrumentation and Special Topics*, 6, 45-56.

[6] PARRA, L., & SAJDA, P. (2003). Blind Source Separation via Generalized Eigenvalue Decomposition. *Journal of Machine Learning Research*, 4, 1261-1269.

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LASSO FEATURE SELECTION IN MULTIVARIATE BERNOULLI LOGISTIC MODELS

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In study, it is purpose of examine the LASSO estimators in multivariate Bernoulli logistic models and compare the estimation models obtained with Akaike Information Criterion (AIC) and Bayesian Information Criterion (BIC), Generalized approximate cross validation (GACV) and Bayesian generalized approximate cross validation (BGACV) used in model selection. Firstly, LASSO estimators and multivariate Bernoulli logistic models were given. Then, using the MVB package in the R program, LASSO estimates were obtained with four different information criterions used in the model selection for the initial beta values determined by us. Simulations have been done for different observation values and different dependent variable numbers. Simulation results are compared according to the criteria. As a result, LASSO estimator has been studied on smaller data sets and also p>n states. When dependent variable binary values were obtained, more stable and stronger results were obtain with GACV and BGACV criteria as an alternative to AIC and BIC criteria when LASSO prediction models were obtained.

Keywords: LASSO; Bernoulli Distribution; Logistic Model; Generalized Approximate Cross Validation.

References

[1] Hastie, T., Tibshirani, R. & Wainwright, M. (2015). Statistical learning with sparsity: the lasso and generalizations. CRC Press.

[2] Dai, B. (2012). Multivariate Bernoulli distribution models. Technical Report, Department of Statistics, University of Wisconsin, Madison, WI 53706.

[3] Xiang, D. & Wahba, G. (1997). Approximate smoothing spline methods for large data sets in the binary case. In Proceding-American Statistical Association Biometrics Section (pp. 94-99).

*Presenter

EMPIRICAL DISTRIBUTION FUNCTIONS UNDER DIFFERENT SAMPLING DESIGNS IN PARTIALLY RANK-ORDERED SETS

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In this study, we discuss the efficiencies of Empirical Distributions Functions (EDFs) that are obtained by using three different sampling designs which are Level-0, Leve-1 and Level-2. Efficiencies simulated for finite populations having different distributions in R software. In ranking process, we used an auxiliary variable and ranked interested variable perfectly and imperfectly. Consequently, we compared the efficiencies of EDFs under perfect and imperfect ranking with tables and figures.

Keywords: Empirical Distribution Functions; Sampling Designs; Partial Ranking; Auxiliary Variable.

References

[1] Deshpande, J. V., Frey, J, & Ozturk, O. (2006). Nonparametric ranked-set sampling confidence intervals for quantiles of a finite population. *Environmental and Ecological Statistics*, *13*, 25-40.

[2] Nazari, S., Jafari Jozani, M., & Kharrati-Kopaei, M. (2016). On distribution function estimation with partially rank-ordered set samples: estimating mercury level in fish using length frequency data. *Statistics*, *50(6)*, 1387-1410.

[3] Ozturk, O. (2011). Sampling from partially rank-ordered sets. *Environmental and Ecological Statistics*, *18*(4), 757-779.

[4] Ozturk, O. (2014). Estimation of Population Mean and Total in a Finite Population Setting Using Multiple Auxiliary Variables. *Journal of Agricultural, Biological, and Environmental Statistics*, *19(2)*, 161-184.

[5] Stokes, L. S., & Sager, T. W. (1988). Characterization of a Ranked-Set Sample with Application to Estimating Distribution Functions. *Journal of the American Statistical Association*, *83*(402), 374-381.

*Presenter

NURSE SCHEDULING PROBLEM AND AN APPLICATION IN A PRIVATE HOSPITAL

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Nowadays, companies have to produce better quality services to compete with their competitors. Hospitals as an important part of service sector also should develop their qualifications to gain competitive advantages. One way to improve quality is making employees happy. So planning a fair shift schedule for employees will increase satisfaction. In this study, the issue of nurse shift scheduling problem at a private hospital in Samsun province of Turkey is discussed. A multi-objective 0-1 integer mathematical programming model is developed for solving nurse shift scheduling problem where nurses work 45 hours a week. At the discussed hospital, the shift scheduling of the nurses is done manually. This situation, as well as difficult and unfair scheduling, also increases scheduling time. In addition, there is an uneven distribution of shift schedule on weekends. The purpose of the proposed model is to equalize the total working time and shift number of each nurse in a monthly schedule. Proposed mathematical model is solved using GAMS software and CPLEX solver and the optimum solution is obtained. As a result, the optimum shift schedule and the number of nurses in these shifts are determined. The optimal shift schedule is shown fairer than the manual schedule and has increased productivity by taking into account the priorities of the nurses.

Keywords: Nurse Shift Scheduling; Optimization; Integer Programming.

References

[1] AGYEI, Wallace; William OBENG-DENTEH and Emmanuel A. ANDAAM; (2015), "Modeling Nurse Scheduling Problem Using 0-1 Goal Programming: A Case Study of Tafo Government Hospital, KumasiGhana", International Journal of Scientific & Technology Research, 4, pp. 5-10.

[2] ATMACA, Ediz; Ceydanur PEHLİVAN; Begüm C. AYDOĞDU ve Mehmet YAKICI; (2012), "Hemşire Çizelgeleme Problemi ve Uygulaması", Erciyes Üniversitesi Fen Bilimleri Enstitüsü Dergisi, 28(4), ss. 351-358.

[3] AZAIEZ, M. Naceur and S. Shaza AL SHARIF; (2005), "A 0-1 Goal Programming Model for Nurse Scheduling", Computers & Operations Research, 32(3), pp. 491-507.

[4] BAĞ, Nurgül; N. Merve ÖZDEMİR ve Tamer EREN; (2012), "0-1 Hedef Programlama ve ANP Yöntemi ile Hemşire Çizelgeleme Problemi Çözümü", International Journal of Engineering Research and Development, 4(1), ss. 2-6.

[5] GÜNGÖR, İbrahim; (2002), "Hemşire Görevlendirme ve Çizelgeleme Sorununa Bir Model Önerisi", Süleyman Demirel Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi, 7(2), ss. 77-94.

*Presenter

[6] NARLI, Müfide ve S. Noyan OĞULATA; (2008), "Hemşirelerin Çalışma Vardiyalarının Değerlendirilmesi ve Çizelgelenmesi" Çukurova Üniversitesi Fen Bilimleri Enstitüsü, 19(1), ss. 31-39.

[7] ÖZTÜRKOĞLU, Yücel ve Filiz ÇALIŞKAN; (2014), "Hemşire Çizelgelemesinde Esnek Vardiya Planlaması ve Hastane Uygulaması", Dokuz Eylül Üniversitesi Sosyal Bilimler Enstitüsü Dergisi, 16(1), ss. 115-133.

[8] SULAK, Harun and Mustafa BAYHAN; (2016) "A Model Suggestion and an Application for Nurse Scheduling Problem", Journal of Research in Business, Economics and Management, 5(5), pp. 755-760.

[9] YILMAZ, Ebru; (2012), "A Mathematical Programming Model for Scheduling of Nurses' Labor Shifts", Journal of Medical Systems, 36(2), pp. 491-496.

[10] WANG, Sheng-Pen; Yu-Kuang HSİEH; Zheng-Yun ZHUANG and Nai-Chia QU; (2014), "Solving an Outpatient Nurse Scheduling Problem by Binary Goal Programming", Journal of Industrial and Production Engineering, 31(1), pp. 41-50.

*Presenter

A NEW VARIABLE SELECTION METHOD FOR DATA ENVELOPMENT ANALYSIS THROUGH BOOTSTRAP APPROACH

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Data envelopment analysis (DEA) based on linear programming first introduced by Charnes et al., is a way of determining the efficiency for a set of decision-making units (DMUs) when measured over a set of multiple input and output variables. One of the most important problems in the analysis of performance using DEA is the choice of input and output variables. Because, DEA results based on the set of input and output variables that are used in the analysis. In this paper, we develop a new method based on bootstrap approach to variable selection that involves maximizing the correlation between former and later the efficiencies as variables are dropped from the analysis. After developing the bootstrap procedure, examples from classic DEA studies are presented. We find that: last efficiency scores via a new method for variable selection proposed in this paper performs well with highly correlated with first efficiency scores.

Keywords: Data Envelopment Analysis; Efficiency Measurements; Data Reduction.

References

[1] Charnes, A., Cooper, W. W., & Rhodes, E. (1978). Measuring the efficiency of decision making units. *European journal of operational research*, *2*(6), 429-444.

[2] Banker, R. D., Charnes, A., & Cooper, W. W. (1984). Some models for estimating technical and scale inefficiencies in data envelopment analysis. *Management science*, *30*(9), 1078-1092.

[3] Wagner, J. M., & Shimshak, D. G. (2007). Stepwise selection of variables in data envelopment analysis: Procedures and managerial perspectives. *European journal of operational research*, *180*(1), 57-67.

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COMPARISON OF PERFORMANCE MEASURES OF LIMITED AND UNLIMITED AND PRIORITY QUEUES DISCIPLINES

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In some of the queuing systems, customers are evaluated according to their customer class. In such queuing systems, customer priorities are determined by the importance of the customer. When there are different customer classes in the queue system j. class customer $(j + 1)$. class $(j = 1,2,\dots)$ will be serviced earlier than the customer. Customers in each class receive service according to the first-in-first-out service discipline. When a high-priority customer arrives on the system, and there is a lower-priority customer receiving service in the system, two different queue disciplines are involved. The first of these queue disciplines is unlimited priority queuing discipline. In this case, as soon as a high priority customer arrives at the system, it is removed from the low priority customer service unit and the high priority customer enters the service unit. When there is no high-priority customer in the system, the low-priority customer removed from the service enters the service unit again. The second queue discipline is the limited priority queue discipline. In this case, when a high-priority customer arrives in the system, a low-priority customer receiving the service waits for the customer to complete the service and then enters the service unit.
In this study, the average number of customers in the system and average waiting times in the system are theoretically compared and given a numerical application for both high priority and low priority customers.

Keywords: Queuing Disciplines; Performance Measures; Priority Planning; Inequalities and Comparisons.

References

[1] Çınlar, E. 1975. Introduction to Stochastic Processes. Prentice-Hall, Inc. New Jersey, USA.

[2] Gross, D., Harris, C. M., Thompson, M. J., & Shortle, F. J. 2008. Fundementals of Queueing Theory, 4th ed., John Wiley & Sons, New York.

[3] Moutzoukis, E., & Langaris, C. 2007. Non-preemptive priorities and vacations in a multiclass retrial queueing system. Communications in Statistics. Stochastic Models, Volume 12, 2007 – Issue 3.

[4] Stewart, W. J. 2009. *Probability, Markov Chains, Queues and Simulation*, Princeton University Press, United Kingdom.

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PORTFOLIO OPTIMIZATION BASED ON ARTIFICIAL BEE COLONY ALGORITHM

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A portfolio is called all the assets an individual or institution has. To estimate the number and their weights of investment instruments in the portfolio, the return provided to the investors and the risk of the portfolio is known as the problem of portfolio optimization. On the other side, the modern portfolio management approach is based on mathematical basis and includes statistically the risk and the return concept. It is investigated by Markowitz in 1952 that the risk cannot be reduced just only diversification and the severity and the direction of the relationships among the investment tools in the portfolio has an influence on the reduction of the risk. Recently researchers have used the artificial intelligence approaches to optimize the portfolio. One of them is Artificial Bee Colony (ABC) algorithm which was introduced by Derviş Karaboğa in 2005. This algorithm is a heuristic algorithm which is based on the herd intelligence generated by the bee colonies who are seeking for food. In this study we try to solve the problem of portfolio optimization by using ABC algorithm. In this application we used the data set of the end day of prices of stocks included in BIST-30 index for the dates between 02/01/2013 and 31/12/2016. The number of iteration of the algorithm has been defined as 120 and the performance of the portfolio has been assessed with Sharpe Performance Ratio. At the end of the application the optimal portfolio has been obtained. The return and the risk of the portfolio and the number and their weights of stocks which are included the portfolio has been estimated. The result has been compared with the result obtained by the quadratic programming and it is investigated that the result from proposed approach is best.

Keywords: Portfolio Optimization; Artificial Bee Colony; Markowitz Mean-Variance Model.

References

[1] Demirelli Y., "Yapay Zeka Yöntemleri ile Karşılaştırma Portföy Optimizasyonu ve İMKB Üzerine bir uygulama", Marmara Üniversitesi, Sosyal Bilimler Enstitüsü, İktisat Anabilim Dalı, Doktora Tezi, 356457, İstanbul, (2004).
[2] Elton E. J., and Gruber M.J., Brown S. J., Goetzmann W.N. (2010). Modern Portfolio Theory and Investment Analysis. 5th Edition. New York:John Wiley&Song, (2010).
[3] Eugene F. Fama, "Efficient Capital Markets: A Review of Theory and Empirical Work", The Journal of Finance, Vol. 25, (1970), 383-416.
[4] Jones , C. P.,Tuttle, D. L., Heaton C. P., Essential of modern investment, The Ronald PressCompany, New York, (1977).
[5] Karaboğa D., "Yapay Zekâ Optimizasyonu Algortimaları", Nobel Akademik Yayıncılık, Ankara, (2014).

*Presenter

[6] Karan, M. Baha, Yatırım analizi ve Portföy Yönetimi, Ankara. (2001).
[7] Markowitz H., Portfolio Selection. The Journal of Finance Vol.7, no.1, March (1952), 77-91.
[8] Sharpe, W. F., A Simplified Model for Portfolio Analysis. Management Science. Vol. 9, No. 2, January , (1963), .277-293.

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ECONOMETRIC MODELING THE STATE AIRPORTS AUTHORITY of TURKEY MONTHLY TOTAL AIRPORT PASSENGER

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The aviation is a major investment area for developing countries. Because aviation technologies are affect all industrial areas and expedite sectoral developments. For this purpose, in 2003, domestic airlines have been opened to competition with private sectoral firms. So the air transportation sector has grown at an average rate of more than 10% per year with an accelerated increase. This increasing speed must model and control by managers to prevent chaotic situations. However, modelling failure will cause errors in planning; resources will be waste and create traffic problem at airports. In this study, monthly total airport passenger modeled as a function of the months to provide more realistic and accurate targets.

In classical linear regression, there are some important assumptions like normally distributed residuals and the homoscedasticity of residuals. Especially, homoscedasticity assumption is vital in classical regression analysis. This assumption means equal variance of residuals across all levels of the independent variables (Carapeto & Holt, 2003; Gujaratti, 2004). Therefore, violation of the homoscedasticity assumption expose heteroscedasticity problem (Çelik, 2016). As stated by Bischoff et al (2006), if the model is correctly specified, Studentized residuals should be homoscedastic.
In this study, Studentized residuals' frequency distribution plot, outliers and variance equality are evaluated against the months. In the first step, assumptions are checked by applying ordinary least squares (OLS). The Durbin - Watson (D - W) D test is used to test 1st order autocorrelation. Additionally RCEV test, which is a new test suggested by Çelik in 2017, is also applied to check the homoscedasticity. Furthermore, model sufficiency is evaluated with F test, adjusted significance coefficient, the standard error of estimation and coefficient of variation. The biggest problem with model is butterfly distributed residuals. Butterfly distributed residuals is a special case of heteroscedasticity problem in the OLS model. As X are months and Y is the total number of passengers the evaluated model in the study is given in Equation 1.

$$Y = \beta_0 + D_i X_i + Trend + \varepsilon \qquad i = 1,2,\dots,11 \qquad (1)$$

In this model adjusted R^2 is 92.01%, but 1st order autocorrelation is detected. Although the model assumes normality of errors, the homoscedasticity assumption is violated. If there is heteroscedasticity problem the regression model is not reliable. We overcome this problem with the weighted model. In the second model, the two main assumptions provided and the butterfly distributed residual problem are left behind. In this study, we eliminated heteroscedasticity problem and we proposed a weighted model to make more accurate predictions.

Keywords: *Regression; Residual Model; Autocorrelation; Studentized Residuals; Heteroscedasticity*

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References

[1] Bischoff, W., Heck, B., Howind, J., & Teusch, A. (2006). A procedure for estimating the variance function of linear models and for checking the appropriateness of estimated variances: a case study of GPS carrier-phase observations. *Journal of Geodesy*, *79*(12), 694-704.

[2] Carapeto, M. & Holt, W. (2003). Testing for heteroscedasticity in regression models, *Journal of Applied Statistics*, Vol. 30, No. 1, 2003, 13–20.

[3] Çelik, R. (2015). Stabilizing heteroscedasticity for butterfly-distributed residuals by the weighting absolute centered external variable. *Journal of Applied Statistics*, 42(4), 705-721.

[4] Çelik, R. (2016), Correcting Double Outward Box Distributed Residuals by WCEV, *Communications in Statistics - Theory and Methods*, DOI: 10.1080/03610926.2016.1213289

[5] Çelik, R. (2017), A new test to detect monotonic and non-monotonic types of heteroscedasticity, *Journal of Applied Statistics*, 44:2, 342-361, DOI: 10.1080/02664763.2016.1169258

[6] Draper, N. R., & Smith, H. (2014). *Applied regression analysis*. John Wiley & Sons.

[7] Gujaratti, D. (2004). Basic Econometrics. 4th Edition the McGraw−Hill.

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CLASSIFICATION OF THE FINANCIAL DATA USING MACHINE LEARNING METHODS AND ARTIFICIAL NEURAL NETWORK: BIST-50 INDEX APPLICATION

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Istanbul Stock Exchange is a growing market day by day. This type of economy attracts investors to financial market from all over the world. Therefore, investors use different criteria like financial indicators. BIST-50 index is one of the mentioned indicators to attract financial investors and funds. The index contains 50 stocks selected among the companies that traded on the BIST Stars and BIST Main markets. Additively this index contains the stocks of real estate investment trusts, venture capital investment trusts traded on the Collective and Structured Products Market and automatically covers BIST 30 stocks.

The direction estimation of the stock market indices and understanding the relationship among foreign countries' stock indexes provide great advantages to investors. Also, revealing the interaction of foreign exchange and investment instruments such as gold will help to understand the index. Furthermore, modeling these data leads to investors, because short-term and long-term investment decisions are made with the help of these models. So, modelling success will increase the expected return.

For this purpose, we classified BIST-50 index increase/decrease values with some of the different machine learning classification methods and neural networks. As independent variables USD, EURO, POUND, Ounce of Gold, Crude Oil Price, Interest Rate, CPI, DAX, FTSE, S&P-500 are taken which are commonly used in the literature as factors that affect the BIST-50 index. Analyzes are performed with Weka3.8 program. Classification performance rates are 67.58% for Naive Bayes classifier; 67.54% for Logistic Regression; 65.84% for Artificial Neural Networks; % 65.46 for C4.5 algorithm and 57.51% for the k-NN algorithm respectively. Besides on these, correlation based feature selection method shows us the importance order of the variables are found as FTSE, DAX, USD, EURO, POUND, S&P-500, Crude Oil Price, Interest Rate, Ounce of Gold, and CPI.

It can be concluded from the results, the main factors which affect the BIST-50 index are foreign countries' stock indexes and foreign exchanges. In other words, political event based economic uncertainty forcing investors to stay away from our stock market. Especially, local investors are evaluating their savings in foreign stock markets and foreign exchange. Addition to this, foreign investors have approximately 68% of the stocks in Turkish Stock Market too. The lacks of depth in our stock market supports create financial turbulence. As a result, the diversification of investment

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instruments and leading people to evaluate their savings in the stock market for long term investing may lead to a healthier and more reliable financial market.

Keywords: BIST-50 Index; Machine Learning; Artificial Neural Networks; Classification

References

[1] Arslantaş, C. C. ve Fındıklı, M. A., (2010), İMKB-50'de Yer Alan Şirketlerin Yönetim Kurulu Yapılanmaları, *Istanbul University Journal of the School of Business Administration*, 39(2): 258-275.

[2] Avci, E., (2007), Forecasting Daily And Sessional Returns Of The ISE-100 Index with Neural Network Models, *Doğuş Üniversitesi Dergisi*, 128-142.

[3] Bahrammirzaee, A., (2010), A comparative survey of artificial intelligence applications in finance: artificial neural networks, expert system and hybrid intelligent systems, *Neural Computing and Applications*, 19:1165–1195.

[4] Balaban, M., E. ve Kartal, E., (2015), *Veri Madenciliği Ve Makine Öğrenmesi*, Çağlayan Kitabevi, İstanbul.

[5] Borsa İstanbul, "BIST Pay Endeksleri Temel Kuralları", http://www.borsaistanbul.com/docs/default-source/endeksler/bist-stock-indices-ground-rules.pdf?sfvrsn=14, Erişim Tarihi: 21.09.2017

[6] Diler, A. İ., (2003), IMKB ULUSAL-100 Endeksinin Yönünün Yapay Sinir Ağları Hata Geriye Yayma Yöntemi İle Tahmin Edilmesi, *IMKB Dergisi*, 7(25-26):65-84.

[7] İlarslan, K., (2016), k-En Yakın Komşu (k-NN) Algoritması ile Hisse Senedi Fiyatlarının Tahmin Edilmesi: BİST' den Örnek Bir Uygulama, *Asos journal*, 4(30):375-392.

[8] Kendirli, S. ve Çankaya, M., (2016), Döviz Kuru ve Enflasyonun BİST Banka Endeksi Üzerindeki Etkisi, *MANAS Sosyal Araştırmalar Dergisi/MANAS Journal of Social Studies*, 5(3): 215-227.

[9] Özdemir, A. K., Tolun, S. ve Demirci, E., (2011), Endeks Getirisi Yönünün İkili Sınıflandırma Yöntemiyle Tahmin Edilmesi: İMKB-100 Endeksi Örneği, *Niğde Üniversitesi İİBF Dergisi*, 4(2):45-

[10] Silahtaroğlu, G., (2013), *Veri Madenciliği Kavram ve Algoritmaları,* Papatya Yayıncılık, İstanbul.

[11] Türkiye Cumhuriyeti Merkez Bankası, http://www.tcmb.gov.tr, Erişim Tarihi: 15.09.2017.

[12] Vuran, B., (2010), IMKB 100 endeksinin uluslararası hisse senedi endeksleri ile ilişkisinin eşbütünleşim analizi ile belirlenmesi, *İstanbul Üniversitesi İşletme Fakültesi Dergisi,* 39(1): 154-168.

[13] Yakut, E., Elmas B. ve Yavuz, S.,(2014), Yapay Sinir Ağları ve Destek Vektör Makineleri Yöntemleriyle Borsa Endeksi Tahmini, *Süleyman Demirel Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi*, 19(1):139-157.

*Presenter

USING GROUP BASED TRAJECTORY MODEL AND LATENT CLASS ANALYSIS TOGETHER FOR MODELING THE COMORBIDITY EFFECT ON MIGRAINE PROGNOSIS

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Migraine is a chronic disease with multiple comorbidities. Comorbidities need to be taken into consideration in disease prognosis, determining the factors affecting prognosis and response to treatment for chronic diseases [1]. The effect of comorbidities on the severity of headache was demonstrated by a preliminary study [2]. However, how to deal with the comorbidities which effects are found on headache should be investigated. It should be noted that comorbidities do not have equal effect on outcome variables and have different weights. In the light of this information, there are five methods that we have proposed for weighting comorbidities. The first method is that prevalance of comorbidities in observed population are taken as weights. Second method is that weights are obtained by multiplying prevalance of comorbidity and individual comorbidity burden that is calculated by dividing the total number of comorbidities seen in an individual by the total number of comorbidities. Third method is that groups obtained from latent class analysis according to comorbidity combinations are taken as weights. Fourth method is that posterior probabilities obtained from latent class analysis in case of significant relationship between comorbidities, or not are taken as weights. The last method is that log-odds values obtained from Group based trajectory model (GBTM) analysis are taken as weights.

The weights obtained for each method were modeled and GBTM analysis was applied. By GBTM analysis, the individuals that show similar changes over time are grouped. These groups are called as trajectories. Even though individuals in groups show similar prognosis, inter-individual differences due to temporal change can be explained by polynomial functions. The magnitude and direction of these changes can be estimated by the constant and slope coefficients calculated for each trajectory [3]. In GBTM analysis, the first important decision that we have to make when determining trajectories is to decide the optimal number of groups. The second important decision is the degree of the model. Then it is necessary to compare the models to find the most appropriate model for data from the models formed by changing group number and parameter degree. In the literature, it is

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suggested to use the values of Akaike Information Criterion (AIC) and Bayesian Information Criterion (BIC) to decide the most appropriate model. In addition, in group-based trajectory models, the minimum percentage of the group is also used as a marker to determine the appropriate number of groups [4-6].

When considered together with clinicians, it was necessary to take into consideration frequency of headache and duration of headache as covariants. Models that include age, comorbidity weights as a single variable and covariants were assessed for the severity of pain and compared by utilizing AIC and BIC values. As the result of this analysis, the best model was determined as the model considering age and weights which obtained from posterior probabilities with latent class analysis in case of significant relationship between comorbidities.

Keywords: Group Based Trajectory Models; Latent Class Analysis; Comorbidity; Posterior Probabilities.

References

[1] Feinstein, A.R. (1970).The pre-therapeutic classification of co-morbidity in chronic disease. *J Chronic Dis* ,23(7),455-468.

[2] Yildirim, D.D., Tasdelen, B.& Ozge, A. The Effect of Co-morbidity on the Modeling of Migraine Prognosis. 1st International Biostatistics Congress, *Book of Abstracts*, *Page 85*, 26-29 October 2016, Antalya, Turkey.

[3] Nagin, S.D. & Odgers, C.L. (2010). Group based trajectory modeling in clinical research. *Annual Review of Clinical Psychology*, 6,109-138.

[4] Nagin, D. (2005) *Group-Based Modeling of Development. Cambridge, MA: Harvard Univ. Press.*

[5] Ram, N. & Grimm, K.J. (2009) Growth Mixture Modeling: A Method for Identifying Differences in Longitudinal Change Among Unobserved Groups. *International Journal of Behavioural Development*, 33(6), 565–576.

[6] Nagin, S.D. (1999) Analyzing Developmental Trajectories: A Semiparametric, Group-Based Approach *Psychological Methods*, 4(2),139-157.

*Presenter

THE EVALUATION OF PERFORMANCE OF COX-SNELL, DEVIANCE AND MARTINGALE RESIDUALS IN SURVIVAL-MARS MODEL

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The aim of this study is to evaluate the usage purposes of Cox-Snell, Deviance and Martingale residual types which use of on the Survival analysis in Multivariate Adaptive Regression Splines (MARS) and also evaluate their performances in the built model.

The study's data regarding survival times has been obtained through 1000 repetitions. Sample sizes are as follows: 30, 100, 150,250, 500 and 1000. Data complexity was intended in the creation of the dataset. A heterogenous dataset has been created with the combination of survival times derived from a Weibull distribution, survival status, and independent variables derived from a normal distribution. MATLAB 6.0 software package has been used for data analysis. Survival-MARS analysis performances have been compared by evaluating Generalized Cross Validation (GCV) and Sum of Squared Errors (SSE) values. Additionally, the standard deviation values of the model coefficients obtained through Cox regression analysis have been compared for each sample size. The means of SSE and GCV obtained from Cox-Snell, Deviance and Martingale residuals used in Survival-MARS analysis have been calculated. Similarly, for classic Cox regression analysis, the means of coefficients and standard deviations have been calculated.

According to the Survival-MARS analysis, it was observed that all residuals' SSE values increased as sample sizes increased. The GCV values of models built with Deviance and Martingale residuals increased as sample sizes increased. Contrastingly, the GCV values of models built with Cox-Snell residuals decreased as sample sizes decreased. In the classic Cox regression model, the standard deviations of beta coefficients that belong to explanatory variables decreased as sample sizes increased.

Keywords: Survival; Cox Regression; MARS; Residuals.

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References:

[1] Dauda, K.A. , Yahya, W. B. , Banjoko, A. W. (2015). Survival analysis with multivariate adaptive regression splines using Cox-Snell residual *Annals. Computer Science Serie*, *8*(2) ,25-41.

[2] Irwansyah, E., Nyoman, DA., Bekti, R.D. (2014).Cox proportional hazard with multivariate adaptive regression splines to analyze the product sales time in e-commerce. *2014 International Conference on Statistics and Mathematics.*

[3] Kriner,M. (July,2007). Survival analysis with multivariate adaptive regression splines. *PhD Thesis*, Mathematics, Computer Science and Statistics Faculty, Ludwig-Maximilians-Munich University,Munich, Germany.

[4] Temel, O.G ., Ankaralı, H., Yazıcı, A.C. (2010). Regresyon Modellerine Alternatif Bir Yaklaşım: MARS. *Turkiye Klinikleri J Biostat*,*2*(2),58-66.

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THE ANXIETY LEVELS OF ANESTHETIZED AND UNANESTHETIZED PATIENTS BEFORE GASTROSCOPY

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Endoscopy is currently used as the most sensitive method in the diagnosis of mucosal pathologies of the gastrointestinal (GI) duct. GI is very useful in diagnosis of ductal diseases (diagnostic endoscopy), and is often used in therapy (therapeutic endoscopy) [1].

Today, gastrointestinal endoscopy is used for a large number of treatment procedures, rather than diagnosing the diseases of the system in which it is applied. Thanks to these treatment practices, even achalasia, gastrointestinal fistulas, pancreatic pseudocysts, early gastric cancer and neuroendocrine tumors can be treated endoscopically [2].

The aim of this study is to compare the anxiety levels of anesthetized and unanesthetized patients before upper gastrointestinal system (GIS) endoscopy. Patients who had undergone only upper GIS endoscopy between October 2016 and May 2017 from the endoscopy unit of a university hospital were included in the study. The sample of the study consists of 189 patients aged 18 years or older who agreed to participate in the study to perform elective upper GIS endoscopy. The patients form two groups: 86 of them were anesthetized and the remaining 103 of the patients were unanesthetized. The sociodemographic characteristics of the patients were recorded and the Beck Anxiety Inventory (BAI) scale was used to determine the anxiety levels.

In result, the BAI score of women was found to be higher than that of men. Patients who underwent endoscopy as anesthetized had higher BAI score averages than patients unanesthetized, patients under psychiatric medication had higher scores than those without BAI score, and those with a family history of psychiatric treatment were significantly higher than the others.

Keywords: Gastrointestinal System; Endoscopy; Anxiety; Beck Anxiety Scale.

References

[1] Kırbaş, G., Üstündağ, G., & Özden, A. (2009). Üst ve alt gastrointestinal sistemin endoskopik incelemesi. *Güncel Gastroenteroloji,* 13(2), 110-121.

[2] Takekoshi, T., Baba, Y., Ota, H., et al. (1994). Endoscopicresection of earlygastric carcinoma: Results of a retrospective analysis of 308 cases. *Endoscopy,* 26(4), 352-358.

*Presenter

[3] Shepherd, H. A., Bowman, D., Hancock, B., Anglin, J., &Hewett, D. (2006). Postal consent for upper gastrointestinal endoscopy. *Gut,* 46, 37-39.

[4] Drossman, D. A., Brandt, L. J., Sears, C., Li, Z., Nat, J.,& Bozymski, E.M. (1996). A preliminary study of patients' concerns related to GI endoscopy. *Am. J. Gastroenterol,* 91, 287-291.

[5] Brandt, L. J. (2001). Patients' attitudes and apprehensions about endoscopy: How to calm troubled waters. *Am. J. Gastroenterol,* 96, 280-284.

[6] Johnson, J. E., Morrissey, J. F., Leventhal, H. (1973). Psychological preparation for an endoscopic examination. *Gastrointest Endosc.,* 19, 180-182.

[7] Hayes, A., Buffum, M., Lanier, E., Rodahl, E. & Sasso, C. (2003). A music intervention to reduce anxiety prior to gastrointestinal procedures. *Gastroenterol Nurs.,* 26, 145-149.

[8] Eren, Z. ve ark. (2012). Hemodiyaliz hastalarının yaşamında neleri değiştirebiliriz? Bir projenin sonuçları. *Turk Neph. Dial Transpl.,* 21(3), 273-281.

[9] Ulusoy, M. (1999). *Beck anksiyete envanteri: Geçerlik ve güvenirlik çalışması.* Yayımlanmamış uzmanlık tezi. Bakırköy Ruh ve Sinir Hastalıkları Hastanesi, İstanbul.

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COMPARISON OF FUNDAMENTAL MACHINE LEARNING ALGORITHMS ON EVALUATION STUDENT SURVEY

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It is no doubt that the sub-field of machine learning / artificial intelligence has increasingly gained more popularity in the past couple of years. Machine Learning is incredibly powerful to make predictions or calculated suggestions based on large amounts of data. In this study, four most popular machine learning algorithm (Support Vector Machine (SVM), Multi Layer Perceptron, Naïve Bayes and Decision Tree (J48)) were selected by literature review and compared with each other by considering accuracy rate. The 10-fold cross validation was used to calculate the accuracy of the classifiers. In detailed cross-validation analysis, each machine learning methods were compared by using WEKA 3.6 program which is a collection of machine learning algorithms for data mining tasks. The Support Vector Machine had the advantage of generating output rules with robust estimates of prediction with accuracy rate **70.88**%. While Naïve Bayes yielded **67.08%,** Decision Tree and Multi Layer Perceptron had given a prediction performance with **65.01%** and **62.85%** accuracy rate, respectively.

Keywords: Data Mining; Classification; Education; Prediction.

References

[1] Pang, B., Lee, L., &Vaithyanathan, S. (2002, July). Thumbs up?: sentiment classification using machine learning techniques. In Proceedings of the ACL-02 conference on Empirical methods in natural language processing-Volume 10 (pp. 79-86). Association for Computational Linguistics.

[2] Williams, N., Zander, S., & Armitage, G. (2006). A preliminary performance comparison of five machine learning algorithms for practical IP traffic flow classification. ACM SIGCOMM Computer Communication Review, 36(5), 5-16.

[3] Joachims, T. (1998). Text categorization with support vector machines: Learning with many relevant features. Machine learning: ECML-98, 137-142.Sebastiani, F. (2002). Machine learning in automated text categorization. ACM computing surveys (CSUR), 34(1), 1-47.

[4] Tong, S., & Koller, D. (2001). Support vector machine active learning with applications to text classification. Journal of machine learning research, 2(Nov), 45-66.

*Presenter

[5] Shipp, M. A.,Ross, K. N., Tamayo, P., Weng, A. P., Kutok, J. L., Aguiar, R. C., ... & Ray, T. S. (2002). Diffuse large B-cell lymphoma outcome prediction by gene-expression profil in gand supervised machine learning. Nature medicine, 8(1), 68-74.

[6] DeFries, R. S.,&Chan, J. C. W. (2000). Multiple criteria for evaluating machine learning algorithms for landcover classification from satellite data. Remote Sensing of Environment, 74(3), 503-515.

[7] Drucker, H.,Wu, D., & Vapnik, V. N. (1999). Support vector machines for spam categorization. IEEE Transactions on Neuralnetworks, 10(5), 1048-1054.

[8] DAVIS, R. H.,Edelman, D. B., &Gammerman, A. J. (1992). Machine-learning algorithms for credit-card applications. IMA Journal of Management Mathematics, 4(1), 43-51.

[9] Wang, Y.,Tetko, I. V., Hall, M. A., Frank, E., Facius, A., Mayer, K. F., &Mewes, H. W. (2005). Gene selection from microarray data for cancer classification—a machine learning approach.

[10] Computational biology and chemistry, 29(1), 37-46.Stallkamp, J., Schlipsing, M., Salmen, J., &Igel, C. (2012). Man vs. computer: Benchmarking machine learning algorithms for traffic sign recognition. Neural networks, 32, 323-332.

[11] Ye, Q.,Zhang, Z., &Law, R. (2009). Sentiment classification of online reviews to travel destinations by supervised machine learning approaches. Expert systems with applications, 36(3), 6527-6535.

[12] Zander, S.,Nguyen, T., &Armitage, G. (2005, November). Automated traffic classification and application identification using machine learning. In Local Computer Networks, 2005. 30th Anniversary. The IEEE Conference on (pp. 250-257). IEEE.

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DATA MINING METHODS AND THEIR APPLICATION IN HEALTH INSURANCE

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In this study, the aim is to investigate the underlying reasons for the change in the health insurance fees. We describe data mining concept, its process, techniques and CRISP-DM which are an important concept in terms of data mining. We examine relations between variables by applying CRISP-DM process using health insurance data. We use CART, C4.5 decision tree algorithms and Neural Networks model in modeling phase. Meanwhile, we use cross-validation method in modeling evaluation phase. It is shown that C4.5 model is the most appropriate model with the highest validation rate.

Keywords: CRISP-DM**;** Data Mining; CART algorithm; C4.5 algorithm; Neural Networks model.

References

[1] Singh, Y. and Chauhan, A.S. (2009). Neural networks in data mining, Journal of Theoretical and Applied Information Technology, Vol.5, No.1, pp.37-42.

[2] Patil, N., Lathi, R. and Chitre, V. (2012). Comparison of C5 & CART Classification algorithms using pruning technique, International Journal of Engineering Research&Technology (IJERT), ISSN:2278-0181, Vol.1, Issue 4.

[3] Kantardzic, M. (2011). Data Mining Concepts, Models, Methods and Algorithms, Second Edition, IEEE Press, A John Wiley&Sons, Inc.

[4] Breiman, L. Friedman, J.H., Olshen, R.A., Stone, C.J. (1984). Classification and Regression Trees. Chapman & Hall, New York.

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DETERMINATION OF THE FACTORS THAT AFFECT THE JOB SATISFACTION OF THE MEDICAL REPRESENTATIVES

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Job satisfaction is vital for the firms. The fact that job satisfaction of the employees working in the firms is high maintains the employees who adopt the productivity growth, the firm loyalty and most importantly the purpose and objectives of the firm. There are individual, organizational and socio-cultural criteria that affect job satisfaction. The measurement of job satisfaction is based on those criteria. The main aim of this study is to measure the job satisfaction levels of the medical representatives carrying on a business in the province Kayseri, to determine and prioritize the criteria affecting job satisfaction, to detect the relationship between those criteria and job satisfaction. The questionnaire content prepared in this direction consists of three parts. In this study was used to measure the demographic characteristics in the first part and the Spector Job Satisfaction scale in the second part. AHP, which is one of multi-criteria decision-making methods, was used to prioritize the criteria affecting job satisfaction. According to the study results, the mid-level job satisfaction was observed and the highest satisfaction criteria appeared as the job itself, the communication and the co-workers. It was seen that there was a positive-directed relationship between 8 criteria determined based on the correlation analysis and the job satisfaction. According to ANOVA, it was seen that there was a statistical difference between the job satisfaction and the income groups and additional opportunities. The job satisfaction criteria the communication (%13,24), the director (%12,64), the job itself (%12,60), salary/wage (%12,26) and working conditions (%11,21) and other four factors (%38,05) were respectively prioritized by AHP method. By measuring job satisfaction, the sectors or firms shall learn the job satisfaction levels of the employees, and it shall be the basis of the studies and improvements which the firms shall make in the future. By this means, the job satisfaction levels determined shall be monitored throughout the years and shall be able to be used as a guiding means to improve the job satisfaction. The abstract should contain concise information about the study.

Keywords: Medical representative; Job satisfaction, Spector scale, MCDM; AHP

References

[1] Altaş, S. S., & Çekmecelioğlu, H. G. (2007). İş tatmini, örgütsel bağlılık ve örgütsel vatandaşlık davranışının iş performansı üzerindeki etkileri: Bir araştırma. *Öneri Dergisi,* 7(28), 47-57.

[2] Bartel, A. P. (1981). Race differences in job satisfaction: A reappraisal. *The Journal of Human Resources*, 16(2), 294-303.

[3] Bender, K. A., Donohue, S. M., & Heywood, J. S. (2005). Job satisfaction and gender segregation. *Oxford economic papers*, 57(3), 479-496.

*Presenter

[4] Bovier, P. A., & Perneger, T. V. (2003). Predictors of work satisfaction among physicians. *European journal of public health*, 13(4), 299-305.

[5] Davis, K., & Newstrom, J. W. (1989). *Human Behavior At Work*. McGraw-Hill.

[6] Gazioglu, S., & Tansel, A. (2006). Job satisfaction in Britain: individual and job related factors. *Applied Economics*, 38(10), 1163-1171.

[7] Ghazzawi, I. (2008). Job satisfaction antecedents and consequences: A new conceptua framework and research agenda. *The Business Review*, Cambridge, 11(2), 1-10.

[8] Saiyadain, M. S. (2009). *Human Resources Management*. New Delhi, Indian: Tata, McGraw-Hill.

[9] Tzeng, G., & Huang, J. (2011). Multiple Attribute Decision Making Methods and Applications. The United States of America. *Taylor ve Francis Group CRC Press*.

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THE EFFECTS OF THE OFFICE ENVIRONMENTS ON THE EMPLOYEES AND AN EXAMPLE APPLICATION

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Musculoskeletal diseases, especially caused by some physical factors at work, are the most important health problems related to work. In the business life, thanks to comfortable working environment, employees can fulfill their duties in the desired manner. By examining the factors that are necessary to achieve this environment, harmony of work and people is the main aim of the science of ergonomics. Establishing ergonomic working environments is one of the most important issues that companies in the manufacturing and service sectors are dealing with.

Achieving ergonomic conditions from workplaces is a very important factor preventing the possible musculoskeletal and occupational diseases that develop over time while increasing the efficiency of the personnel, job satisfaction and customer satisfaction. Ergonomics studies; noise level, display brightness, tools and their dimensions, furniture, ventilation system, heat, humidity, lighting, etc. . This study was carried out in a call-center with an office-style working area operating in the Black Sea region. In the scope of the study, the literature was examined and the answers to the questionnaires prepared with the 5 likert scale were entered into the analysis program and evaluated.

It has been determined that the vast majority (62%) of those working in the research are female, and that more high school and associate degree graduates work in terms of education level. It was found that 86% of the workers were between the ages of 20-30 and 66% were not smoking. According to the results of the survey, the employees' environmental conditions, working postures, tools and equipment used, and overall workplace design.

Keywords: Office; Ergonomics; Design; Layout; Performance.

References

[1] UĞUR, Adem. (1994). *Çevre Sağlığının Verimlilik Üzerini Etkileri, 2. Verimlilik Kongresi,* Ankara:Milli prodüktivite Yayınları.

[2] ŞİMŞEK, Muhittin. (1994*). Mühendislikte Ergonomik Faktörler.* İstanbul:Marmara Üniversitesi Yayınları.

[3] ÖZOK, A. Fahri. (1987). *Ergonomik Açıdan Çalışma Yeri Düzenleme Ve Antropometri,* İstanbul:Türkiye Metal Sanayicileri sendikası (MESS)Yayınları.

*Presenter

[4] ÖNCER, Mustafa. (2000). *İşyeri Ortamında Çalışanların Performansını Etkileyen Fiziksel Çevre Koşulları.* Milli Prodüktivite Merkezi Verimlilik Dergisi, (3), 147.

[5] KANAWATY, George. (1997*). İş Etüdü. (Çev. Zuhal AKAL),* Ankara: Milli Prodüktivite Merkezi Yayınları.

[6] İNCİR, Gülten. (1986) *Ergonomi,* Ankara: Milli Prodüktivite Yayınları.

*Presenter

INVESTIGATION OF INTERNET ADDICTIVE ACCORDING TO DIFFERENT VARIABLES ON UNIVERSITY STUDENTS

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Nowadays, internet is the one of the most important mass media and its usage increases day by day. Though internet provides convenience, it causes many problems for users. In this study, it was aimed to determine internet addictive levels and which variables are related.

The working group consists of 2016-2017 fall semester students of Ondokuz Mayıs University. Participants in the survey were randomly selected at faculty canteens where frequently are used by students and Kurupelit campus area.

According to the results; 19.8% of participants were 1st , 30% of 2nd, 22.5% of 3rd and 27.7% of 4th class students. According to the addictive analysis results, it was determined that 47.4% of the students in the campus were addicted and 52.6% were not. It was found that 57.4% of the addicted students always keep cell phones open to use their internet connections and the purpose of using internet is social media with 62.2% and e-mail with 19.3%. Besides, it has been determined that having scholarship and presence of internet facilities in their dormitory or houses have effect on students virtual addictive.

Key Words: Internet addictive; Gender; Social network usage, Income level.

References

[1] Balcı Ş., Bülnar B., *Üniversite öğrencileri arasında internet bağımlılığı ve internet bağımlılarının profili,* Selçuk İletişim, 6:1,5-22, 2009.

[2] Ceyhan, E., Ceyhan, A. A. ve Gürcan, A. (2007). *The Validity and Reliability of the Problematic Internet Usage Scale.* Educational Sciences: Theory & Practice, 7 (1), 411-416.

*Presenter

[3] Gününç, S., Kayri, M, 2010, *Türkiye'de internet bağımlılık profili ve internet bağımlılık ölçeğinin Geliştirilmesi: Geçerlik-Güvenirlik çalışması,* Hacettepe Üniversitesi Eğitim Fakültesi Dergisi (H. U. Journal of Education) 39: 220-232.

[4] Öztürk Ö, Odabaşıoğlu G, Eraslan D, Genç Y, Kalyoncu ÖA., 2007, *İnternet bağımlılığı: Kliniği ve tedavisi.* Bağımlılık Dergisi 8:36-41.

[5] Yalçın C., (2003). *Sosyolojik Bir Bakış Açısıyla İnternet,* Sosyal Bilimler Dergisi, 27,(1), 77-89.

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DANGERS AND RISKS EXPOSED TO EMPLOYEES IN HEALTH SECTOR

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Studies on occupational health and safety vary according to the sectors. Employees in the health sector exposed to risks differ according to other sectors depending on their work conditions. Those Employees are exposed to occupational hazard such as waist, neck and back pain, injection injuries, stress and violence. All of these hazards lead to reduce work performance. Depending on increasing occupational accidents, it effects negatively the safety of both patients and employees.

In this study, the hazards and risks occurred in the health sector have been determined by literature search and precaution to reduce risks are stated. Employees are commonly faced dangers and risks in the health sector such as biological, ergonomic, physical, chemical and psychosocial.

Physicians, dentists, physiotherapists and nurses are have back pain problems in the musculoskeletal organization rather than average of society. Employees who work in nuclear medicine, radiotherapy and radiology departments are exposed to radiation and accordingly affected. Especially who works in the laboratory are adversely affected by various chemicals. Also, employed people in health sector are faced with pathogenic risks. Violence against health employe is a problem that needs to be considered.

Awareness trainings to all partner will positively contribute to protection of the physical and mental health of health employees, work performances and increasing patient satisfaction. In addition, interdisciplinary studies to be carried out will contribute to resolve such problems.

Key Words: Medicine; Worker health; Musculoskeletal problem; Risk.

Referances

[1] Ministry of Labor and Social Security, Official Gazette dated 5 November 2009, "Communiqué on Hazard Classes Regarding Occupational Health and Safety". , No: 27417

[2] F. Bayram, 2008, Occupational Health and Safety Control in Turkish Labor Law , Beta Publishing Distribution, İstanbul, p.15.

[3] Burgaz S. , 2004 ,Occupational Risks of Healthy Workers in Turkey-Chemical Hazards: Health and Society, 14(1): p.16-25.

*Presenter

[4] Özkan Ö. ,2005, Identification of Hazards and Risks and Risk Perceptions of Work and Workplace Workers at Work in Hospital. Unpublished Doctorate Thesis, Hacettepe University Institute of Health Sciences, Ankara

[5] Emiroğlu C. , 2003; January-February-March, Health and Safety of Public Works in Turkey. Journal of Occupational Health and Safety , p. 14-22

[6] Uğurlu N., Yılmaz B., Karabacak F. ,2010, Determination of Occupational Risk Factors of Nurses Working in Two Different Hospitals, İ.Ü. F.N. Journal of Nursing School, 18: 19-25.

[7] Yılmaz M. , 2003, Back / Waist Pain and Protection Measures Caused by Working Conditions in Nurses. Health and Society , p.13: 30-36.

*Presenter

SEGMENTATION AND TEXTURE BASED CLASSIFICATION OF BURN COLOR IMAGES

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For burn wound evaluation, the preliminary step is to find out the percentage of burn that the patient has. Especially in rural areas where there is lack of burn specialists, the assessment of burn wound is done by using image processing techniques performed on color images taken by mobile phones or digital cameras. First, the burn color image is segmented, then the segmented parts are classified as skin, burn or background, and finally the depth of the burn is tried to be predicted. If the images are taken based on a predefined protocol, it is also possible to estimate the percentage of burn that the patient has. The purpose of this paper is to propose a system for the preliminary step of burn wound evaluation in burn color images: separating burned skin form normal skin.

In the first part of the proposed system, classification was done based on texture information obtained from RGB and LAB color spaces of burn color images. Texture was defined by using 13 Haralick features and 7 statistical histogram features (mean, standard deviation, smoothness, skewness, uniformity, kurtosis, modified standard deviation). A total number of 364 Haralick features and 49 statistical histogram features were obtained from gray level co-occurrence matrix (calculated at 0, 45, 90, and 135 degrees) generated on R, G, B, L, A, B and gray channels. The help of specialist surgeons has been taken to create a ground truth of 55 burn images. Various supervised pattern classifier methods such as k-nearest neighbor, Bayes, decision tree, random forest, gradient boosted tree, rule induction, auto MLP, generalized linear models, artificial neural networks and deep learning have been applied on skin burn images and a performance comparison of these methods has been made on the pre-labeled burn images. Training of the classifiers was done by using 50 of the burn images. A forward selection algorithm was performed on the first three best methods, and the classification method having the highest performance was obtained. In the second part of the proposed system, a segmentation procedure was proposed to segment the burn color images into regions. 5 images were used for testing. First, the color images were segmented into 10 regions using a multi-threshold algorithm. Then, a connected component labeling algorithm was applied to the segmented images, so that the number of regions in the images were increased. At the last step, the regions were evaluated by the classification method proposed in the first part of the paper, and the regions on the burn color images were classified as skin, burn, or background.

Artificial neural network, deep learning and auto MLP were the best three classification methods to classify the burn images when all the features were included. After performing forward selection, neural network classifier with the selected features showed the highest performance (after 10-fold cross validation, calculated micro/macro averaged recall, micro averaged precision, macro averaged precision, micro averaged F-score and macro averaged F-score were 98.67%, 98.72 %, 98.99 %, 98.69 %, and 98.78 %, respectively). In the best model, only the 2 burn regions in the color images were misclassified as skin regions. Feature selection process decreased the number of features from 413 to 10, resulted with a simpler and higher performance model. For the segmentation part, 5 test images were first divided into regions and then classified by neural network model obtained in the first part of the proposed system. The average positive predictive value and the average sensitivity were 83.48 % and 80.02 %, respectively.

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Keywords: Image segmentation; Texture based classification; Haralick features; GLCM; Skin burns; Statistical histogram features; Burn segmentation.

References

[1] Acha, B., Serrano, C., Acha, J. I., & Roa, L. M. (2003). CAD Tool for Burn Diagnosis. *LNCS*, *2732*, 294–305.

[2] Albregtsen, F. (2008). Statistical Texture Measures Computed from Gray Level Cooccurrence Matrices.

[3] Alonso Betanzos, A., Arcay Varela, B., & Castro Martínez, A. (2000). Analysis and evaluation of hard and fuzzy clustering segmentation techniques in burned patient images. *Image and Vision Computing*. https://doi.org/10.1016/S0262-8856(00)00045-7

[4] Badea, M. S., Vertan, C., Florea, C., Florea, L., & Badoiu, S. (2016). Automatic burn area identification in color images. In *IEEE International Conference on Communications*. https://doi.org/10.1109/ICComm.2016.7528325

[5] Castro, A., Bóveda, C., & Arcay, B. (2006). LNCS 4142 - Analysis of Fuzzy Clustering Algorithms for the Segmentation of Burn Wounds Photographs. *LNCS*, *4142*, 491–501.

[6] Chaddad, A., Tanougast, C., Dandache, A., & Bouridane, A. (2011). Extracted haralick's texture features and morphological parameters from segmented multispectral texture bio-images for classification of colon cancer cells. *WSEAS Transactions on Biology and Biomedicine*.

[7] Eleyan, A., Dem, H., & Irel, ˙. (2011). Co-occurrence matrix and its statistical features as a new approach for face recognition. *Turk J Elec Eng & Comp Sci*, *19*(1). https://doi.org/10.3906/elk-0906-27.

[8] Espindola, G. M., Camara, G., Reis, I. A., Bins, L. S., & Monteiro, A. M. (2006). Parameter selection for region-growing image segmentation algorithms using spatial autocorrelation. *International Journal of Remote Sensing*. https://doi.org/10.1080/01431160600617194

[9] Gadkari, D. (2004). Image Quality Analysis Using Glcm. Retrieved from http://stars.library.ucf.edu/cgi/viewcontent.cgi?article=1186&context=etd

[10] Kumar, K. S., & Reddy, B. E. (2014). Wound Image Analysis Using Contour Evolution. *I.J. Image, Graphics and Signal Processing*, *6*(6), 36–42. https://doi.org/10.5815/ijigsp.2014.06.05

[11] Nirgude, R. B., & Jain, S. (n.d.). Color Image Segmentation with Different Image Segmentation Techniques. *International Journal of Engineering Research and General Science*, *2*(4).

[12] Porebski, A., Vandenbroucke, N., & Macaire, L. (2008). Haralick feature extraction from LBP images for color texture classification. In *2008 1st International Workshops on Image Processing Theory, Tools and Applications, IPTA 2008*. https://doi.org/10.1109/IPTA.2008.4743780

[13] Sabeena, B., & Raj Kumar, P. (2007). Diagnosis and Detection of Skin Burn Analysis Segmentation in Colour Skin Images. *International Journal of Advanced Research in Computer and Communication Engineering ISO Certified*, *3297*(2). https://doi.org/10.17148/IJARCCE.2017.6285

[14] Sokolova, M., & Lapalme, G. (2009). A systematic analysis of performance measures for classification tasks. *Information Processing and Management*. https://doi.org/10.1016/j.ipm.2009.03.002

*Presenter

[15] Subashini, T. S., Ramalingam, V., & Palanivel, S. (2010). Automated assessment of breast tissue density in digital mammograms. *Computer Vision and Image Understanding*. https://doi.org/10.1016/j.cviu.2009.09.009

[16] Wantanajittikul, K., Auephanwiriyakul, S., Theera-Umpon, N., & Koanantakool, T. (2011). Automatic segmentation and degree identification in burn color images. In *BMEiCON-2011 - 4th Biomedical Engineering International Conference*. https://doi.org/10.1109/BMEiCon.2012.6172044

*Presenter

PERFORMANCE ANALYSES OF PHOTOVOLTAIC SYSTEMS AND PARABOLIC COLLECTORS USING SIMULATION PROGRAMES

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The use of Renewable Energy Sources (RES) are finding wide areas. The key reason for this is the increase of prices in fuel oils and other fossil based energy resources. Another effect is the increase of global warming and pollution of the atmosphere. Photovoltaic applications are finding place because of their reliability and economic formations to compare with other solar energy systems. On the other case parabolic collectors are also another good selection for efficient RES. The key point for making the most suitable selection is their efficiency and their maintenance which is changing for different regions and conditions. In this study a simulation program is developed to realize the electrical energy output of an defined photovoltaic system and a parabolic collector module with similar implementation costs[1]. Both systems are supposed to be implemented on Denizli/Kızıldere. The physical parameters of the parabolic collectors and the photovoltaic collectors can be defined and rearranged using the user interface of the developed simulation program [2]. The incoming solar beam to the surface estimated using the Hottel's Estimation Method. The first module of the developed simulation program will estimate the incoming solar beam due to the altitude, coordinate and date-time parameters[3]. These parameters can be defined by the user of the simulation program. A second developed module will calculate the output energy of the photovoltaic module and parabolic collector modules using their physical design parameters which can be defined from the user interface[4]. Graphical relations between the cost and efficiency of both RES are shown and discussed for different seasons.

Keywords: Renewable Solar Energy Systems; Hottel's Estimation Method; Photovoltaic Systems; Parabolic Ccollectors; C#.Net.

References

[1] George C. Bakos, Design and construction of a two-axis Sun tracking system for parabolic trough collector (PTC) efficiency improvement Renewable Energy, Volume 31, Issue 15, Pages 2411-2421, December 2006.

[2] Çolak, L., Technical Optimisation, Design and Developing a Mathematical Model for Parabolic Trough Sun Tracking System , Gazi University, Ankara, 268.

[3] Uçkan,G., Özturk,HK., Çetin,E.,2011, Developing a Computer Program for the Estimation of the Incomming Sun Beam by Defining a Special Coefficient for Denizli/Turkey, *The 52nd International Conference of Scandinavian Simulation Society, İsveç, Stockholm,* ISBN: 978.

[4] Uçkan,G., İçli, S.,Öztürk,HK., 2014,Developing a Simulation Program for Estimating the Useful Output Energy of a Parabolic Collector Module. *SOLARTR 2014, Izmir Turkey, November.*

*Presenter

A COMPARISON OF ESTIMATION METHODS FOR THE PARAMETERS OF ODD WEIBULL DISTRIBUTION

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The odd Weibull distribution has attracted recent attention as lifetime data modeling since its hazard function can exhibit monotonic, unimodal and bathtub shapes. This paper focuses on the comparison of estimates of the odd Weibull distribution parameters obtained by different estimation methods: maximum likelihood, least-squares and weighted least-squares methods. Estimates are evaluated in terms of the bias and mean square error (MSE) through an extensive numerical simulation. According to the simulation results, it can be concluded that the least-square and weighted least-squares methods show good performances for most of the cases in terms of bias, while they are performing good in small number of cases with regards to MSE.

Keywords: Odd Weibull Distribution; Maximum Likelihood; Least-Squares; Weighted Least-Squares; Mean Squared Error.

References

[1] Cooray, K. (2006). Generalization of the Weibull distribution: the odd Weibull family, Stat. Model., 6, 265–277.

[2] Cooray, K. (2012).Analyzing grouped, censored, and truncated data using the odd Weibull family, Comm. Statist. Theory Methods, 41, 2661–2680

[3] Cooray, K. (2015). A study of moments and likelihood estimators of the odd Weibull distribution. Statist. Methodol. 26, 72–83.

[4] Jiang, H. Xie, M. & Tang L.C. (2008). On the odd Weibull distribution, J. Risk Reliab., 222, 583–594.

[5] Usta, I. (2013). Different estimation methods for the parameters of the extended Burr XII distribution, J. Appl. Stat. vol. 40(2), 397–414.

*Presenter

AN ARTIFICIAL NEURAL NETWORK APPROACH TO PREDICTIVE MODELLING THE HABITAT PREFERENCE OF THE STEPPE BIRDS AROUND TUZLA LAKE IN CENTRAL ANATOLIA, TURKEY

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Understanding the functioning of ecological systems consisting of a large number of strongly interacting units represents a major endeavour for scientists. To cope with the ecosystem complexity and large data sets available, ecologists nowadays have the opportunity to use machine-like learning techniques such as the artificial neural networks (ANNs). Artificial neural networks are non-linear mapping structures based on the function of the human brain. They have been shown to be universal and highly flexible function approximators for any data. Models for predicting the distribution of organisms from environmental data are widespread in ecology. This particular data set concerned the habitat preferences of four steppe bird species in Central Anatolia. Namely; skylark (*Alauda arvensis* Linnaeus, 1758), short-toed lark (*Calandrella brachydactyla* Leisler, 1814), lesser short-toed lark (*Calandrella rufescens* Vieillot, 1820), calandra lark (*Melanocorypha calandra* Linnaeus, 1766). The data has been collected from Tuzla Lake in Central Anatolia during breeding season. In field studies, the presence (1) or absence (0) of each bird species on a particular spot was recorded along with the environmental variables, and was used as dependent variable for models. There were 12 predictive variables. These were vegetation type, percent vegetation cover (%), stemheight (cm), water depth (cm), grazing, which was a semantic variable with 4 categories ranging from 0 (none) to 3 (extensive), and 6 satellite imagery bands. The images used were obtained from variables were TM1–5 and TM7. In this research was modelled the ability of artificial neural networks to predict the habitat preferences of the skylark, the short-toed lark, the lesser short-toed lark and the calandra lark in Central Anatolia, Turkey. The neural network model performed better than the logistic regression model in the presence. The bird distribution is similar in both the observation and the modeling. This response of the model to environmental variables and field observations shows similarities and indicates neural network modelling can be trusted. The vegetation type and stem height (cm) are the two most important dependent variables for models. ANN's combined with geographic information systems (GIS) provided an effective method for modeling spatial distribution in data.

Keywords: Tuzla Palas Lake; Artificial Neural Network (ANN); GIS; Habitat Preference, Turkey

References

[1] Quetglas, A. & Ordines, F., and Guijarro, B. (2011). The use of artificial neural networks (ANNs) in aquatic ecology. In *Artificial neural networks - application*. Edited by C.L.P. Hui. ISBN: 978-953-307-188-6. InTech. pp. 576–586.

[2] Lek, S., & Guégan, J.F., (1999). Artificial neural networks as a tool in ecological modelling. An introduction. *Ecological Modelling*, 120: 65–73

[3] Manel S, Williams H.C, & Ormerod S.J. (2001) Evaluating presence–absence models in ecology: theneed to account for prevalence. *Journal of Applied Ecology*, 38:921–931.

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DEVELOPING A SIMULATION PROGRAM OF A PHOTOVOLTAIC SYSTEM USING HOTTEL'S ESTIMATION METHODE

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In these days Renewable Energy Sources (RES) are becoming increasingly more popular. The key reason for this is, perhaps, the increase of prices in fuel oils and other fossil based energy resources. Another effect is the increase of global warming. Photovoltaic applications are finding place because of their reliability and economic formations to compare with other solar energy systems.

In this study a simulation program is developed to realize the electrical energy output of an photovoltaic system. The surface area of each photovoltaic panel in each module can be defined and rearranged using a developed user interface of the developed simulation program. The incoming solar beam to the surface of the photovoltaic panels are estimated using the Hottel's Estimaiton Methode. The first module of the developed simulation program will estimate the incoming solar beam due to the altitude, coordinate and date-time parameters. These parameters can be defined by the user of the simulation program. A second developed module will calculate the output energy of the photovoltaic module using the technical parameters of each photovoltaic panel, which can be defined from the user interface. Graphical analyses have been made to compare the energy outputs of the defined photovoltaic modules for different seasons.

Keywords: Solar Energy Systems; Hottel's Estimation Methode; Photovoltaic Systems; C#.Net.

References

[1] George C. Bakos, Design and construction of a two-axis Sun tracking system for parabolic trough collector (PTC) efficiency improvement Renewable Energy, Volume 31, Issue 15, Pages 2411-2421, December 2006.

[2] Çolak, L., Technical Optimisation, Design and Developing a Mathematical Model for Parabolic Trough Sun Tracking System , Gazi University, Ankara, 268.

[3] Uçkan,G., Özturk,HK., Çetin,E.,2011, Developing a Computer Program for the Estimation of the Incomming Sun Beam by Defining a Special Coefficient for Denizli/Turkey, *The 52nd International Conference of Scandinavian Simulation Society, İsveç, Stockholm,* ISBN: 978.

[4] Uçkan,G., İçli, S.,Öztürk,HK., 2014,Developing a Simulation Program for Estimating the Useful Output Energy of a Parabolic Collector Module. *SOLARTR 2014, Izmir Turkey, November.*

*Presenter

ON A NEW GROWTH MODEL NAMELY KORKMAZ MODEL COMPARED WITH SOME GROWTH MODELS

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For growth models, in addition to some classical growth models, I derived a new model. In this study, I derived a new model by using this expression: "Growth models has generally sigmoidal shape. In this shape there is one inflection point. Until this inflection point the graph is convex that's until this inflection point the growth rate is increasing. At this infection point the growth rate reaches maximum value. After this inflection point the graph is concave that's after this inflection point the growth rate is decreasing." Growth models Ire generally derived by using the last part of this situation. That's Growth models were generally derived by using this expression: "Growth rate goes to zero when the time is too large or approaches infinity". After introducing this new model, namely Korkmaz model, I applied two sets of data. In addition to Korkmaz model, I used growth models such as Logistic, Brody, Gompertz, and Von Bertalanffy. They are compared by using error sum of squares criteria. According to this criteria, it was seen that none of the models used has minimum error sum of squares for each data set. That's while one model is the best model for one data set, that model could not be the best model for the other data set. Actually, Although Korkmaz model is not the best model for two sets of data by using error sum of squares criteria, Korkmaz model is one of the best models in this study. For that reason, use of Korkmaz model in addition to classical growth models in their studies on growth data was suggested to the researchers using growth models in their studies.

Keywords: Growth Models; Korkmaz Model; Inflection Point

References

[1] Bethard, G. L. (1997). A micro computer simulation to evaluate management strategies for rearing dairy replacement, (*Ph. D. Thesis*), April 18, 1997 Blacksburg, Virginia

[2] Brody, B. (1945). Bioenergetics and Growth, *Reinhold Publishing Corporation*, New York

[3] Brown, J. E, Brown, C. J, & Butts, W. T. (1972). A discussion of the aspects of weight, mature weight and rate of maturing in Hereford and Angus cattle. *J. Anim. Sci.* 34: 525-537

[4] Fabens, A. J. (1965). Properties and fitting of the Von Bertalanffy growth curve. *Growth, Development and Aging*, 29:265

[5] Fitzhugh, H. A. (1976). Analysis of growth curves and strategies for altering their shape. *J. Anim. Sci.* 42: 1036-1051

*Presenter

[6] Gompertz, B. (1825). On the nature of function expensive of the law of human mortality, and on a new model of determining the value of life contingencies, *philos,Trans. K. Soc..London* 115: 513-585

[7] Goonewardene, L. A., Berg, R. T., & Hardin, R. T. (1981). A study growth of beef cattle. *Can. J. Anim. Sci*, 61. 1041-1048

[8] Kara, C., Alp, A., & Can, F. (2011). Growth and Reproductive Properties of Flathead Trout (Salmo platycephalus Behnke, 1968) Population from Zamanti Stream, Seyhan River, Turkey, *Turkish Journal of Fisheries and Aquatic Sciences* 11, 367-375

[9] Richards, F. J. (1959). A flexible growth function for empirical use. *J. Exp. Bot.* 10:290

[10] Ricker, W. E. (1979). Growth rates and models. *Fish Physiol.* 8: 677-743

[11] Russell, T. S. (1969). Mathematical Models of Growth. P. 374-391. In: Animal Growth and Nutrition. *E. S. E. Hafez and I. A. Dyer, ed. Lea and Febiger*, Philadelphia, PA

[12] Von, Bertalanffy, L. (1957). Quantitative Laws in Metabolism and Growth, *The Quarterly Review of Biology*, Vol. 3, No. 2, p.218

[13] Yıldızbakan, A. (2005). Analysis on mathematical models of tree growth and comparison of these models, *MSc Thesis (Turkish)*, University of Cukurova, Adana-Turkey

*Presenter

MODELING OF DUPLEX STAINLESS STEEL MICROSTRUCTURES WITH IMAGE PROCESSING

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Estimating the problems that occur during or after forming is very important in terms of cost and time. The problems that will occur in forming processes are determined by modeling with the finite elements method. The accuracy of results of the analysis with the finite element method are only possible with the correct modeling. In this study, hardness measurement was tried to be modeled on duplex stainless steel sheets. The double-phase structure in the duplex stainless steel microstructure is photographed with a microscope and transferred to an image processing program. It was modeled in the ABAQUS finite element program by vectorising the image with image processing program. The results of the analysis were compared with the experimental results and it was seen that the results were consistent.

Keywords: Microstructure Modelling; FEM; Image Processing

References

[1] Ekici, R., Kemal Apalak, M., Yildirim, M., & Nair, F. (2014). Simulated and actual micro-structure models on the indentation behaviors of particle reinforced metal matrix composites. *Materials Science and Engineering: A, 606*(Supplement C), 290-298. doi:https://doi.org/10.1016/j.msea.2014.03.062

[2] Jorge Júnior, A. M., Reis, G. S., & Balancin, O. (2011). Influence of the microstructure on the plastic behaviour of duplex stainless steels. *Materials Science and Engineering: A, 528*(6), 2259-2264. doi:http://dx.doi.org/10.1016/j.msea.2010.11.087

[3] Li, S., Ren, X., Ji, X., & Gui, Y. (2014). Effects of microstructure changes on the superplasticity of 2205 duplex stainless steel. *Materials & Design, 55*, 146-151. doi:http://dx.doi.org/10.1016/j.matdes.2013.09.042

[4] Manual, A. U. (2010). Version 6.10. *ABAQUS Inc*.

[5] Rana, R., Loiseaux, J., & Lahaye, C. (2012). Microstructure, Mechanical Properties and Formability of a Duplex Steel. In T. Chandra, M. Ionescu, & D. Mantovani (Eds.), *Thermec 2011, Pts 1-4* (Vol. 706-709, pp. 2271-2277). Stafa-Zurich: Trans Tech Publications Ltd.

[6] Yıldızlı, K. (2015). Investigation on the microstructure and toughness properties of austenitic and duplex stainless steels weldments under cryogenic conditions. *Materials & Design, 77*, 83-94. doi:http://dx.doi.org/10.1016/j.matdes.2015.04.008

*Presenter

POSITIVE DISCRIMINATION, AN ALLEGED PHRASE OR EXACTLY THE TRUTH? STATISTICAL ANALYSIS ACCORDING TO AN EDUCATIONAL STATUS BY PROVINCE

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The link between economic development and education is undeniable. It is therefore a condition for all segments (male and/or female) of the community to be educated at the highest possible level for complete economic development. In this study, it is aimed to see the provincial effect of efforts to meet the lack of educated human resources, especially by the positive discrimination practices against women in recent years within the human population of our country and compare the educational efficiencies of provinces according to gender and total.

For this purpose, two different models of DEA are used according to education level. Later, the results compared with Kruskall-Wallis Tests.

It is seen that educational performance of provinces are significantly different according to genders. Hence, İt is concluded that more positive discrimination should be made in favor of women.

Keywords: Positive Discrimination; Education; DEA; Provinces.

References

[1] Charnes, A. & Cooper, W., W., Rhodes, E. (1978). Measuring the efficiency of decision making units, *European journal of operational research* 2(6): 429-444.

[2] Ruggiero, J., (1996). Efficiency of educational production: An analysis of New York school districts. *The Review of Economics and Statistics*, 78(3) 499-509. [

[3] Ruggiero, J., (2004). Performance evaluation in education, *Handbook on data envelopment analysis, Springer*, pp. 323-346

[4] Bal, H., Gölcükcü, A., (2015) BAL, H., & GÖLCÜKCÜ, A. (2016). Academıc Efficıency Comparıson of Countrıes via DEA. In *Proceedings of the International Conference on Data Envelopment Analysis.*

*Presenter

DETERMINATION OF STRAIN BY IMAGE PROCESSING TECHNIQUE IN SHEET METAL FORMING

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Sheet metals are used in many forms, such as car hoods, pots, pressure tanks and metal sink. In order to obtain the desired geometry, it is necessary to determine the forming limits of the sheet metals. For this reason, it is necessary to know the strains (amount of deformation) on the sheet metal after forming. In this study, image processing technique was used to determine the strain on the sheet metal. The circles were created by etching on the sheet metal surface. After the forming process, the ellipse-shaped circles are photographed with a camera equipped with a macro lens. Photos transferred to computer are processed by MATLAB and strains are calculated. As a result, the forming limit diagram (FLD) was constructed with the obtained strain values.

Keywords: Strain Measurement; Sheet Metal Forming; FLD; Image Processing

References

[1] Bong, H. J., Barlat, F., Lee, M.-G., & Ahn, D. C. (2012). The forming limit diagram of ferritic stainless steel sheets: Experiments and modeling. *International Journal of Mechanical Sciences, 64*(1), 1-10. doi:http://dx.doi.org/10.1016/j.ijmecsci.2012.08.009

[2] Çapan, L. (1999). *Metallere plastik şekil verme*: Çağlayan Kitabevi.

[3] Danckert, J., & Wanheim, T. (1979). The use of a square grid as an alternative to a circular grid in the determination of strains. *Journal of Mechanical Working Technology, 3*(1), 5-15.

[4] Kalpakjian, S., & Schmid, S. (2008). *Manufacturing Processes for Engineering Materials, 5/E*: Prentice Hall.

[5] Li, X.-q., Song, N., & Guo, G.-q. (2012). Experimental measurement and theoretical prediction of forming limit curve for aluminum alloy 2B06. *Transactions of Nonferrous Metals Society of China, 22, Supplement 2*, s335-s342. doi:http://dx.doi.org/10.1016/S1003-6326(12)61728-2

[6] Ozturk, F., Dilmec, M., Turkoz, M., Ece, R. E., & Halkaci, H. S. (2009). *Grid marking and measurement methods for sheet metal formability.* Paper presented at the 5th International Conference and Exhibition on Design and Production of MACHINES and DIES/MOLDS.

*Presenter

[7] Sklad, M., Atzema, E., Schouten, F., de Bruine, M., & Emrich, A. (2008). *Experimental Study of forming limits in multistage deformation processes.* Paper presented at the Proceedings of IDDRG 2008, International Conference.

[8] Sklad, M., Atzema, E., Schouten, F., de Bruine, M., & Verhaeghe, J. (2009). CRITICAL DEFORMATION UNDER SHEAR-TENSION LOADING IN MULTISTAGE PROCESSES.

[9] Sklad, M. P., & Verhaeghe, J. D. (2010). *Forming limit curve based on shear under tension failure criterion*: na.

*Presenter

ANALYZING THE GENDER AND PHYSICAL CHARACTERISTICS EFFECTS ON WEIGHT BY USING MULTIVARIATE ADAPTIVE REGRESSION SPLINES (MARS)

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In parametric methods, the parameters of the pre-determined model are estimated, while in non-parametric methods the aim is to directly estimate the regression function. Non-parametric methods give more reliable results in cases where the number of data and number of variables large and loss data is available. In this study was mentioned about application steps of model and main concepts of a non-parametric method MARS (Multivariate Adaptive Regression Splines). Also, the relationship between physical characteristics and gender on weight was examined. In this study as independent variables are gender, stature, arm length, shoulder width, neck width used, and as dependent variable is weight used.

Keywords: MARS; Basic Function; Gender; Physical Characteristics.

References

[1] Kolyshkina, I., Sylvia, W. (2004). "Enhancing Generalised Linear Models With Data Mining", Casualty Actuarial Society, Arlington, Virginia, 279-290.

[2] Xu, QS., Daszykowski, M., Walczak, B., Daeyaert, F., DeJonge MR., Heeres, J., Koymans, LMH., Lewi, PJ., Vinkers, HM., Janssen, PA., Massart, DL. (2004). "Multivariate Adaptive Regression Splines, Studies of HIV Reverse Transcriptase İnhibitors", Chemometrics and Intelligent Laboratory Systems, 72:27-34.

[3] Friedman, JH. (1991). "Multivariate Adaptive Regression Splines", The Annals of Statistics, 19(1): 1-67.

*Presenter

SURFACES FAMILY WITH A COMMON MANNHEIM GEODESIC CURVE

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In this paper, We analyzed surfaces family possessing an Mannheim partner of a given curve as a geodesic. Using the Frenet frame of the curve in Euclidean 3-space, we express the family of surfaces as a linear combination of the components of this frame, and derive the necessary and sufficient conditions for coefficents to satisfy both the geodesic and isoparametric requirements. The extension to ruled surfaces is also outlined**.** Finally, examples are given to show the family of surfaces with common Mannheim geodesic curve.

Keywords: Geodesic Curve; Mannheim Partner; Frenet Frame; Ruled Surface.

References

[1] G. J. Wang, K. Tang, C. L. Tai. (2004) . Parametric representation of a surface pencil with a common spatial geodesic, *Computer. Aided Design*, 36 (5) , 447-459.

[2] E. Kasap, F.T. Akyildiz, K. Orbay. (2008). A generalization of surfaces family with common spatial geodesic,. *Applied Mathematics and Computation*, 201, 781-789.

[3] B. O'Neill. (1966). Elementary Differential Geometry, Academic Press Inc., New York.

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SURFACES FAMILY WITH A COMMON MANNHEIM ASYMPTOTIC CURVE

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In this paper, We analyzed surfaces family possessing an Mannheim partner of a given curve as a asymptotic. Using the Frenet frame of the curve in Euclidean 3-space, we express the family of surfaces as a linear combination of the components of this frame, and derive the necessary and sufficient conditions for coefficents to satisfy both the asymptotic and isoparametric requirements. The extension to ruled surfaces is also outlined**.** Finally, examples are given to show the family of surfaces with common Mannheim asymptotic curve.

Keywords: Asymptotic Curve; Mannheim Partner; Frenet Frame; Ruled Surface.

References

[1] Atalay Ş. G. , Kasap E. (2016). Surfaces Family With Common Smarandache Asymptotic Curve. *Boletim da Sociedada Paranaense de Matematica*, 34, 187-202.

[2] Bayram E., Güler F. , Kasap E. (2012). Parametric representation of a surface pencil with a common asymptotic curve. *Computer Aided Design,* doi:10.1016/j.cad.2012.02.007.

[3] B. O'Neill. (1966). Elementary Differential Geometry, Academic Press Inc., New York.

*Presenter

THE STATISTICAL ESTIMATION OF THE POTENTIAL DISTRIBUTION OF *Serinus pusillus* (PALLAS, 1811) IN TURKEY BASED ECOLOGICAL SPECIES MODEL

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Distribution of the species can be modeled in relation to climate data with Geographic Information Systems (GIS) in ecology. With modeling, the possible effects of climate change on the present and future distribution of species can be estimated, which is an innovative GIS-based method. This method is increasingly being used in bioinformatics. In this study, the distribution model of Red-fronted Serin *Serinus pusillus* (Pallas, 1811) which is resident in Turkey, with climatic parameters has been analyzed by Maximum Entropy Modeling (Maxent). To avoid highly correlated and redundant information, we performed Pearson correlation tests by using SPSS pocket programme for each of the environmental variables. According to the analysis results were used 9 environmental variables and 73 different sampling for breeding period, 7 environmental variables and 21 different sampling data for wintering period in modeling. The most contributing environmental variables in modeling, and the different locations of the species have been used to determine the potential breeding and wintering distribution in accordance to a climate change scenario in Maxent. The area under of a ROC curve (AUC) for training data was obtained (0.993±0.001 for breeding period; 0.996±0.001 for wintering period). The present distribution is similar in both the observation and the modeling. The widespread breeding distribution is seen in the Southern, Northeast and Western Anatolia, the Aegean and Mediterranean Regions (Ilgaz, Uludağ, Western – Central Taurus, Erciyes, Engizek, Palandöken, Eastern Black Sea, Yalnızçam, Mesut, Arasgüneyi, Allahüekber, Süphan, Nemrut Mountains). The widespread wintering distribution is seen in the South and West Anatolia (Western – Central Taurus, Nur, Erciyes, Köroğlu, Sündiken, Uludağ ve Simav Mountains). The future modeling with different models is overlapping with each other. In the future it is predicted that it will have a gradually decrease and disappear in some regions breeding and wintering distribution than now. Seasonal temperature and precipitation are the most important environmental variables, contributing to at least 65% of the models.

Key words: *Serinus Pusillus, Maxent, Ecological Niche Modelling, Bioinformatics, Turkey*

References:

[1] Hijmans, R.J., Guarino, L., & Mathur, P. (2012). DIVA GIS Version 7.5 Manual. [Online]. http://www.diva-gis.org/docs/DIVA GIS_manual_7.pdf.

[2] Elith, J., Phillips, S.J., Hastie, T., Dudík, M., & Chee, Y.E., Yates, C.J. (2011). A statistical explanation of MaxEnt for ecologists. *Diversity and Distributions*, 17 (1), 43-57.

[3] Phillips, S.J. (2010). A brief tutorial on Maxent. *Lessons in Conservation*, 3, 107-135.

*Presenter

RNA-SEQ ANALYSIS AND TRANSCRIPTOME ASSEMBLY FOR EUROPEAN HAZELNUT (CORYLUS AVELLANA L.) LEAF BUDS

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The control of bud burst process depending on temperature is crucial factor in woody perennial plants to survive in unfavorable ecological conditions [1,2]. Although it has important economic and agronomic values, little information is available on the molecular mechanism of the bud burst process in *Corylus avellana*. Here for the first time, we conducted a *de novo* transcriptome-based experiment using eco-dormant leaf bud tissues collected from two hazelnuts genotypes altering in their bud burst time. Four transcriptome libraries were constructed from the leaf bud tissues and sequenced via Illumina platform. Transcriptome analyzes contained 86,542 unigenes with a mean length of 1,189 nt and an N50 of 1,916 nt. Among these unigenes, 63,854 (73,78%) of them were annotated by at least one database. In KEGG network, transcripts associated with the phenylpropanoid metabolism and phytohormone biosynthesis and signal transduction were enriched and they analyzed in terms of the leaf bud burst mechanism. Analyses of phytohormone-associated genes suggest important changes in responses to gibberellic acid, auxin, and brassinosteroids take place during bud burst. Approximately 2,163 putative transcription factors were predicted, of which the largest number of unique transcripts belonged to the MYB transcription factor family. These results contribute to a better understanding of the regulation of bud burst genes in perennial plants.

Keywords: Bud Burst; Dormancy; Hazelnut; Phenylpropanoid Metabolism; Phytohormone Biosynthesis; RNA-Seq

References

[1] Derory, J., Léger, P., Garcia, V., Schaeffer, J., Hauser, M.-T., Salin, F., . . . Kremer, A. (2006). Transcriptome analysis of bud burst in sessile oak (Quercus petraea). *New Phytologist, 170*(4), 723-738. doi:10.1111/j.1469-8137.2006.01721.x

[2] Kumar, G., Gupta, K., Pathania, S., Swarnkar, M. K., Rattan, U. K., Singh, G., . . . Singh, A. K. (2017). Chilling Affects Phytohormone and Post-Embryonic Development Pathways during Bud Break and Fruit Set in Apple (Malus domestica Borkh.). *Scientific Reports, 7*, 42593. doi:10.1038/srep42593

*Presenter

A NEW APPROACH TO ASYMMETRIC CRYPTOGRAPHY BY USING POWER FIBONACCI SEQUENCE MODULE M

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In this paper, we have studied on adapting to public key cryptography power Fibonacci sequence module m. To do this, we determine optimal problem of mathematical difficult problems which is used asymmetric cryptography. We have rearranged this problem by using power Fibonacci sequence module m and by means of this sequences, we have made the mathematical difficult problem which is used only in prime modules is also useful for composite modules. Thus we have made this problem more difficult. Then we have constructed cryptographic system based on this more difficult problem which has rearranged. Hence, we have obtained a better cryptosystem.

Keywords: Asymmetric Cryptography; Power Fibonacci Sequence Module m; Discrete Logarithm Problem.

References

[1] Stinson, D. R. (2002). *Cryptography Theory and Practice*. Chapman & Hall / CRC, New York.

[2] Ide J., & Renault, M.S. (2012). Power Fibonacci Sequences. *The Fibonacci Quarterly*, 50(2), 175 – 180.

[3] Zhu, H. (2001). *Survey of Computational Assumptions Used in Cryptography Broken or Not by Shor's Algoritm*. Master Thesis, McGill University School of Computer Science, Montreal.

*Presenter

COMBINING DIFFERENT EFFICIENCY SCORES WITH THE COPULA

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One of the most frequently used methods of evaluating the performance of units operating in today's intense competitive environment is efficiency analysis. The efficiency analysis represents how we can produce the best output with available input. It also helps to determine its place in the competitive environment where any unit. Commonly used methods for efficiency analysis are parametric stochastic frontier analysis (SFA) and nonparametric data envelopment analysis (DEA). The aim of this study was to model dependency structure of the same units efficiency values obtained from copula is to achieve a single efficiency score. Copulas reveals the dependence structure between random variables. Copulas are functions that uniformly distribute on univariate margins [0;1], and bind multivariate distributions to these univariate margins. Determining the dependency of the efficiency values with the copula method will increase our modeling power in the analysis. Therefore, copulas remove the problem of dimensionality in multivariate analysis and provide us with a single distribution parameter, thus allowing us to reach more concrete models.

Keywords: Copula Approach; Efficiency Analysis; SFA; DEA.

References

[1] Kolev, N., & Paiva, D. (2009). Copula-based regression models: A survey. *Journal of statistical planning and inference*, *139*(11), 3847-3856.

[2] Ayuso, M., Bermúdez, L., & Santolino, M. (2016). Copula-based regression modeling of bivariate severity of temporary disability and permanent motor injuries. *Accident Analysis & Prevention*, *89*, 142-150.

[3] Parsa, R. A., & Klugman, S. A. (2011). Copula regression. *Variance Advancing and Science of Risk*, *5*, 45-54.

*Presenter

A NEW WEIGHTS METHOD FOR CROSS EFFICIENCY BASED ON GOAL PROGRAMMING IN DATA ENVELOPMENT ANALYSIS

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Performance evaluation is one of the most highlighted elements in any performance management. Among many performance evaluation methods, data envelopment analysis (DEA) has been widely used to evaluate the relative performance of decision making units (DMUs). DEA produces a efficiency score of performance for each of DMUs. However, the DEA-based evaluation may suffer from lack of discrimination particularly when multiple DMUs are classified as efficient. Thus, the cross-efficiency evaluation method is suggested by Sexton et al. to overcome this inability of DEA in discriminating among efficient DMUs. In addition, the cross efficiency method has some deficiencies as the cross efficiency scores depending on the optimal input-output weights obtained by classical DEA may not be unique. Therefore, a new selection of weights method in cross evaluation based on goal programming is proposed for DMUs in this study. Furthermore, efficiency of international airports in Turkey is examined by using DEA based on goal programming.

Keywords: Data Envelopment Analysis; Cross Efficiency; Goal Programming**.**

References

[1] Sexton, T. R., Silkman, R. H., & Hogan, A. J. (1986). Data envelopment analysis: Critique and extensions. *New Directions for Evaluation*, *1986*(32), 73-105.

[2] Cooper, W. W., Ruiz, J. L., & Sirvent, I. (2007). Choosing weights from alternative optimal solutions of dual multiplier models in DEA. *European Journal of Operational Research*, *180*(1), 443-458.

[3] Bal, H., Örkcü, H. H., & Çelebioğlu, S. (2010). Improving the discrimination power and weights dispersion in the data envelopment analysis. *Computers & Operations Research*, *37*(1), 99-107.

*Presenter

EXAMINATION OF DIFFERENCES IN ACADEMICIANS' COMMUNICATION SKILLS IN TERMS OF DEMOGRAPHIC CHARACTERISTICS THROUGH STATISTICAL TECHNIQUES

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The aim of this study is to determine to what extent the academicians, who are the one of the leading stakeholders of the education world, differ in terms of demographic characteristics while making contact with their environment by using statistical techniques.

Human being is a collectively living creature. Communication, therefore, constitutes an inevitable and important dimension of human life of the human being who is a social entity. Each one living in a society is in communication with each other, whether they are aware or not. People communicate emotions, thoughts and dreams, and their problems to each other in communication [1]

Communication means the unilateral or mutual sharing of feelings, thoughts, knowledge or behaviors between two or more people or groups of people. While making these exchanges, various types are used. Among these types there are four types mentioned below:

1) Communication with language,
2) Communication with mimics,
3) Communication with figures and drawings,
4) Communication with signs.

As a result of the information provided above, the data were collected from 408 academicians via survey method by making use of simple random sampling. It was determined that what type of differences the academicians have when making contact their environment in terms of demographic characteristics such as gender, age, educational status, marital status, etc. SPSS package program was used during the analysis phase.

Keywords: Statistical Techniques; SPSS; Communication Skills.

References

[1] http://urlkisaltma.com/7Zl1M. (Acessed: 15.10.2017)

[2] Jones, C. M. (1999). Shifting sands: Women, men, and communication. Journal of Communication, 49, 148-155.

[3] Buckman, R. (2001). Communication skills in palliative care. Neurologic Clinics, 19(4), 989-1004.

*Presenter

[4] Schulz, B. (2008). The importance of soft skills: Education beyond academic knowledge, Journal of Language and Communication, June, 146-154.

[5] Black, K. A. (2000). Gender differences in adolescents' behavior during conflict resolution tasks with best friends. Adolescence, 35(139), 499-512.

[6] Johnson, D. W. (1996). Reaching out: Interpersonal effectiveness and self-actualization, 6th ed. Boston, Allyn & Bacon.

[7] Nelson-Jones, R. (2002). Essential counselling and therapy skills: The skilled client model. London: SAGE Publications Ltd.

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ON HERMITE-HADAMARD TYPE INEQUALITIES WITH RESPECT TO THE GENERALIZATION OF SOME TYPES OF S-CONVEXITY

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In this paper, the authors give a new concept which is a generalization of the concepts s-convexity,GA-s-convexity, harmonically s-convexity and (p; s)-convexity establish some new Hermite-Hadamard type inequalities for this class of functions. Some natural applications to special means of real numbers are also given.

Keywords: Mφa-S-Convex Function; Hermite-Hadamard Type Inequality.

References

[1] Aczel, J. (1947). The notion of mean values, Norske Vid. Selsk. Forhdl., Trondhjem 19 83-86.

[2] Aczel, J. (1947). A generalization of the notion of convex functions, Norske Vid. Selsk. Forhd., Trondhjem 19 (24) 87-90.

[3] Aumann G. (1933). Konvexe Funktionen und Induktion bei Ungleichungen zwischen Mittelverten, Bayer. Akad. Wiss.Math.-Natur. Kl. Abh., Math. Ann. 109, 405-413.

[4] Avci, M., Kavurmaci, H. and Özdemir, M. E. (2011). New inequalities of Hermite-Hadamard type via s-convex functions in the second sense with applications, Appl. Math. Comput., vol. 217,pp. 5171-5176,

[5] Anderson, G.D., Vamanamurthy M.K. and Vuorinen, M. (2007). Generalized convexity and inequalities, Journal of Mathematical Analysis and Applications 335 (2) 1294-1308.

[6] Dragomir, S.S., Agarwal, R.P. (1998). Two Inequalities for Differentiable Mappings and Applications to Special Means of Real Numbers and to Trapezoidal Formula, Appl. Math. Lett. 11 (5) 91-95.

[7] Dragomir, S. S. – Fitzpatrick, S. (1999). The Hadamard's inequality for s-convex functions in the second sense, Demonstr. Math., 32 (4) 687-696.

[8] Hudzik, H. and Maligranda, L. (1994). Some remarks on s-convex functions, Aequationes Math., 48, 100-111.

*Presenter

[9] İşcan, İ. (2013). A new generalization of some integral inequalities for convex functions, Mathematical Sciences, 7:22, 1-8.

[10] İşcan, İ. (2013). New estimates on generalization of some integral inequalities for s-convex functions and their applications, International Journal of Pure and Applied Mathematics, 86 (4), 727-746.

[11] İşcan, İ. (2014). Some New Hermite-Hadamard Type Inequalities for Geometrically Convex Functions, Mathematics and Statistics 1(2), 86-91.

[12] İşcan, İ. (2014). Hermite-Hadamard type inequalities for harmonically convex functions, Hacettepe Journal of Mathematics and Statistics, 43 (6), 935-942.

[13] İşcan, İ. (2014). Some new general integral inequalities for h-convex and h-concave functions, Adv. Pure Appl. Math. 5 (1), 21-29.

[14] İşcan, İ. (2014). Hermite-Hadamard type inequalities for GA-s-convex functions, Le Matematiche, Vol. LXIX Fasc. II, pp. 129-146.

[15] İşcan, İ. (2015). Hermite-Hadamard-Fejer type inequalities for convex functions via fractional integrals, Studia Universitatis Babes-Bolyai Mathematica, no.3, 355-366.

[16] İşcan, İ. and Kunt, M. (2015). Hermite-Hadamard-Fejer type inequalities for harmonically s-convex functions via fractional integrals, The Australian Journal of Mathematical Analysis and Applications, Volume 12, Issue 1, Article 10, , pp. 1-16.

[17] İşcan, İ. (2016). Ostrowski type inequalities for p-convex functions, New Trends in Mathematical

Sciences, in press.

[18] İşcan, İ. (2016). Hermite-Hadamard type inequalities for p-convex functions, International Journal of Analysis and Applications, Volume 11, Number 2 137-145.

[19] Kirmaci, U.S. (2004). Inequalities for differentiable mappings and applications to special means of real numbers and to midpoint formula, Appl. Math. Comput. 147 137-146.

[20] Kilbas, A.A., Srivastava, H.M. and Trujillo, J.J. (2006). Theory and applications of fractional differential equations, Amsterdam, Elsevier,.

[21] Kirmaci, U. S., Bakula, M. K., Özdemir M. E. and Pecaric J. (2007) Hadamard-type inequalities for s-convex functions, Applied Mathematics and Computation, 26-35.

[22] Matkowski, J. (2003/2004). Convex functions with respect to a mean and a characterization of quasi-arithmetic means, Real Anal. Exchange, 29, 229-246.

[23] Niculescu, C. P. (2000). Convexity according to the geometric mean, Math. Inequal. Appl., vol. 3, no. 2, pp. 155-167,

[24] Niculescu, C.P. (2003). Convexity according to means, Math. Inequal. Appl., 6, 571-579.

[25] Orlicz, W. (1961). A note on modular spaces I, Bull. Acad. Polon. Sci. Ser. Math. Astronom. Phys., 9, 157-162.

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HERMITE-HADAMARD TYPE INEQUALITIES FOR MφA-CONVEX FUNCTIONS

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In this paper, This article deals with the different classes of convexity and generalizations. The authors reveal the new generalization of the definition of convexity that can reduce many order of convexity and constitute some new Hermite-Hadamard type inequalities for this class of functions.

Keywords: Mφa Convex Function; Hermite-Hadamard Type Inequality.

References

[1] Aczel, J. (1947). The notion of mean values, Norske Vid. Selsk. Forhdl., Trondhjem 19 83-86.

[2] Aczel, J. (1947). A generalization of the notion of convex functions, Norske Vid. Selsk. Forhd., Trondhjem 19 (24) 87-90.

[3] Aumann G. (1933). Konvexe Funktionen und Induktion bei Ungleichungen zwischen Mittelverten, Bayer. Akad. Wiss.Math.-Natur. Kl. Abh., Math. Ann. 109, 405-413.

[4] Avci, M., Kavurmaci, H. and Özdemir, M. E. (2011). New inequalities of Hermite-Hadamard type via s-convex functions in the second sense with applications, Appl. Math. Comput., vol. 217,pp. 5171-5176,

[5] Anderson, G.D., Vamanamurthy M.K. and Vuorinen, M. (2007). Generalized convexity and inequalities, Journal of Mathematical Analysis and Applications 335 (2) 1294-1308.

[6] Dragomir, S.S., Agarwal, R.P. (1998). Two Inequalities for Differentiable Mappings and Applications to Special Means of Real Numbers and to Trapezoidal Formula, Appl. Math. Lett. 11 (5) 91-95.

[7] Dragomir, S. S. – Fitzpatrick, S. (1999). The Hadamard's inequality for s-convex functions in the second sense, Demonstr. Math. 32 (4) 687-696.

[8] Kunt, M. İşcan, İ. (2016). On new inequalities of Hermite-Hadamard-Fejer type for GA-s-convex functions via fractional integrals, Konuralp journal of Mathematics, 4 (1), 130-139.

*Presenter

[9] İşcan, İ. (2013). A new generalization of some integral inequalities for convex functions, Mathematical Sciences, 7:22, 1-8.

[10] İşcan, İ. (2013). New estimates on generalization of some integral inequalities for s-convex functions and their applications, International Journal of Pure and Applied Mathematics, 86 (4), 727-746.

[11] İşcan, İ. (2014) Hermite-Hadamard type inequalities for harmonically convex functions, Hacettepe Journal of Mathematics and Statistics, 43 (6), 935-942.

[12] İşcan, İ. (2014). Some new general integral inequalities for h-convex and h-concave functions, Adv. Pure Appl. Math. 5 (1), 21-29.

[13] İşcan, İ. (2014).Hermite-Hadamard type inequalities for GA-s-convex functions, Le Matematiche, Vol. LXIX Fasc. II, pp. 129-146.

[14] İşcan, İ. (2015). Hermite-Hadamard-Fejer type inequalities for convex functions via fractional integrals, Studia Universitatis Babes-Bolyai Mathematica, no.3, 355-366.

[15] İşcan, İ. (2016). Ostrowski type inequalities for p-convex functions, New Trends in Mathematical

Sciences, in press.

[16] İşcan, İ. (2016). Hermite-Hadamard type inequalities for p-convex functions, International Journal of Analysis and Applications, Volume 11, Number 2 137-145.

[17] Kirmaci, U.S. (2004). Inequalities for differentiable mappings and applications to special means of real numbers and to midpoint formula, Appl. Math. Comput. 147 137-146.

[18] Matkowski, J. (2003/2004). Convex functions with respect to a mean and a characterization of quasi-arithmetic means, Real Anal. Exchange, 29, 229-246.

[19] Niculescu, C. P. (2000). Convexity according to the geometric mean, Math. Inequal. Appl., vol. 3, no. 2, pp. 155-167,

[20] Niculescu, C.P. (2003). Convexity according to means, Math. Inequal. Appl., 6, 571-579.

[21] Orlicz, W. (1961). A note on modular spaces I, Bull. Acad. Polon. Sci. Ser. Math. Astronom. Phys., 9, 157-162.

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PREDICTION OF AN UPPER BOUND OF GENERALIZED CROSS VALIDATION IN MULTIVARIATE ADAPTIVE REGRESSION SPLINES IN AGRICULTURAL STUDIES

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It is known that smaller generalized cross validation (GCV) is better within the scope of the predictive model constructed by means of MARS algorithm, which is also recognized as a non-parametric regression analysis technique. In literature, there is no information about what an upper bound of GCV is in obtaining good fit for the MARS predictive model. This article presents a new approach for the upper bound of generalized cross validation in relation to multivariate adaptive regression splines as a perfect alternative to multiple linear regressions in agricultural studies. For predicting a continuous response variable, the agricultural data set was exposed to MARS algorithm. The package "earth" of R free software was implemented with "penalty = -1" and "a backward pruning method". Thus, GCV is transformed into a convenient form like RSS/n where RSS is residual sum of squares and n is sample size. In this context, we developed a new solution from sample's variance and mean for hypothesis testing in the upper bound of GCV, which enables analysts to estimate an upper bound of GCV corresponding to a good fit.

As a result, it is hoped that predicting the upper bound of GCV will be a practical tool for further analysts studying MARS topics.

Keywords: MARS; GCV; GCV Upper Bound; Hypothesis Testing.

References

[1] Ali, M., Eyduran, E., Tariq, M. M., Tirink, C., Abbas, F., Bajwa, M. A., Baloch, M. H., Nizamani, A. H., Waheed, A., Awan, M. A., Shah, S. H., Ahmad, Z., & Jan, S. (2015). Comparison of Artificial Neural Network and Decision Tree Algorithms used for Predicting Live Weight at Post Weaning Period from Some Biometrical Characteristics in Harnai Sheep. *Pakistan J. Zool., 47(6),* 1579-1585.

[2] Eyduran, E., Akkus, O., Kara, M. K., Tirink, C., Tariq, M. M. (2017, May). Use of Multivariate Adaptive Regression Splines (MARS) in Predicting Body Weight from Body Measurements in Mengali Rams. In *Proceedings of the International Conference on Agriculture, Forest, Food Sciences and Technologies.*

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THE DISCRIMINANT OF THE SECOND FUNDAMENTAL FORM UNDER THE CONNECTION PRESERVİNG MAPS

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Let $f:E^n \to E^n$ be an isometric immersion provided $f(M)=\overline{M}$ where M and $\overline{M}$ are $(n-1)-$ dimensional Riemannian manifolds. We study the discriminant of the second fundamental form and also being $\lambda-$ isotropic of the Riemannian manifolds if f is a connection preserving map.

Keywords: Discriminant of the Second Fundamental Form; Connection Preserving Map; $\lambda-$ Isotropy.

References

[1] Bayar, F. & Sarıoğlugil, A. (2017). Connection preserving maps and some applications, *Hadronic Journal*, 40(1), 85.

[2] Ferus, D., (1974). Immersions with parallel second fundamental form, *Math. Z.*, 140, 87.

[3] Fueki, S., (1998). Helices and isometric immersions, *Tsubuka Math. J.*, 22, 427,

[4] Hicks, N. J., (1965). *Notes on differential geometry*, D. Van Nostrand Company Inc.,New York.

[5] Kılıç, B. The discriminant of second fundamental form, *Commun.Fac.Sci.Univ. Ankara*, Series A1, 56(1), 2007.

[6] O'Neill, B., (1965). Isotropic and Kahler Immersions, *Canadian Math. J.*, 17, 907.

[7] O'Neill, B., (1983). *Semi-Riemannian geometry*, Academic Press, New York.

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COMPARISON OF DIFFERENT NORMALIZATION TECHNIQUES FOR AMMONIA EMISSION ESTIMATION

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This study aims to investigate the effect of different normalization techniques on neuro computing ammonia emission estimation accuracy in poultry building. To this end, a total of 110 air temperature, relative humidy and air velocity measurements were used as inputs for ammonia estimation. Data was divided into training (70 %) and testing (30 %) data sets for development and validation of models. For data used in this study normalization, all data were scaled as Min-max, Basic, Z score and D-min-max normalization techniques. Determination coefficient (R^2), root mean square error (RMSE) and mean absolute error (MAE) were used to evaluate models. The D-min-max (0.6-0.8) normalization technique gave best results with a Multi-layer perceptron (3-5-1) model having RMSE, MAE and R^2 values in the range 1.30 ppm, 0.94 ppm and 0.88 respectively.

Keywords: Ammonia Emission; Normalization; Poultry Building; Artificial Neural Networks.

References

[1] Boniecki, P., Dach, J., Pilarski, K., & Piekarska-Boniecka, H. (2012). Artificial neural networks for modeling ammonia emissions released from sewage sludge composting. *Atmospheric Environment*, *57*, 49-54.

[2] Cios, K. J., Pedrycz, W., Swiniarski, R. W., & Kurgan, L. A. (2007). *Data mining: a knowledge discovery approach*. Springer Science & Business Media.

[3] Coufal, C. D., Chavez, C., Niemeyer, P. R., & Carey, J. B. (2006). Nitrogen emissions from broilers measured by mass balance over eighteen consecutive flocks. *Poultry science*, 85, 384-391.

[4] Donham, K. J., Cumro, D., & Reynolds, S. (2002). Synergistic effects of dust and ammonia on the occupational health effects of poultry production workers. *Journal of agromedicine*, 8, 57-76.

[5] Haykin, S. S. (2001). *Neural networks: a comprehensive foundation*. Tsinghua University Press.

[6] Lim, Y., Moon, Y. S., & Kim, T. W. (2007). Artificial neural network approach for prediction of ammonia emission from field-applied manure and relative significance assessment of ammonia emission factors. *European journal of agronomy*, 26, 425-434.

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SOME GEOMETRIC PROPERTIES OF THE NON-NEWTONIAN SEQUENCE SPACES $l_p(N)$

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In this study, we generalize the concepts of convexity, strict convexity and uniform convexity in the sense of Non-Newtonian calculus. Agarwal, O'regan & Sahu [2] and Castillo & Rafeiro [3] have studied the strict convexity and uniform convexity properties of l_p sequence spaces where $1 < p < \infty$. The main aim of this study is to obtain the Non-Newtonian convexity, Non-Newtonian strict convexity and Non-Newtonian uniform convexity properties of the Non-Newtonian sequence spaces $l_p(N)$ by using the methods in [1], [2] and [3].

Keywords: Non-Newtonian Convexity; Non-Newtonian Strict Convexity; Non-Newtonian Uniform Convexity.

References

[1] Grossman, M. & Katz, R. (1972). *Non-Newtonian Calculus*. Lee Pres, Pigen Cove (Lowell Technological Institute).

[2] Agarwal, R.P., O'regan, D. & Sahu, D.R. (2009). *Fixed Point Theory For Lipschitzian-type Mappings With Applications*, Springer Dordrecht Heidelberg London New York.

[3] Castillo, R.E. & Rafeiro, H. (2016). *An Introductory Course In Lebesgue Spaces*, Springer International Publishing Switzerland.

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COMPATIBLE MAPS β- TYPE ON FUZZY METRIC SPACES

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The aim of this presentation gives compatible maps β −type on fuzzy metric spaces. Also, we examine relationships between these maps and compatible maps with examples and finally, we prove the common fixed point theorem for these maps.

Keywords: Fuzzy Metric Spaces; Compatible Maps; Fixed Point.

References

[1] Zadeh, L. A. (1965). Fuzzy sets. *Inform. ve Control*. 8, 338-353.

[2] Cho, Y. J., Pathak, H. K., Kang, S. M. & Jung J. S. (1998). Common fixed points of compatible maps (β) on fuzzy metric spaces. *Fuzzy Sets and Systems.* 93, 99-111.

[3] Grabiec, M. (1988). Fixed points in fuzzy metric space. *Fuzzy Sets ve Systems*. 27, 385-389.

[4] Kütükcü, S., Turkoglu,D. & Yıldız, C. (2006). Common fixed points of compatible (β) on fuzzy metric spaces. *Commun.Korean Math.Soc.* 21, 89-100.

[5] Jungck, G. (1976). Commuting mappings and fixed points. *Amer. Math. Monthly.* 83, 261-263.

[6] George, A. & Veeramani, P. (1994). On some results in fuzzy metric spaces. *Fuzzy Sets and Systems*. 64, 395-399.

[7] Mishra, S. N., Sharma, N. & Singh, S. L. (1994). Common fixed points of maps fuzzy metric spaces. *Internat.J.Math.Sci.* 17, 253-258.

[8] Sessa, S. (1982). On weak commutativity condition of mappings fixed point considerations. *Publ Inst.Math.Beagrad*. 32: (46), 149-153.

[9] Cho, Y. J. (1997). Fixed points in fuzzy metric spaces. *J.Fuzzy Math.* 4, 949-962.

[10] Schweizer, B. & Sklar, A. (1960). Statistical Metric Spaces. *Pasific Journal of Mathemetics.* (10):1, 313-334.

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COMPARISON OF PREDICTIVE PERFORMANCES OF MARS AND CART ALGORITHMS THROUGH R SOFTWARE

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Within the framework of general linear model, there is lack of information on comparatively examining data mining algorithms viz. CART, CHAID, C5.0, Exhaustive CHAID, MLP, RBF and particularly MARS, which derives a convenient prediction equation. All of the algorithms can be more informative than a classical method like multiple linear regressions in the violation of some distributional assumptions in relation to variables to be studied. The aims of the current investigation were to comparatively examine MARS and CART algorithms and multiple linear regressions through R free software in terms of general linear model and to present how to step-by-step use R software in the application of these statistical approaches. MARS data mining algorithm also used as an alternative to response surface method in optimization process has been examined in detail in generalized cross validation for the first time. In the R software, “penalty = -1” and “a backward pruning method” were specified for MARS. Thus, GCV is converted into RSS/n where RSS is residual sum of squares and n is sample size. Model evaluation criteria estimated to compare these three approaches were R^2, $R^2_{ADJUSTED}$, SD_{RATIO} and Pearson correlation between predicted and actual dependent values.

As a result, the current investigation will be a noble reference for researchers who will perform similar studies in next time**.**

Keywords: CART; MARS; Tree-Based Algorithm; Linear Regression.

References

[1] Ali, M., Eyduran, E., Tariq, M. M., Tirink, C., Abbas, F., Bajwa, M. A., Baloch, M. H., Nizamani, A. H., Waheed, A., Awan, M. A., Shah, S. H., Ahmad, Z., & Jan, S. (2015). Comparison of Artificial Neural Network

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[2] Eyduran, E., Akkus, O., Kara, M. K., Tirink, C., Tariq, M. M. (2017, May). Use of Multivariate Adaptive Regression Splines (MARS) in Predicting Body Weight from Body Measurements in Mengali Rams. In *Proceedings of the International Conference on Agriculture, Forest, Food Sciences and Technologies.*

[3] Karadas, K., Ertürk, Y. E., Eyduran, E., Gürsoy, A. K., Tariq, M. M. (2017, May). Predictive Performances of Chaid and Mars Data Mining Algorithms in the Establishment of Relationship between Live Body Weight and Several Morphological Measurements of Indigenous Mengali Sheep and Its Economic Importance. In *Proceedings of the International Conference on Agriculture, Forest, Food Sciences and Technologies.*

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LATTICE STRUCTURES OF SOFT SETS

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Many complicated problems in economics, engineering, the environment, social science, medical science and many other fields involve uncertain data. These problems which one come face to face with in life cannot be solved using classical mathematic methods. In classical mathematics, a mathematical model of an object is devised and the notion of the exact solution of this model is determined. Because of that the mathematical model is too complex, the exact solution cannot be found. There are several well-known theories to describe uncertainty. For instance fuzzy set theory, rough set theory and other mathematical tools. But all of these theories have their inherit difficulties as pointed out by Molodtsov [5]. To overcome these difficulties, Molodtsov introduced the concept of soft set as a new mathematical tool for dealing with uncertainties that is free from the difficulties affecting existing methods. In this study, we introduce lattice structure of the soft set theory. We give notion of soft lattice and obtain some basic properties of it. We also investigate structures of soft distributive lattice and soft modular lattice. Moreover, we define soft lattice homomorphism, and then give theorems concerning homomorphic image and homomorphic pre-image under a soft function.

Keywords: Lattice; Soft Set; Soft Lattice; Soft Lattice Homomorphism.

References

[1] Aktas, H., & Cagman, N. (2007). Soft sets and soft groups, *Inform. Sci.*, 177, 2621-2628.

[2] Ali, M. I., Feng, F., Liu, X., Min, W. K., & Shabir, M. (2009). On some new operations in soft set theory, *Comput. Math. Appl*., 57, 1547-1553.

[3] Birkhoff, G. (1967). *Lattice Theory*, American Mathematical Society, Rhode Island.

[4] Maji, P. K., Biswas, R., & Roy, A. R. (2003). Soft set theory, *Comput. Math. Appl*., 45, 555-562.

[5] Molodtsov, D. (1999). Soft set theory-First results, *Comput. Math. Appl.*, 37, 19-31.

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IRRIGATION WATER QUALITY ASSESSMENT OF WESTERN MEDITERRANEAN BASIN WATERS THROUGH FUZZY LOGIC APPROACH

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Irrigation water quality is usually assessed through SAR and EC values presented in a graph developed by United States Salinity Laboratory (USSL). Since the irrigation quality parameters do not imply net values, there is flexibility between the limits of each water quality class. Irrigation water quality is expressed as a class rather than a numerical value based on EC and SAR. The present study uses fuzzy logic approach to assess the irrigation water quality by taking EC and SAR values measured by Electrical Power Resources and Survey and Development Administration in 10 stations over Western Mediterranean Basin between the years 2003-2008. Mamdani method was compared with traditional graphical method.

Keywords: EC; SAR; Fuzzy Logic; Irrigation Water Quality

References

[1] Alavi, N,, Nozari, V,, Mazloumzadeh, S.M,, Nezamabadi-Pour, H, (2010). Irrigation Water quality evaluation using adaptive network-based fuzzy inference system. *Paddy Water Environ* 8: 259-266.

[2] Elmas, Ç. (2007). *Yapay zeka uygulamaları. Seçkin yayıncılık, Ankara.*

[3] Gazzaz, N.M., Yusoff, M.K., Aris, A.Z., Juahir, H,, Ramli, M.F, (2012). Artificial neural network modeling of the water quality index for Kinta River (Malaysia) using water quality variables as predictors. *Marine Pollution Bulletin. 64:2409–2420.*

[4] Mirabbasi, R., Mazloumzadeh, S.M,, Rahnama, M.B. (2008). Evaluation of irrigation water quality using fuzzy logic. *Research Journal of Environmental Sciences 2: 340-352.*

[5] Priya, K.L. (2013). A Fuzzy Logic Approach for Irrigation Water Quality Assessment: A Case Study of Karunya Watershed, *India. J Hydrogeol Hydrol Eng 2:1.*

[6] Şen, Z. (2004). *Mühendislikte bulanık (fuzzy) mantık ile modelleme prensipleri. Su vakfı yayınları, İstanbul.*

[7] Silvert, W, (2000). Fuzzy indices of environmental conditions. *Ecol Model 130:111–119*

[8] US Salinity Laboratory Staff, (1954). *Diagnosis and improvement of saline and alkali soils: US Department Agric Handbook 60: 160.*

[9] Wilcox. L.V. (1955). *Classification and use of irrigation waters: US Dept Agric Circ 969: 19.*

[10] Yeon, I.S., Kim, J.H,, Jun, K.W.(2008). Application of artificial intelligence models in water quality forecasting. *Environ Technol. 2008 Jun;29(6):625-31.*

[11] Zadeh, L.A. (1965). *Fuzzy sets. Inf Control 8:338–353*

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ESTIMATION OF SOIL TEMPERATURE IN THE MIDDLE BLACK SEA REGION OF TURKEY BY ARTIFICIAL NEURAL NETWORK

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In this study, artificial neural network (ANN) models were developed to predict soil temperatures at 5, 10, 20, 30, 50 and 100 cm depth in the Middle Black Sea region of Turkey. The soil temperature and other meteorological parameters were obtained between the years of 1971 and 2015 by the Turkish State Meteorological Service (TSMS). To evaluate the average monthly soil temperature, three input parameters (depth of soil, air temperature and month) were used. The obtained 540 data were divided into training (240 data), testing (120 data) and validation (180 data) sets during neuro computing. The results of ANN model were compared with measured data on the basis of determination coefficient (R^2), root mean square error (RMSE) and mean absolute error (MAE) in order to evaluate performance of developed model. The ANN model for all data sets gave best results with R^2, RMSE and MAE values in the ranged 0.854-0.994, 0.240-3.745 ^oC and 0.011-2.333 ^oC, respectively.

Keywords: Artificial Neural Networks; Soil Temperature; Black Sea Region; Meteorology

References

[1] Bilgili, M. (2011). The use of artificial neural networks for forecasting the monthly mean soil temperatures in Adana, Turkey. *Turkish Journal of Agriculture and Forestry*, *35*(1), 83-93.

[2] Bond-Lamberty, B., Wang, C., & Gower, S. T. (2005). Spatiotemporal measurement and modeling of stand-level boreal forest soil temperatures. *Agricultural and Forest Meteorology*, 131(1), 27-40.

[3] Kaastra, I., & Boyd, M. (1996). Designing a neural network for forecasting financial and economic time series. *Neurocomputing*, 10(3), 215-236.

[4] Mohandes, M. A., Rehman, S., & Halawani, T. O. (1998). A neural networks approach for wind speed prediction. *Renewable Energy*, 13(3), 345-354.

[5] More, A., & Deo, M. C. (2003). Forecasting wind with neural networks. *Marine structures*, 16(1), 35-49.

*Presenter

[6] Seyfried, M. S., Flerchinger, G. N., Murdock, M. D., Hanson, C. L., & Van Vactor, S. (2001). Long Term Soil Temperature Database, Reynolds Creek Experimental Watershed, Idaho, United States. *Water Resources Research*, 37(11), 2843-2846.

[7] Tabari, H., Sabziparvar, A. A., & Ahmadi, M. (2011). Comparison of artificial neural network and multivariate linear regression methods for estimation of daily soil temperature in an arid region. *Meteorology and Atmospheric Physics*, 110(3-4), 135-142.

[8] Tenge, A. J., Kaihura, F. B. S., Lal, R., & Singh, B. R. (1998). Diurnal soil temperature fluctuations for different erosion classes of an oxisol at Mlingano, Tanzania. *Soil and Tillage Research*, 49(3), 211-217.

[9] Yang, C. C., Prasher, S. O., Mehuys, G. R., & Patni, N. K. (1997). Application of artificial neural networks for simulation of soil temperature. *Transactions of the ASAE*, 40(3), 649-656.

[10] Zheng, D., Hunt Jr, E. R., & Running, S. W. (1993). A daily soil temperature model based on air temperature and precipitation for continental applications. *Climate Research*, 183-191.

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A FIXED POINT THEOREM IN COMPLETE $A-$METRIC SPACES AND AN APPLICATION

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In this paper, we prove a fixed point theorem for contractive mappings in the complete $A-$metric spaces. Furthermore we obtain the existence and uniqueness of solution for an ordinary differential equation with an initial condition using this theorem.

Keywords: A-Metric; Fixed Point; Differential Equation.

References

[1] Abbas, M., Ali, B., & Suleiman, Y. I. (2015). Generalized coupled common fixed point results in partially ordered A-metric spaces. *Fixed Point Theory and Applications*, *2015*(1), 64.

[2] Abbas, M., Ali, B., & Suleiman, Y. I. (2016). Unification of several distance functions and a common fixed point result. *Fixed Point Theory and Applications*, *2016*(1), 6.

[3] Fernandez, J., Saelee, S., Saxena, K., Malviya, N., & Kumam, P. (2017). The A-cone metric space over Banach algebra with applications. *Cogent Mathematics*, *4*(1), 1282690.

[4] Mlaiki, N., & Rohen, Y. (2017). Some Coupled fixed point theorems in partially ordered A (b)-metric space. *Journal of Nonlinear Sciences and Applications, 10*(4), 1731-1743.

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DEVELOPMENT OF AN ANDROID BASED DATA LOGGING SOFTWARE FOR ENERGY PROCUTION AND CONSUMPTION AT SMART HOMES

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The use of alternative energy sources by individual users in homes is increasing rapidly. In the direction of developing technology and increasing opportunities, consumers are able to satisfy their energy needs by using solar and wind energy in their houses. By calculating the installed power of the house, the required energy is produced and stored by using solar panel or wind turbine at a low cost. The stored energy can be used as a priority, but if it is not enough, electric grid energy can be used. Past energy production and consumption records are very important in order to estimate the amount of energy needed in the future, infrastructure improvement and efficient use of energy. At this point, the data of produced and consumed energy by the user must be archived. In this study, a recording, visualization and control system of intelligent home system is designed which uses solar and wind energy resources and records and manages energy consumption of each device. An energy recording software has been developed to record the amount of instantaneous energy production of each energy source and the instantaneous energy consumption of all devices. The software is developed using JAVA programming language. Through this software, all energy quantities are recorded hourly, daily, monthly and annually, and retrospective evaluations can be made. All the data obtained is stored in a MySQL database on a server and can be easily accessed from anywhere in the world at any time. An Android-based smartphone software has also been developed to allow remote control of the smart home. The control is carried out using a wireless smart plug that is connected to each device. With the mobile software, user can have the ability to prepare for future capacity changes and view the individual energy consumption of any device in the house. If the user thinks it is necessary, the energy of this device can be turned off remotely. A database of energy production and energy consumption for renewable energy sources in a smart house has created through this study. These records, which can be used in many future works, provide the opportunity to estimate regional energy production. In addition, data will be provided to predict future energy demand of the user by obtaining the energy

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usage profile. A data recording infrastructure supporting energy efficiency has been created to encourage the user to use energy conservatively.

Keywords: Energy Consumption Database; Future Energy Prediction; Data Logging;

References

[1] I. Colak, H. Wilkening, G. Fulli, J. Vasiljevska, F. Issi, and O. Kaplan, "Analysing the efficient use of energy in a small smart grid system," *in Renewable Energy Research and Applications (ICRERA), 2012 International Conference on*, 2012, pp. 1-4: IEEE.

[2] A. Tedeschi, F. R. Fulginei, and A. Laudani, "PV Panel Modeling: a mobile application for modeling photovoltaic panels using datasheets information," *in Future Internet of Things and Cloud (FiCloud), 2015 3rd International Conference on*, 2015, pp. 608-613: IEEE.

[3] S. Ferrari et al., "A computational intelligence approach to solar panel modelling," *in Instrumentation and Measurement Technology Conference (I2MTC) Proceedings*, 2014 IEEE International, 2014, pp. 1261-1266: IEEE.

[4] K. Jiju, P. Ramesh, P. Brijesh, and B. Sreekumari, "Development of Android based on-line monitoring and control system for Renewable Energy Sources," *in Computer, Communications, and Control Technology (I4CT), 2014 International Conference on*, 2014, pp. 372-375: IEEE.

[5] E. Granado, W. Colmenares, S. De Santis, L. Contreras, and O. Pérez, "Web based design of virtual teaching in the laboratory of automatic control," *in European Control Conference (ECC)*, 2003, pp. 3273-3276: IEEE.

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VIRTUAL LABORATORY STUDY FOR ENERGY EFFICIENCY: ASYNCHRONOUS MOTOR'S REAL-TIME TORQUE / POWER EXCHANGE EXPERIMENT

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Engineering education consists of two parts as theory and practice. The importance of applications as well as theoretical training is very high, but it is difficult to provide a separate set of experiments for each student in laboratory applications. For this reason online laboratory systems are being developed. In this study, torque analysis was performed by keeping constant the voltage / frequency (V / F) ratio of the asynchronous motor. A frequency converter is used to control the motor for torque analysis. The control of the frequency converter was made via a computer. The user interface required for computer control is designed using MATLAB GUI. The communication between the designed GUI software and the frequency converter is provided using the USB communication protocol. In order to provide USB communication and to control the equipment of the experimental set, a control circuit is prepared. In addition, the parameters required for torque analysis operations were obtained with the prepared measurement circuits and transmitted to the control circuit. Obtained data was transferred to the computer and necessary calculation and graphic drawing operations were performed. Thus, an experimental set designed by a user who controls the system from the MATLAB GUI interface can visualize the effect of torque change of the asynchronous motor on power change. By using the developed experimental set, the effect of asynchronous motor torque on energy efficiency will be visually interpreted.

Keywords: MATLAB Data Obtaining; Experimental Set; Virtual Laboratory; Torque Archiving.

References

[1] Turkey Energy Effiency Report , Europen Union, Country Reports, *Trends in global energy efficiency* 2011

[2] H. Falkner, "Promoting High Efficiency Motors in Europe. The role of the copper Industry", *ETSU. European Copper Institute*, pp. 13, November 2000.

[3] Energy Efficient Control of Three-Phase Induction Motor-A Review

*Presenter

[4] Three-Phase Induction Motor Efficiency Improvements with Die-Cast Copper Rotor Cage and Premium Steel

[5] Parasiliti F.; Villani M.: Technical and economical evaluation of electrical steels for high efficiency motors. *Transworld Research Network, Recent Res. Devel. Magnetics*, n. 2, 2001, ISBN: 81-7895-001-4.

[6] Parasiliti F.; Villani M.: Design of high efficiency induction motors with die-casting copper rotors. "Energy Efficiency in Motor Driven Systems", *Springer*, 2003, pp 144-151.

[7] Brush E.F.; Cowie, J.G.; Peters D.T.; Van Son D.J.: Die-Cast Copper Motor Rotors:Motor Test Results, Copper Compared to Aluminum. "Energy Efficiency in Motor Driven Systems", *Springer*, 2003, pp. 136 –143.

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COMPARISON OF THE EFFECT OF COLOR SPACES IN FUZZY CLUSTERING OF BURN IMAGES

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Decision support systems have been using in burn diagnosis, as in many medical fields. The World Health Organization reported that the annual number of deaths caused by burn wounds was 180.000 in 2017. Hence, it is important to develop helper utilities for burn wound diagnosis.

There are many parameters needed to be determined in the planning of burn wound treatment. Percentage of burn is the one of the most important parameters. In this study, fuzzy clustering methods have been used to determine the burn / normal skin regions in order to determine this burn percentage. In this study, we selected 10 sample images were from the burn wound image dataset of the patients who applied to the burn unit of the Karadeniz Technical University Faculty of Medicine Farabi Hospital. The optimal number of clusters for the selected sample images was calculated using fuzzy cluster validity indices for all clusters within C = [2, 20]. In addition, experiments were performed on RGB, HSV, LAB, YCbCr color spaces and the results were compared to determine the effect of color space on the performance of the fuzzy clustering approach.

Keywords: Burn; Clustering; FCM; Color Spaces.

References

[1] Gustafson, D. and Kessel, W., "Fuzzy clustering with a fuzzy covariance matrix," in *1978 IEEE Conference on Decision and Control including the 17th Symposium on Adaptive Processes*, 1978, no. 2, pp. 761–766.

[2] Wang, W. and Zhang, Y., "On fuzzy cluster validity indices," *Fuzzy Sets Syst.*, vol. 158, no. 19, pp. 2095–2117, 2007.

[3] Pal, N. R., Pal, K., Keller, J. M., and Bezdek, J. C., "A Possibilistic Fuzzy c-Means Clustering Algorithm," *IEEE Trans. Fuzzy Syst.*, vol. 13, no. 4, pp. 517–530, 2005.

[4] Suvarna, M., Kumar, S., and U C, N., "Classification Methods of Skin Burn Images," *Int. J. Comput. Sci. Inf. Technol.*, vol. 5, no. 1, pp. 109–118, Feb. 2013.

[5] Castro, A., Bóveda, C., and Arcay, B., "Analysis of Fuzzy Clustering Algorithms for the Segmentation of Burn Wounds Photographs," 2006, pp. 491–501.

[6] S. Badea, M., Felea, I., Florea, L., and Vertan, C., *The use of deep learning in image segmentation, classification and detection*. 2016.

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MODULES THAT HAVE A δ-SUPPLEMENT IN EVERY δ-COATOMIC EXTENSION

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In this paper, we study modules with the properties $\delta - E^*$ and $\delta - EE^*$ which are adapted from Zöschinger's properties (E) and (EE). We call a module $\delta - E^*$- module (respectively $\delta - EE^*$-module) if M has a δ-supplement (respectively ample δ-supplement) in every δ-coatomic extension N, i.e. (N/M) is δ-coatomic.We prove that every direct summand of $\delta - E^*$-modules is a $\delta - E^*$-module and every submodule of a $\delta - EE^*$-module is a $\delta - E^*$-module. We showed that if a ring R is left δ-perfect , then every left R-module is a $\delta - EE^*$-module. We also prove that over a left hereditary ring, every factor module of a δ-coatomic $\delta - E^*$-module is a $\delta - E^*$-module.

Keywords: Δ-Supplement; Δ-Coatomic Extension; $\delta - E^*$-Module,; $\delta - EE^*$-Module; Δ-Perfect Ring

References

[1] Clark, J. (2006). *Lifting modules: supplements and projectivity in module theory*. Basel: Birkhäuser Verlag.

[2] Çalışıcı, H., & Türkmen, E. (2012). Modules that have a supplement in every cofinite extension. *Georgian Mathematical Journal,19*(2). doi:10.1515/gmj-2012-0018

[3] Kasch, F., & Wallace, D. A. (1982). *Modules and rings: a translation of Moduln und Ringe*. London: Academic Press.

[4] Koşan, M. T., & Harmanci, A. (2005). Generalizations of coatomic modules. *Central European Journal of Mathematics,3*(2), 273-281. doi:10.2478/bf02479203

[5] Koşan, M. T. (2007). δ-Lifting and δ-Supplemented Modules. *Algebra Colloquium,14*(01), 53-60. doi:10.1142/s1005386707000065

[6] Nematollahi, M. J. (2009). On δ-supplemented modules. *Tarbiat Moallem University, 20^{th} Seminar on Algebra,*155-158.

[7] Ozdemir, S. (2016). Rad-Supplementing Modules. *Journal of the Korean Mathematical Society,53*(2), 403-414. doi:10.4134/jkms.2016.53.2.403

*Presenter

[8] SÖZEN, E., & EREN, Ş. (2017). Modules that have a - δ-supplement in every extension. *Europen Journal of Pure and Applied Mathematics,10*(4), 730-738.

[9] TÜRKMEN, B. N. (2015). Modules that have a supplement in every coatomic extension. *Miskolc Mathematicial Notes,16*(1), 543-551.

[10] Tribak, R. (2012).Finitely generated δ-supplemented modules are amply δ-supplemented, *Bulletin of the Australian Mathematicial Society, 86*(3), 430-439.

[11] Ungor, B. , Halıcıoğlu, S. & Harmancı, A. (2014).On a class of δ-supplemented modules, *Bulletin of the Malaysian Mathematicial Sciences Society, 37*(3)(2), 703-717.

[12] Wang, Y. (2007). δ-small submodules and δ-supplemented modules, *International Journal of Mathematics and Mathematicial Sciences*, Article ID 58132, 8 pp,

[13] Wisbauer, R. (1991).*Foundations of Modules and Rings* (Gordon and Breach,).

[14] Zhou, Y. (2000). Generalizations of perfect, semiperfect, and semiregular rings, *Algebra Colloquim, 7*(3), 305-318.

[15] Zöschinger, H. (1975). Moduln die in jeder Erweiterung ein Komplement haben, *Mathematica Scandinavica, 35*(2), 267-287.

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REVIEW ON HOME HEALTH CARE ROUTING AND SCHEDULING PROBLEM

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Home health care (HHC) is a wide range of health care services given by skilled professionals to patients in their homes. HHC provides better service to patients in the convenience of their home as well as reduces the demand for the hospitals which in turn prevents so many problem. HHC is rapidly growing service industry due to population ageing.

One of the major problem in HHC is to assign professionals to patient home and to find routes such a way that some performance measure is improved. This problem is called home health care routing and scheduling problem (HHCRSP). This problem has been studied from different perspective in the literature. However, each research deals with a unique case so there is no common ground to compare these research. In these study we give detailed literature review of the problem and group the studies based on the objective functions, constraints, methods in order to identify further research topics.

Keywords: Home Health Care; Scheduling; Routing

References

[1] Allaoua, H., Borne, S., Létocart, L., & Calvo, R.W. (2013). A matheuristic approach for solving a home health care problem. *Electron Notes Discrete Math*, 41:471–8.

[2] Bachouch, R.B., Guinet, A., & Hajri-Gabouj, S. (2011). A decision-making tool for home health care nurses' planning. *Supply Chain Forum: Int J*, 12(1):14–20.

[3] Bertels, S., & Fahle, T. (2006). A hybrid setup for a hybrid scenario: combining heuristics for the home health care problem. *Comput Oper Res*, 33(10):2866–90.

*Presenter

[4] Braekers, K., Hartl, R.F., Parragh, S.N., & Tricoire, F. (2016). A bi-objective home care scheduling problem: analyzing the trade-off between costs and client inconvenience. *Eur J Oper Res*, 248(2):428–43.

[5] Bredström, D., & Rönnqvist M. (2008). Combined vehicle routing and scheduling with temporal precedence and synchronization constraints. *Eur J Oper Res*, 191(1):19–31.

[6] Dohn, A., Kolind, E., & Clausen, J. (2009). The manpower allocation problem with time windows and jobteaming constraints: a branch-and-price approach. *Comput Oper Res*, 36(4):1145–57.

[7] Elbenani, B., Ferland, J. A. & Gascon, V. (2008). Mathematical Programming Approach for Routing Home Care Nurses. *Int. Conf. Ind. Eng. Eng. Manag*., 1-3, 107–111.

[8] Eveborn, P., Flisberg, P., & Rönnqvist, M. (2006). Laps care an operational system for staff planning of home care. *Eur J Oper Res*, 171(3):962–76.

[9] Fernandez, A., Gregory, G., Hindle, A., & Lee, A. (1974). A model for community nursing in a rural county. *Oper Res Q*, 25(2):231–9.

[10] Fikar, C., & Hirsch, P. (2015). A matheuristic for routing real-world home service transport systems facilitating walking. *J Clean Prod*, 105:300–10.

[11] Fikar, C., & Hirsch, P. (2016). Home Health Care Routing and Scheduling: A Review. *Comput. Oper. Res*., 77, 86–95.

[12] Hiermann, G., Prandtstetter, M., Rendl, A., Puchinger, J., & Raidl, G. (2015). Metaheuristics for solving a multimodal home-healthcare scheduling problem. *Cent Eur J Oper Res*, 23(1):89–113.

[13] Hindle, T., Hindle, A., & Spollen, M. (2000). Resource allocation modelling for home-based health and social care services in areas having differential population density levels: a case study in Northern Ireland. *Health Serv Manage Res*, 13:164–9.

[14] Hindle, T., Hindle, G., & Spollen, M. (2009). Travel-related costs of population dispersion in the provision of domiciliary care to the elderly: a case study in English local authorities. *Health Serv Manage Res*, 22:27–32.

[15] Lanzarone, E., & Matta, A. (2014). Robust nurse-to-patient assignment in home care services to minimize overtimes under continuity of care. *Oper Res Health Care*, 3(2):48–58.

[16] Mankowska, D., Meisel, F., & Bierwirth, C. (2014). The home health care routing and scheduling problem with interdependent services. *Health Care Manag Sci*, 17(1):15–30.

*Presenter

[17] Mısır, M., Smet, P., & Vanden Berghe, G. (2015). Generalised heuristics for vehicle routing and personnel rostering problems. *J Oper Res Soc*., 66: 858–70.

[18] Mutingi, M., & Mbohwa, C. (2014). Multi-objective homecare worker scheduling: a fuzzy simulated evolution algorithm approach. *IIE Trans Healthc Syst Eng*, 4 (4):209–16.

[19] Rasmussen, M.S., Justesen, T., Dohn, A., & Larsen, J. (2012). The home care crew scheduling problem: preference-based visit clustering and temporal dependencies. *Eur J Oper Res*, 219(3):598–610.

[20] Redjem, R., & Marcon, E. (2016). Operations management in the home care services: a heuristic for the caregivers' routing problem. *Flex Serv Manuf*, 28:280–303.

[21] Trautsamwieser, A., Gronalt, M., & Hirsch, P. (2011). Securing home health care in times of natural disasters. *OR Spectr*, 33(3):787–813.

[22] Trautsamwieser, A., & Hirsch, P. (2011). Optimization of daily scheduling for home health care services. *J Appl Oper Res*, 3(3):124–36.

[23] Yuan, B., Liu, R., & Jiang, Z. (2015). A branch-and-price algorithm for the home health care scheduling and routing problem with stochastic service times and skill requirements. *Int J Prod Res*, 53(24):7450–64.

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THE Z-TRANSFORM APPROACH IN SOLVING MARKOVIAN QUEUES

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The queueing systems that can be represented by a set of states in which the sojourn time is exponentially distributed are called Markovian queues. When the states are arranged in a linear form and the transitions are only to nearest neighbors, the process is called a birth-death process; the transition rate matrix is block diagonal and geometric method can be used in such case. In both cases, a limited number of boundary states that do not meet the transition restriction to nearest neighbor states can be handled. The standard method for solving advanced Markovian models is the z-transform approach which we shall consider in this study. Although the z-transform approach is sometimes considered to be an analytic as opposed to a numerical procedure, it is not entirely analytic because, the roots of a polynomial equation frequently must be found numerically and used in various formulas. In this paper a study on the z-transform and inversion process of the transform is given. Some examples of the z-transform are given and finally the M / M / 1 queue is solved using z-transform.

Keywords: Markovian Queues; Z-Transfrom; Generating Function; Stochastic Processes

References

[1] D. Bertsimas (2011). Performance Analysis of Queueing Networks via Robust Optimization. *Operations Research*, Volume 59, Issue 2, pp. 455-466.

[2] Stewart, W.J. (2009). *Probability, Markov Chains, Queues and Simulation*, Princeton University Press, United Kingdom.

[3] J. R. Artalejo and G. Choudhury (2004). Steady State Analysis of an M/G/1 Queue with Repeated Attempts and Two-Phase Service Quality Technology & *Quantative Management*, Vol.1, No.2, pp. 189-199.

[4] Gross, D., Harris, C. M., Thompson, M. J., Shortle, F. J. (2008). *Fundementals of Queueing Theory*, 4th ed., John Wiley & Sons, New York.

[5] Çınlar, E. (1975). *Introduction to Stochastic Processes*. Prentice-Hall, New Jersey.

*Presenter

[6] A. Choudhury, A. C. Borthakur (2008). Bayesian inference and prediction in the single server Markovian queue. *Metrika*, April 2008, Volume 67, Issue 3, pp 371–383.

[7] K. Wu ve L. McGinnis (2012). Performance evaluation for general queueing networks in manufacturing systems: Characterizing the trade-off between queue time and utilization. *European Journal of Operational Research*, Volume 221, Issue 2, 1 September 2012, Pages 328–339

[8] J. R. Artalejo and G. Choudhury (2004). Steady State Analysis of an M/G/1 Queue with Repeated Attempts and Two-Phase Service Quality Technology *& Quantative Management*, Vol.1, No.2, pp. 189-199.

*Presenter

BERTRAND-B CURVES IN 3 DIMENSIONAL RIEMANNIAN SPACE FORMS

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We define a Bertrand-B curve in Riemannian manifold M such that there exists an isometry ϕ of M, that is, $(\phi \circ \beta)(s) = X(s, t(s))$ and the binormal vector of another curve β is the paralel vector of binormal vector of α at corresponding points. We obtain the conditions of existence of a Bertrand-B curves in the event E^3, S^3 and H^3 of M. The first of our main results is that the curve α in E^3 is the Bertrand-B curve if and only if it is planar. Second one, we prove that the curve α in S^3 with the curvatures ε_1, ε_2 is the Bertrand-B curve if and only if it is satisfies $\varepsilon_1^2 + \varepsilon_2^2 = 1$. Finally, we state that there not exists the Bertrand-B curve in H^3.

Keywords: Bertrand-B Curves; Bishopii Frame; Space Forms.

References

[1] Thorpe, J.A. (2012). *Elementary topics in differential geometry*. Springer Science & Business Media.

[2] Choi, J. H., Kang, T.H., & Kim, Y. H. (2012). Bertrand curves in 3-dimensional space forms. *Applied Mathematics and Computation*, *219*(3), 1040-1046.

[3] Yerlikaya, F., Karaahmetoglu, S., & Aydemir, I. (2016). On the Bertrand B-pair curves in 3-dimensional Euclidean space. *Journal of Science and Arts, (3), 215-224.*

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COMPARISON OF STATISTICAL NORMALIZATION TECHNIQUES ON SPEAKERS HEIGHT ESTIMATION

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Sound is defined as the hearing sense of an acoustic surgeon. In spite of most animals has ability of using various sounds to expressing their feelings, human can transform these sounds into utterance. Whenever an utterance is spoken, some information about the speaker is carried by the speech signal in addition to the message occurs from meaningful words and sentences. Automatic extraction of these information may be a leading task in some cases like judicial cases, call center management etc. Besides the speakers' gender and age estimation is a common research area for speaker recognition researchers, speakers' height estimation is also remarkable. Speaker recognition could be dealt with four main stages as preprocessing of data, feature extraction from data, feature normalization and training the decision making model. In spite of normalizing is not a must for speaker recognition, it is important to reduce the negative impact of environmental disputes. The used feature vectors in this study are extracted from 630 speech sample belongs to 630 speakers in TIMIT dataset and the length of it is reduced with principal component analysis. After this step, they are normalized with seven different normalizing techniques by using four different regression method to estimate speakers' heights with and it is examined their effects to success rate for speakers' height estimation. These normalizing techniques are Max-Min Normalization, Z-Score Normalization, Sigmoid Normalization, Standart-Deviation Normalization, Short-time Mean and Variance Normalization, Short-time Mean and Scale Normalization and D-Max-Min Normalization. Multi-Layer Perceptron, Linear Regression and Sequential Minimal Optimization Regression methods are used. After each combination of normalization and regression methods have tried, results show the pair that gives best success rate as 8.1271% Root Mean Square Error is sigmoid normalization with additive regression. But when comparing success rates of additive regression for non-normalized features, it is seen that both model has absolutely same rate of estimation success. When the success rates of each regression method with normalized features are compared to the success rate of regression model with non-normalized features, it is deduced that normalizing features does not cause a remarkable positive effects on the success rate of estimation. According to this results it could be said that by using the normalizing features with any of normalizing techniques is not feasible for speakers' height estimation problem.

*Presenter

Keywords: Speaker Recognition; Height Estimation; Normalization; Regression.

References

[1] Müller, C. (2007). Speaker Classification. *Lecture Notes in Artificial Intelligence*.

[2] Poorjam, A. H., Bahari, M. H., &Vasilakakis, V. (2015). Height estimation from speech signals using i-vectors and least-squares support vector regression. *38th International Conference on Telecommunications and Signal Processing (TSP)*. IEEE.

[3] Campbell J. P. Jr. (1997). Speaker recognition: A tutorial. *Proceedings of the IEEE,* 85(9), 1437–1462. IEEE.

[4] Yavuz, S., &Deveci, M. (2012). The Effect of Statistical Normalization Techniques on the Perpormance of Artificial Neural Network. *Erciyes University Journal of the Faculty Economic and Administrative Sciences*. 40. 167-187.

[5] Alam, M., Ouellet, P., Kenny, P., &O'Shaughnessy, D. (2011). Comparative evaluation of feature normalization techniques for speaker verification. *Advances in Nonlinear Speech Processing*. 246–253. IEEE.

[6] Mporas, I., &Ganchev, T. (2009). Estimation of unknown speaker's height from speech. *International Journal of Speech Technology*. 12(4). 149-160. Springer.

[7] Karabina, A., &Kılıç, E. (2017). Speakers' Height Estimation Using Linear Regression. *19th International Conference on Machine Learning and Pattern Recognition*.

[8] İleri, C. S., Karabina, A., &Kılıç, E. (2017). Comparison of Different Normalization Techniques on Speakers' Gender Detection. *I. International Scientific and Vocational Studies Congress.*

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GENERALIZATION OF SOME INEQUALITIES RELATED TO THE CHEBYSHEV'S FUNCTIONAL VIA FRACTIONAL INTEGRAL

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In this work, we give some new results in the case of differentiable functions whose derivatives belong to $L_P[0,\infty)$ and $L_\infty[0,\infty)$ related to Chebyshev funcional via generalized fractional integrals. The results presented here would provide extensions of those given in earlier works.

Keywords: Fractional Integral Operators; Katugampola Fractional Integral Operators; Chebyshev Functional.

References

[1] S.S. Dragomir, Some integral inequalities of Gruss type, IJPAM, Indian J. Pure Appl. Math., 31 4 (2000), 397-415.

[2] Kilbas, A.A., Srivastava, H.M., Trujillo, J.J. (2006) *Theory and applications of fractional dfferential equations*, Elsevier B.V., Amsterdam, Netherlands.

[3] U.N. Katugampola, *New approach to generalized fractional derivatives*, Bull. Math. Anal. Appl., 6(4), (2014), 1-15.

[4] Z. Dahmani, The Riemann-Liouville Operator to Generate Some New Inequalities, International Journal of Nonlinear Science, 12 (4), (2011) ,452-455.

[5] Z. Dahmani, O. Mechouar, S. Brahimi, Certain inequalities related to the Chebyshev's functional involving a Riemann-Liouville operatör, Bulletin of Mathematical Analysis and Applications, 3 (4), (2011), 38-44.

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COMPARISON OF REGRESSION METHODS ON SPEAKERS HEIGHT ESTIMATION

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Human has an ability to transform sound into speaking language by changing it in mouth and throat. The message is transmitted to listeners by this way. But some tracks about speakers' physical and mental information are also transmitted alongside the message. Automatic estimation of these speaker information has an importance especially call centers and judicial authorities for some cases. Although estimating speakers' age, gender and psychological state is commonly researched, another research subject in this area is speakers' height estimation. In this study, four different regression methods and Sigmoid Normalization are used to estimate speakers' height and results are compared. These four regression methods are Linear Regression, Sequential Minimal Optimization Regression, Additive Regression and Multi-layer perceptron. For this purpose, Mel Frequency Cepstral Coefficient (MFCC) features are extracted from 630 speech sample from TIMIT dataset. Than principal component analysis is applied to MFCC features to reduce and standardize feature dimension. After this two steps, success rate of each four regression models were investigated. Results shows that Additive Regression method has the best accuracy with 8.1271% Root Mean Square Error (RMSE) and the second best regression method was Lineer Regression with 8.7865% RMSE while multi-layer perceptron were the worst one with 11.032% RMSE.

Keywords: Speaker Recognition; Height Estimation; Regression; Additive Regression.

References

[1] Müller, C. (2007). Speaker Classification. *Lecture Notes in Artificial Intelligence*.

[2] Poorjam, A. H., Bahari, M. H., &Vasilakakis, V. (2015). Height estimation from speech signals using i-vectors and least-squares support vector regression. *38th International Conference on Telecommunications and Signal Processing (TSP)*. IEEE.

[3] Campbell J. P. Jr. (1997). Speaker recognition: A tutorial. *Proceedings of the IEEE*, 85(9), 1437–1462. IEEE.

*Presenter

[4] Bertuletti, S., Cereatti, A., Della, U., Caldara, M., &Galizzi, M. (2016). Indoor distance estimated from Bluetooth Low Energy signal strength: Comparison of regression models. IEEE Sensors Applications Symposium (SAS). 1-5. IEEE.

[5] Radonja, P. (2012). Comparison of generalized profile function models based on linear regression and neural networks. 11th Symposium on Neural Network Applications in Electrical Engineering. 41-46. IEEE.

*Presenter

META-ANALYSIS OF PREVALENCE OF SUBCLINICAL MASTITIS IN HOLSTEIN COWS (2006-2016)

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Mastitis; is an inflammation of mammary gland that is generated by microorganisms and, causing great economic loss for the dairy industry. Subclinical mastitis is defined as a latent form that does not show any signs on the milk and mammary gland but reduces milk yield and quality significantly. Meta-analysis is the method of combining the results of multiple independent studies in a given subject and making statistical analysis of the research findings obtained. In this way, there is a chance to increase the reliability of the results and to make the results clear by the increase the number of samples. In this study, it was aimed to synthesize the results of studies done in various countries in recent years about the prevalence of subclinical mastitis in Holstein cows by using meta-analysis method, to determine heterogeneity and to determine common prevalence. The publications on the prevalence of subclinical mastitis in Holstein cows in the past 10 years were used as a material. Of the 400 studies evaluated, 29 cow-based studies and 24 udder quarter-based studies were included in the meta-analysis. In the analysis, subclinical mastitis results of a total of 9720 head cows and 27012 quarter were evaluated. The random effect model (Der-Simonian Laird method) was used in the meta-analysis for subclinical mastitis in the study. The random effect model takes into account the variances of both within study and between the studies, and assumes that there is a difference in effect size between all studies. Meta-analysis was performed with Comprehensive Meta-Analysis Software (CMA). As a result of the study, significant heterogeneity was found between both cow and quarter based studies (Cow based: Q=949.837, df=28, p<0.001), quarter based: Q=2918.362, df=23, p<0.001). Using the random effect model, the common prevalence of subclinical mastitis was 46.9% (95% CI: 40.6; 53.4%) in cows and I^2: 97.1 % and τ^2 : 0.477; In the case of quarter-based studies, the prevalence of joints was 30 % (95% CI:23.3; 37.7%), with I^2: 99.2 % and τ^2 : 0.715. The reason for the high prevalence of subclinical mastitis is due to the high prevalence of cow-based studies in India, Turkey, China, Iraq, Argentina, Ethiopia and Lithuania, and the high prevalence of quarter-based studies in Lithuania, Ethiopia, Korea, Iran, Turkey, Romania and India. In conclusion, it has been concluded that systematic screening of a large number of research items through meta-analysis may be

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an effective tool for developing subclinical mastitis control strategies and will be a source for future studies.

Key words: Meta-Analysis; Subclinical Mastitis; Cows; Udder Quarter

References

[1]Sutton, A.J., Abrams, K.R., Jones, D.R., Sheldon, T.A., Song, F. (2000*). Methods Meta-Analysis in MedicalResearch*, 309p

[2]Veroniki, A. A., Jackson ,D., Viechtbauer, W., Bender, R., Bowden, J., Knapp, G., Kuss, O., Higgins, J. P.T., Langan, D., Salanti, G.(2015). *Methods to Estimate the Between-Study Variance and Its Uncertainty in Meta Analysis*.

[3] Lıpsey, M., & Wilson, D. (2000). *Practical meta-analysis.* Londra: Sage Publication.

[4] Hashemi, M., Kafi, M., Safdarian, M. (2011). *The prevalence of clinical and subclinical mastitis in dairy cows in the central region of Fars province, south of Iran*.

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ESTIMATING THE NONPARAMETRIC REGRESSION FUNCTION BY USING RATIONAL FUNCTION APPROXIMATION

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The purpose of this study is predicting of truncated total least squares (TTLS) approximations to data using rational functions. The main problem of the nonparametric regression is to modelling the functional relationship between explanatory and response variables. Here, true functional relationship is presented by nonparametric function *f*. The key idea is to estimate the unknown function *f*. In this case, the Pade approximation of the function is derived from a constrained least squares minimization problem with regularization (Zhang et al., 2010). TTLS is used for to overcome the ill-conditioned linear systems (Fierro et al., 1997 and Sima and Huffel, 2007).To realize the purpose of this study and to see how the method works simulation study is made and results are presented.

Keywords: Nonparametric Regression; Rational Approximation; Truncated Total Least Squares

References

[1] Zhang D., Lamoureux, M.P., Margrave, G.F. (2010). A Multiple model and Pade approximation.*CREWES Research Report.*

[2]Fierro R.D., Golub, G.H., Hansen, P.C. and O'leary, D.P. (1997). Regularization by truncated total least squares, *SIAM Journal on Scientific Computing, 4*(18), 1223-1241.

[3]Sima D.M. and Van Huffel, S. (2007). Level choice in truncated total Least sqaures, *ComputationalStatistics& Data Analysis, 52*(2007), 1103-1118.

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ON THE PUBLICATION BIAS ISSUE IN RELIABILITY GENERALIZATIONS: INTERPRETING CONFLICT RESULTS OF DIFFERENT METHODS

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Most of meta-analytic studies just like Reliability Generalizations (RG) suffer from publication bias since favorable resulted studies have more tendencies to be published. Therefore, conclusions drawn from studies unheeding this bias can be deceptive. Funnel plots as an illustrative tool play a crucial role to uncover such bias, however significance can be tested by some methods of which the most known ones are Beg and Mazumdar's (1994) rank test and Egger et al.'s (1997) regression test. By this study, we put forth some conflicting results on significance of the above tests such that different transformation methods commonly used in RG studies to normalize coefficient alpha produce different levels of significance in most of the time and cases. This means that depending on the choice of any transformation, one could claim his publication biased study as non-biased. To explain such contradiction, we performed a simulation of likert type data for various cases in which the heterogeneity was taken into account on sampling. The results suggest that the use of the method based on Hakstian and Whalen (1976) transformation is much better in many cases to reveal publication bias while the Bonett (2002) based one failed to indicate biasness in most heterogeneous cases.

Keywords: Publication Bias; Simulation; Reliability Generalization.

References

[1] Hakstian, A. R., & Whalen, T. E. (1976). A k-sample significance test for independent alpha coefficients. *Psychometrika*, 41(2), 219-231.

[2] Vacha-Haase, T. (1998). Reliability generalization: Exploring variance in measurement error affecting score reliability across studies. *Educational and Psychological Measurement*, 58 (1), 6-20.

[3] Bonett, D. G. (2002). Sample size requirements for testing and estimating coefficient alpha. *Journal of educational and behavioral statistics*, 27(4), 335-340.

[4] de los Ángeles Morata-Ramírez, M., & Holgado-Tello, F. P. (2013). Construct validity of Likert scales through confirmatory factor analysis: A simulation study comparing different methods of estimation based on Pearson and polychoric correlations. *International Journal of Social Science Studies*, 1(1), 54-61.

[5] Rodriguez, M. C. ve Maeda, Y. (2006). Meta-analysis of coefficient alpha. *Psychological methods*, 11(3), 306-322.

*Presenter

[6] Egger, M., Davey Smith, G., Schneider, M., & Minder, C. (1997). Bias in meta-analysis detected by a simple, graphical test. *BMJ : British Medical Journal*, 315(7109), 629–634.

[7] Begg, C., & Mazumdar, M. (1994). Operating Characteristics of a Rank Correlation Test for Publication Bias. *Biometrics*, 50(4), 1088-1101..

[8] López-López, J. A., Botella, J., Sánchez-Meca, J., & Marín-Martínez, F. (2013). Alternatives for mixed-effects meta-regression models in the reliability generalization approach: A simulation study. *Journal of Educational and Behavioral Statistics*, 38(5), 443-469.

*Presenter

DETERMINATION OF SOCIAL AND TECHNICAL INFRASTRUCTURE LOCATIONS IN ZONING PLANS OF HIGH POPULATED AREAS

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The number of people living in cities is increasing every year, so the population is increasing regularly. Zoning plans are made to answer needs of humans who will lived in planning areas. Zoning plans include living areas, roads, hospitals, schools and religious facilities etc.. As development plans are prepared, how many people live and what they need will be considered here. The technical and social infrastructure and the location of them are important to meet the needs of people. For the creating better life conditions and high quality living areas, roads, hospitals, schools, shopping areas, green fields, transportation stops, place of worship etc. must be accessible for the all types of people. In this study density areas identified and then pedestrian accessibility of social and technical infrastructures determine with spatial analysis in GIS. Pedestrian accessibility in the specific time for tramway stops, community clinics, schools, religious facilities determined in according to population. Some suggestion were done for location of the social and technical infrastructure in new zoning plans.

Keywords: Population Density; Development Plan; Network Analysis; Pedestrian Accessibility.

References

[1] Sisman A & Yıdırım R.E. & Oner I. (2016) *Investigation of Pedestrian Accessibility of Green Fields, Community Clinics and Schools in Atakum District,* Water Waste Symposium, Roma**.**

[2] Erkal, T. & Değerliyurt, M. (2014) *Eskişehir'de Acil Durum Yönetiminde Ağ (Network) Analizlerinin Kullanılması,* , İstanbul, Türk Coğrafya Dergisi, Sayı:61:11-20.

[3] ESRI, ArcGIS Network Analyst, (2017)

http://www.esri.com/software/arcgis/extensions/networkanalyst.

[4] Turkish Standardization Institute (2012) *TS 12174 Standart.*

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SENTIMENT ANALYSIS ON TURKISH TWEETS USING CONVOLUTIONAL NEURAL NETWORKS

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Sentiment analysis or opinion mining is one of the major application of natural language processing. Sentiment analysis is mainly thought as identifying writer's opinion from given text [1]. Sentiment analysis is mostly studied on social media data. Twitter data is mostly messy as they contain emojis, links and other non-affective data. Though, sentiment analysis using twitter data is quite challenging. In this study, we collected Turkish tweets on 'iphone' topic using twitter streaming API. Links, emojis, hashtag sign (#), etc. are removed from the collected data. Clean data is sent to Microsoft Azure Text Analytics API for labeling. We used Convolutional Neural Networks (CNN) on Keras deep learning library with tensorflow backend. Words are vectorized using word2vec and given as input. Naïve Bayes method is also applied. With CNN, 0.69 test accuracy and with Naïve Bayes 0.64 test accuracy is achieved.

Keywords: Sentiment Analysis; Deep Learning; Convolutional Neural Networks

References

[1] Shirani-Mehr, H. (2015). Applications of Deep Learning to Sentiment Analysis of Movie Reviews.

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DETERMINATION OF MEASUREMENT UNCERTAINTY IN ANALYSIS OF LOSS ON IGNITION OF CEMENT

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Loss on ignition of cement is a quality control test carried out according to TS EN 196-2 standard at the laboratories of State Hydraulic Works in Turkey to measure the amount of moisture or impurities lost when the cement sample is ignited under the specified conditions. Measurement uncertainty is a significant subject for all measurement fields. No measurement results can be interpreted correctly without the associated uncertainty. Analysts need to know how large the uncertainty is so that they can make appropriate allowances, or they need assurance that the associated uncertainty is small enough for accurate results. Laboratories accredited to ISO/IEC 17025 or related standards such as ISO 15189 are responsible for determination of measurement uncertainty in their tests to give their customers. Thus, in this study, an example calculation for measurement uncertainty in analysis of loss on ignition of cement was performed. All the calculation were done according to EUROCHEM Guide - The Fitness for Purpose of Analytical Methods and Quantifying Uncertainty in Analytical Measurement. Sources of uncertainty in the test were determined as conformity, repeatability, recovery and equipment uncertainties. Fishbone analysis was performed for calculation. Experiments were repeated by two analysts to find individual uncertainty. Repeatability of results found by these two analysts was compared by F-test with 95% confidence interval. Relative standard uncertainties were calculated for each parameter contributed to total measurement uncertainty. Finally, total measurement uncertainty and expanded measurement uncertainty (k=2) were calculated with 95% confidence interval.

Keywords: Loss on Ignition of Cement; Fishbone Analysis; F-Test; Measurement Uncertainty.

References

[1] S.L.R. Ellison & A. Williams. (2012**).** EUROCHEM Guide - The Fitness for Purpose of Analytical Methods and Quantifying Uncertainty in Analytical Measurement. Third Edition.

[2] TSE (Turkish Standards Institution) (2010). Methods of testing cement- Part 2: Chemical analysis of cement TS EN 196-2.

[3] State Hydraulic Works in Turkey (2016). Guide for determination of measurement uncertainty in analysis of loss on ignition of cement.

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DETERMINATION OF MEASUREMENT UNCERTAINTY IN ANALYSIS OF NITROGEN IN WATER

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Nitrogen is a critical parameter for water quality. Analysis of nitrogen in water was performed to STMD standard at the laboratories of State Hydraulic Works in Turkey. Measurement uncertainty is a crucial issue for all measurement fields. Knowing measurement uncertainty makes analysts be sure for accurate results. Laboratories accredited to ISO/IEC 17025 or related standards such as ISO 15189 are objected to calculate measurement uncertainty in their tests to give their customers. Hence, in this study, an example calculation for measurement uncertainty in analysis of nitrogen in water was done. All the calculation were carried out according to ISO GUM- Guides to the expression of uncertainty in measurement. Sources of uncertainty in this test were determined as conformity, repeatability, recovery and equipment uncertainties. Fishbone analysis was performed for calculation. Experiments were repeated by four analysts to find individual uncertainty. Repeatability of results found by these analysts was compared by ANOVA test. Relative standard uncertainties were calculated for each parameter contributed to total measurement uncertainty. Finally, total measurement uncertainty and expanded measurement uncertainty (k=2) were calculated with 95% confidence interval.

Keywords: Nitrogen in Water; Fishbone Analysis; ANOVA Test; Measurement Uncertainty.

References

[1] ISO/IEC Guide 98-3:2008. Uncertainty of measurement Part 3: Guide to the expression of uncertainty in measurement (GUM:1995).

[2] Standard Methods for the Examination of Water and Wastewater (STMD) (2012). Determination of nitrogen in water.

[3] State Hydraulic Works in Turkey (2016). Guide for determination of measurement uncertainty in analysis of nitrogen in water.

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THE DEFORMATION ANALYSIS USING HYPOTHESIS TESTS

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There are temporary or permanent physical changes depending on time in earth surface. These physical changes named as deformation. The magnitude and direction of the deformation effect must be measured and controlled. The geodetic deformation network is established to determine the deformation movements and the deformation measurements are made. Then, the point coordinates are calculated used the free network adjustment. So, the different point coordinates were obtained according to measured time. The difference of point coordinate must be test to decide as significant or insignificant. Thus, the significance test based hypothesis test can be made. The hypothesis tests include four stages. 1) the establishment of the zero-alternative hypothesis, 2) the calculation of the test value, 3) the calculation of the able values and 4) the comparison of test and table values.

In this study, deformation network was established in Toybelen village of Samsun province and the deformation measurements were made periodically. The deformation network was consist of 14 points. This deformation network measured in two periods used the global positioning system. Evaluation was made using the Topcon program and point coordinates were obtained. Differences in point coordinates received and these differences were significant tested. The program written in the matlab program was used for this test. Finally coordinate values compared in two periods and movement points have been identified.

Keywords: Deformation; Hypothesis Tests; Significant Tests.

References

[1] Baarda W., 1968, A *Testing Procedure For Use In Geodetic Networks, Computing Centre of The Delft Geodetic Institute*, Netherlands.

[2] Doğanalp S. & Turgut B. & İnal C., 2006, *Yükseklik ağlarında φ^2 Ölçütü ve Kalman Filtreleme Yöntemi İle Deformasyon Analizi*, Selçuk Teknik Dergisi, 5, 49-59.

[3] Gründig L.V. & Nevreither M. & Bahndorf J., 1985, *Deformation Analyses and S-Transformation*, ZFV, Helf 4, 151-160.

[4] Heunecke, O. & Pelzer, H., April 1998, *A New Terminology for Deformation Analysis Models Based on System Theory*, IAG Symposium on Geodesy for Geotechnical and Structral Engineering in Eisenstadt, 20-22.

[5] Heunecke O. & Pelzer H. & Pfeuter A. & Willgalis S., 1993, *Comparative Investigations of Dynamic Deformation Models*, 7st International Symposium on Deformation Measurements, Banff.

[6] Koch, K.R. 1999.: *Parameter Estimation and Hypothesis Testing in Linear Models*. 2nd Ed. Springer-Verlag, Berlin Heidelberg New York.

*Presenter

[7] Şişman Y. & Dilaver A., 2005, Datum *Dönüşümünde Kalite Kontrol*, TMMOB Harita ve Kadastro Mühendisleri Odası 10.Türkiye Harita Bilimsel ve Teknik Kurultayı, Ankara.

[8] Yalçınkaya M. & Bayrak T., 2005, *Comparison of Static, Kinematic and Dynamic Geodetic Deformation Models for Kutlugün Landslide in Northeastern Turkey*, Natural Hazards (2005) 34: 91–110

[9] Yang L. & Wang J. & Knight N.L. & Shen Y., 2013, *Outlier Separability Analysis With a Multiple Alternative Hypotheses Test*, Journal of Geodesy, 87, 591-604.

[10] Young C., 1983, *Analysis Of Deformation Surveys-A Generalized Method*, University of New Brunswick, Canada.

*Presenter

MODELLING EXTREME WIND SPEED DATA: A CASE STUDY FOR ESKISEHIR, TURKEY

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In this study, extreme wind speed for Eskisehir (Turkey) is modelled using the extreme value distribution (EVD). The data, obtained from the Turkish State Meteorological Service, consists of the daily maximum wind speed for the year 2015. Before modelling the maximum wind speed data, we conduct a small Monte Carlo simulation study in order to evaluate the efficiencies of the maximum likelihood (ML), Tiku's [1,2] modified maximum likelihood (MML) , the maximum product spacing (MPS) and the Cramer Von Mises (CVM) estimation methods. The results show that the MML estimators perform as good as the ML estimators and perform better than the MPS and the CVM estimators. Furthermore, the ML, MPS and CVM estimators cannot be obtained explicitly for the parameters of EVD. However, the MML estimators are formulated analytically and computed easily [3]. We therefore use the MML estimates in the modelling part of the study. In other words, the MML estimators are used for fitting the EVD to maximum wind speed data for Eskisehir.

Keywords: Extreme Value Distribution; Parameter Estimation; Efficiency; Şömodelling.

References

[1] Tiku, M.L. (1967). Estimating the mean and standard deviation from a censorednormal sample. *Biometrika*, *54*, 155-165.

[2] Tiku, M.L. (1968). Estimating the parameters of normal and logistic distributions from a censored normal sample. *Aust. J. Statist.*, *10*, 64-74.

[3] Tiku, M. L., & Akkaya, A. D. (2004). Robust Estimation and Hypothesis Testing. *New Age International Publishers (Wiley Eastern)*, New Delhi.

*Presenter

A NEW DIMENSIONAL REDUCTION METHOD BASED ON DISTANCE FOR MIXTURE DISCRIMINANT ANALYSIS

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In this study, we proposed a new dimensional reduction method for mixture discriminant analysis. The proposed method is compared to traditional methods such as variable selection with F approach, principal component analysis and clustering of variables. The results of the simulation study and real data set applications are showed that a new dimensional reduction method is a good alternative to traditional methods in respect to classification accuracy assessment.

Keywords: Dimensional Reduction; Classification Accuracy; Mixture Discriminant Analysis.

References

[1] Hastie T. and Tibshirani R. (1996). Discriminant Analysis by Gaussian Mixtures. *Journal of the Royal Statistical Society. Series B (Methodological.* 58 (1), 155-176.

[2] Hennig, C., (2004). Asymmetric linear dimension reduction for classification. *Journal of Computational and Graphical Statistics* 13, 930-945.

[3] Jacop Kogan (2007). *Introduction to Clustering Large and High-Dimensional Data*. Cambridge University Pres. U.S.A.

[4] Yeung K.Y., Ruzzo W.L. (2001). Principal Component Analysis for Clustering Gene Expression Data. *Bioinformatics.* 17, 9, 763-774.

[5] Yi, N., V. George, and D. B. Allison (2003). Stochastic search variable selection for identifying multiple quantitative trait loci. *Genetics* 164, 1129–1138.

[6] Tadesse, M. G., N. Sha, and M. Vannucci (2005). Bayesian variable selection in clustering highdimensional data. *Journal of the American Statistical Association* 100, 602–617.

*Presenter

PERFORMING PROFICIENCY TESTS FOR ANALYSIS OF ANIONS IN WATER

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Proficiency tests are needed to compare analysis results produced by different laboratories. By the results of proficiency test, each laboratory joining it can check whether their analysis are accurate or not. Analysis of anions such as fluoride, chloride and nitrate in water is routinely performed by quality control laboratories at State Hydraulic Works in Turkey. Proficiency tests that should be done convenient to ISO/IEC 17043:2010 standard are obligatory for quality control laboratories accredited to ISO/IEC 17025. Each accredited laboratory should join these tests at least once every four years. In this study, an example proficiency test for analysis of anions in water was carried on twenty four laboratories. The names of laboratories were kept secret for ethical reasons. In this test, outlier results were omitted by Grubbs' test. Reference values for each anion were found by median of the results. Standard score (z-score) calculations were performed for comparison. The results that were $|z| \leq 2$ were classified as acceptable. The other results were classified as unacceptable and these ones were rejected by the test.

Keywords: Analysis of Anions in Water; Proficiency Tests; Z-Score; Grubbs' Test

References

[1] ISO/IEC 17043:2010 (2010). Conformity Assessment-General Requirements for Proficiency Testing.

[2] H. CEBECİ (2013). Proficiency Testing and Results for Analysis of Anions in Water at State Hydraulic Works Laboratories.

*Presenter

INCREASING EFFICIENCY OF PERCENTILE ESTIMATONS FOR WEIBULL DISTRIBUTION

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The Weibull distribution is one of widely used probability distributions in many different applications and for solving a variety of problems from many different disciplines. Percentile method is one of methods used to estimate of parameters of Weibull distribution. The percentile method is commonly used parameter estimation method and has some advantages over the other estimation methods as easily computable and efficiently in parameter estimation. The effectiveness of the percentile estimators depends on the selected percentage point and chosen empirical distribution function. In this study, we aimed to determine the appropriate empirical distribution and the percentage points to increase the effectiveness of the percentile estimators for Weibull distribution.

Keywords: Weibull Distribution; Percentile Estimators; Empirical Distribution; Mean Squared Error

References

[1] Castillo, E., & Hadi, A. S. (1995). A method for estimating parameters and quantiles of distributions of continuous random variables. *Computational statistics & data analysis*, 20(4), 421-439.

[2] Hudak, D., & Tiryakioğlu, M. (2009). On estimating percentiles of the Weibull distribution by the linear regression method. Journal of materials science, 44(8), 1959.

[3] Marks, N. B. (2005). Estimation of Weibull parameters from common percentiles. *Journal of applied Statistics*, 32(1), 17-24.

[4] Wang, F. K., & Keats, J. B. (1995). Improved percentile estimation for the two-parameter Weibull distribution. *Microelectronics Reliability*, 35(6), 883-892.

*Presenter

A COMPARISON OF VARIOUS NORMALITY TESTS IN R

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The R program is a high-level statistical package program that is now popular because it is free software. Most researchers need to be aware of the assumption of normality before the analysis they are interested in. In this regard, the R program is the first reference for these researchers. There are 18 different normality tests in the stats, nortest, normtest, moments packages of the current R packages. In this study, the speed and accuracy performances of these analyzes were compared with the Monte-Carlo simulation of 18 different normality tests included in the current packages in the R program.

Keywords: Normality Tests; R Programming; Monte-Carlo Simulation.

References

[1] Anderson,T.W. & Darling, D.A. (1954), A test of goodness of fit. *Journal of American Statistical Association*, 49, 765–769.

[2] Bera, A.K. & Ng, P.T. (1995), Tests for normality using estimated score function. *Journal of Statistical Computation and Simulation*, 52(3), 273–287.

[3] Bonett, D.G. & Seier, E. (2002) A test of normality with high uniform power. *Computational Statistics and Data Analysis*, 40, 435-445.

[4] B. W. Yap & C. H. Sim. (2011). Comparisons of various types of normality tests, *Journal of Statistical Computation and Simulation*, 81:12, 2141-2155.

[5] D'Agostino, R. B. & Stephens, M. A. (Eds.) (1986). *Goodness-of-Fit Techniques*, Marcel Dekker: New York.

[6] Hadi A.N. & Naser R.A. (2011). Monte Carlo comparison of seven normality tests, *Journal of Statistical Computation and Simulation*, 81:8, 965-972.

*Presenter

APPLIANCES ENERGY PREDICTION USING LONG SHORT-TERM MEMORY

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Energy consumption of appliances is becoming a problem day by day. One effect of this is the increasing usage of appliances. If the energy consumption of any environment can be estimated, then different intervention can be done to reduce unnecessary energy consumptions. At a previous study, different parameters like humidity, temperatures, have been taken from the living room, kitchen, office room, laundry room and bathroom using sensors. Data taken from the sensors are transmitted using a wireless network. Outside humidity, atmospheric pressure, wind speed, visibility parameters are taken from a weather station. These data are analyzed to estimate energy consumption of a defined building [1]. In this study, the discussed data is used for a machine learning to analyze and predict the energy consumptions. Long Short-Term Memory (LSTM) which is a Recurrent Neural Network is used in this work [2]. The predicted values of this study are compared with the values of the previous work. Both output values are analyzed, graphical outputs are discussed and shown.

Keywords: Appliances Energy Prediction, Long Short-Term Memory, LSTM, Deep Learning

References

[1] Candanedo, L. M., Feldheim, V., & Deramaix, D. (2017). Data driven prediction models of energy use of appliances in a low-energy house. *Energy and Buildings, 140*, 81-97.

[2] Hochreiter, S., & Schmidhuber, J. (1997). Long short-term memory. *Neural Computation, 9(8)*, 1735-1780.

*Presenter

A STUDY ON GENERAL INTEGRAL INEQUALITIES FOR FUNCTIONS WHOSE FIRST DERIVATIVES IN ABSOLUTE VALUE AT CERTAIN POWERS ARE QUASI-CONVEX

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In this study, by using the identity in the study of İşcan et al. [5], we establish general integral inequalities for functions whose first derivatives in absolute value at certain powers are quasi-convex. It is seen that some of these equalities for different values of n correspond to known inequalities in the literature and others are new equalities. Furthermore, it is indicated that these inequalities reduce to Hermite-Hadamard inequalities and Bullen type inequalities for n=1 and n=2, respectively.

Keywords: Quasi-Convex Function; General Integral Inequalities; Hermite-Hadamard Inequalities; Bullen Type Inequalities

References

[1] Alomari, M., Darus, M. & Kirmaci, U.S. (2010). Refinements of Hadamard-type inequalities for quasi-convex functions with applications to trapezoidal formula and to special means. *Computers and Mathematics with Applications.* 59, 225–232.

[2] Alomari,,M, Darus, M. & Dragomir, S.S. (2010). Inequalities of Hermite–Hadamard's type for functions whose derivatives absolute values are quasi-convex. *Tamkang Journal of Mathematics,* 41(4),353-359.

[3] Dragomir, S.S., & Agarwal, R.P. (1998).Two inequalities for differentiable mappings and applications to special means of real numbers and to trapezoidal formula. *Appl.Math.Lett.*11, 91–95.

[4] Ion, D.A. (2007). Some estimates on the Hermite-Hadamard inequality through quasi-convex functions. *Annals of University of Craiova, Math. Comp. Sci. Ser.* 34, 82–87.

[5] İşcan, İ., Toplu, T. & Yetgin, F. (2017). Some new inequalities on generalization of Hermite-Hadamard and Bullen type inequalities, applications to trapezoidal formula and midpoint formula. https://www.researchgate.net/publication/317231757.

[6] Pearce, C.E.M..,&, Pecaric, J. (2000). Inequalities for differentiable mappings with application to special means and quadrature formula. *Appl.Math.Lett.* 13, 51–55.

[7] Pecaric,J., Proschan, F., & Tong, Y.L. (1992). Convex Functions, Partial Ordering and Statistical Applications. *Academic Press, San Diego,* (1992).

*Presenter

A PERFORMANCE COMPARISON OF MAXIMUM LIKELIHOOD ESTIMATION AND GENETIC ALGORITHM ON PROGRESSIVE TYPE 2 CENSORED SAMPLES

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In this paper, the estimation of parameters based on Type-II censored sample from a Weibull distribution is obtained by maximum likelihood estimation (MLE) and genetic algorithm. Performance of estimates are evalualed in terms of Averages values and mean squared errors of the estimates , average number of iterations (AI) needed for convergence. An illustrative example is also presented.

Keywords: Maximum Likelihood Estimation; Genetic Algorithm.

References

[1] Balakrishnan, N., & Aggarwala, R. (2000). *Progressive censoring: theory, methods, and applications*. Springer Science & Business Media.

[2] Cohen, A. C. (1963). Progressively censored samples in life testing. *Technometrics, 5*(3), 327-339.

[3] Ng, H. K. T., Chan, P. S., & Balakrishnan, N. (2002). Estimation of parameters from progressively censored data using EM algorithm. *Computational Statistics & Data Analysis*, *39*(4), 371-386.

[4] Wu, S. J. (2002). Estimations of the parameters of the Weibull distribution with progressively censored data. *Journal of the Japan Statistical Society*, *32*(2), 155-163.

[5] Balakrishnan, N., & Lee, S. K. (1998). 5 Order statistics from the Type III generalized logistic distribution and applications. *Handbook of Statistics, 17*, 127-155.

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EVALUATING THE CITIES IN TURKEY ACCORDING TO CONSUMPTION EXPENDITURES

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Humanity had many necessities since the day it came into existence. They satisfied these necessities through the consumption of various goods and services. The consumption expenditures of humans have been a subject of interest for many scholars and many studies were conducted in this field. Our study examines the consumption expenditures of provinces in Turkey for the years between 2012 and 2014 based on the Statistical Regional Units Classification-2. The consumption expenditures criteria obtained from Turkish Statistics Institute were analyzed with the MCDM methods. The criteria with weights below 10% were removed. Then, the provinces in Turkey were clustered by using cluster analysis according to 5 criteria. In line with the criteria determined by MCDM methods, it was concluded that consumption amount is affected by the spatial neighborhood relations in Turkey.

Keywords: Cluster Analysis; Consumption Expenditures; MCDM.

References

[1] Han J., Kamber M., (2006). *Data mining: concepts and techniques*, 2nd ed., USA: Morgan Kaufmann.

[2] Keynes, J.M. (1936), *The General of Employment, Interest and Money*. New York: Horcourt Brace and Co.

[3] Vural, B. M., Koç, Ş. A., Vural, K. (2010). Belirsizliğin Özel Tüketim Harcamaları Üzerindeki Etkisi: Türkiye Örneği. *Kocaeli Üniversitesi Sosyal Bilimler Enstitüsü Dergisi, 20*, 2-10.

[4] Ching W.K., Michael K.P. (2002). Advances in data mining and modeling, 1st ed., Hong Kong: World Scientific.

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GAUSSIAN NOISE REMOVAL VIA HEAT EQUATION

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In this study, Gaussian noise elimination has been performed based on the heat equation. The heat equation actually shows a low-pass filter behavior. Generally, it contains only the data term. Therefore, when noise is removed, blurring appears in the resulting image. In this study, the fidelity term has been added to the heat equation in order to preserve the original structure of the given image. Namely, when the noise is removed, and at the same time, the blurring in the resulting image is also reduced. In the presented method, the noise reduction process is performed by taking into account the neighborhood relations of both the Standard Five Points (SFP) and the Diagonal Five Points (DFP) Formulas. Here, the noise removal method performed by using with and without the fidelity term has been compared based on the two neighborhood conditions. The best results based on the mean square error criterion are obtained by using the SFP formula where the fidelity term is taken into account on the given image. Since the neighborhood distances in the method using the SFP formula are less than the DFP formula, the method using the SFP formula generates better results. The experimental results obtained are given in the table below where the standard deviation of Gaussian noise and the number of iterations are set to 20 and 150 respectively. In future studies, it is planned to be used a fuzzy based noise reduction method in order to generate better results.

		
a) Original image	b) Noisy image	c) SFP without fidelity term (MSE): 432.964

*Presenter

		
c) SFP with fidelity term (MSE): 119.338	d) DFP without fidelity term (MSE) : 522.208	e) DFP with fidelity term (MSE) : 151.251

Keywords: Heat Equation with Fidelity Term; Gaussian Noise Removal; Standard Five Points Formula (SFPF); The Diagonal Five Points Formula (DFPF).

References

[1] Mhassin, A. A. Numerical Solution of Poisson Equation Using Fuzzy Data by finite Difference.

[2] Saikia, R. K. (2011). Fuzzy numerical solution of Poisson equation using fuzzy data. *International Journal of Engineering Science and Technology*, 3(12), 8450-8456

*Presenter

A ROBUST APPROACH FOR MULTI-CRITERIA DECISION MAKING

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In global markets, it is very important to measure the performance of the firms. Multi-criteria decision making (MCDM) techniques are very popular for performance measurement task. Although there are several methods within MCDM techniques, most of them are based on subjective criteria. Criteria Importance Through Intercritera Correlation (CRITIC) method is one of the most useful approach for objective decision making [1]. CRITIC method employs based on the covariance matrix of the variables. Obviously, CRITIC generates unreliable results when the outliers exist in data set. To overcome this problem, we propose a robust approach using Deterministic Minimum Covariance Estimator (DETMCD) [2]. Even though the classical MCD estimators do not produce consistent results due to the sampling scheme, DETMCD enables to give stable results. The experimental results indicate that our approach efficiently achieves the goal of performance measurement in the presence of outliers. We conducted the implementations in R software [3].

Keywords: Multi-Criteria Decision Making; Robust Estimators; Performance Measurements

References

[1] Kazan, H., & Ozdemir, O. (2014). Financial performance assessment of large scale conglomerates via TOPSIS and CRITIC methods. *International Journal of Management and Sustainability*, *3*(4), 203.

[2] Hubert, M., Rousseeuw, P. J., & Verdonck, T. (2012). A deterministic algorithm for robust location and scatter. *Journal of Computational and Graphical Statistics*, *21*(3), 618-637.

[3] R Core Team (2017). R: A language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria. URL https://www.R-project.org/.

*Presenter

EFFECT ON CONVERGENCE DIAGNOSTIC TESTS OF THINNING RATE IN BAYESIAN ANALYSIS

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The most basic problems for the most users of Bayesian approach can determine prior distributions, the number of samples, start point of sample, number of burn-in and thinning rates by running Markov chain. In this paper, after establishing a Bayesian logistic random effect model that is suitable a real medical data and determining the appropriate prior distributions, we have researched whether different thinning rates are an effect on convergence diagnostic tests by keeping the number of samples and the number of burn in a constant. Firstly, we provide an expository review of Bayesian logistic random effect models, MCMC, thinning rate and some diagnostic tests. Consequently, the thinning rate has been found to have no effect on the output of the convergence diagnostics and model parameters. Thinning rate is seen to be important only for time, memory and .to reduce autocorrelation.

Keywords: Markov Chain Monte Carlo (MCMC); Thinning Rate; Convergence Diagnostic Tests; Bayesian Logistic Random Effect Models.

References

[1] Booth, J.G., & Hobert, J.P. (1999). Maximizing generalized linear mixed model likelihoods with an automated Monte Carlo EM algorithm. *Journal of the Royal Statistical Society. Series B. Methodological*; 61:265–285.

[2] Brooks, S., & Giudici, P., & Phillipe, A. (2003). Nonparametric convergence assessment for MCMC model selection. *Journal of Computational and Graphical Statistics*, 12:1–22.

[3] Gamerman, D. (1997). Sampling from the posterior distribution in generalized linear mixed models. *Statistics and Computing*; 7:57–68.

[4] Gelman, A. (2006). Prior Distributions for Variance Parameters in Hierarchical Models, *International Society for Bayesian Analysis*, 1, Number 3, pp. 515-534.

[5] Geweke J. (1992). Evaluating the Accuracy of Sampling-Based Approaches to Calculating Posterior Moments," in J. M. Bernardo, J. O. Berger, A. P. Dawiv, and A. F. M. Smith, eds., Bayesian Statistics, volume 4, Oxford, UK: Clarendon Press.

[6] Heidelberger P., & Welch P. D., (1981). A Spectral Method for Confidence Interval Generation and Run Length Control in Simulations, *Communication of the ACM*, 24:233-245.

[7] Kass, R. E., & Carlin, B. P., & Gelman, A., & Neal, R. (1998). Markov Chain Monte Carlo in Practice: A Roundtable Discussion, *The American Statistician*, 52, 93–100.

*Presenter

[8] Larsen, K., & Petersen, J. H., & Jørgensen, E.B. & Endahl, L. (2000). Interpreting Parameters in the Logistic Regression Model with Random Effects, *Biometrics*, Vol. 56, No. 3 (Sep., 2000), pp. 909-914.

[9] Link, W.A., & Eaton M.J. (2012). On thinning of chains in MCMC. *Methods in Ecology and Evolution*, 3, 112-115, USA.

[10] Natarajan R, & Kass RE. (2000). Reference Bayesian methods for generalized linear mixed models. *Journal of the American Statistical Association;* 95:227–337.

[11] Pierce, D. A. & Sands, B. R. (1975). Extra-Bernoulli variation in binary data. Technical Report 46, Department of Statistics, Oregon State University.

[12] Raftery A. E., & Lewis S. M. (1996). The Number of Iterations, Convergence Diagnostics and Generic Metropolis Algorithms, in W. R. Gilks, D. J. Spiegelhalter, and S. Richardson, eds., Markov Chain Monte Carlo in Practice, London, UK: Chapman & Hall.

[13] Sahlin, K. (2011). Estimating convergence of Markov chain Monte Carlo simulations Mathematical Statistics Stockholm University Master Thesis :2 http://www.math.su.se

[14] Stiratelli, R., & Laird, N. M., & Ware, J. H. (1984). "Random-Effects Model for Several Observations With Binary Response," *Biometrics*, 40, 961-971.

[15] Zeger, S.L., & Karim R.M. (1991). Generalized linear models with random effects: A Gibbs sampling approach. *Journal of the American Statistical Association*; 86:79–86.

*Presenter

AN APPLICATION of MULTI-PERIOD MULTI-PRODUCT PRODUCTION PLANNING MODEL IN AUTOMOTIVE INDUSTRY

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In this study, multi-product, multi-period (MPMP) production planning model was developed considering production routes on machines in automotive industry. MPMP production planning problems consist of multi products which are processed on machine centers in given time periods. Every product has several operations and each operation has to be processed in a specific machine center. The operations of each product must be processed in a given order, which is specific for that product. In these systems, the main goal is to use efficient utilisation of available capacity of machines. For this purpose, the problem was first formulated as mixed integer non-linear programming model (MINLP). Because of difficulty to solve optimality, the proposed model was reformulated by a mixed-integer linear programming model (MILP) using linearization techniques and then solved using via GAMS software. The objective of the problem is to minimize the total cost that is composed of operation, inventory holding, and backorder cost during planning horizon. The proposed model is capable of optimizing multi-product, multi-period production planning network while considering production routes.

Keywords: MPMP Model; Mixed-Integer Linear Programming Model; Production Planning.

References

[1] Feylizadeh, M. R., Modarres, M., & Bagherpour, M. (2008). Optimal Crashing of Multi-period Multiproduct Production Planning Problems. *World Applied Sciences Journal*, *4*(4), 499-505.

[2] Lu, S., Su, H. Y., Zhu, L., & Shen, Q. (2013, July). Multi-objective mathematic programming model and algorithm for production planning in steel and iron enterprise. In *Control Conference (CCC), 2013 32nd Chinese* (pp. 8401-8406). IEEE.

*Presenter

NEW LEAF AREA ESTIMATION MODEL IN PEAR

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Leaf area is an important variable for most stages of plant growth and development such as light interception, water and nutrient use, photosynthetic efficiency, respiration, yield potential. For this reason, non-destructive estimation of leaf area saves time as compared with geometric measurements. In the creation of accurate leaf area estimation model are usually some leaf parameters such as the length and width of leaves. This study was carried out to determine the easy, accurate and inexpensive and reliable leaf area estimation model in pear by linear measurements of leaf geometry. A model was developed by using six pear cultivars of 'Abate Fetel','Carmen', 'Decana', 'Deveci', 'Santa Maria' and 'Williams' grafted on BA 29 quince rootstock and by measuring lamina width, length and leaf area. The full expanded different sized leaf samples were randomly taken from tree canopy in actively growing season (three months; June, July, August) from the six cultivars, randomized 100 leaves collected from each cultivar and each month period and during 2014 and 2015 growing season, i.e. a total of 3,600 leaves. Then, in brief, after a leaf has been placed on a sheet of paper and photocopied, a digital planimeter or suitable tool may be used to measure the actual leaf area. The leaf width (W) and length (L) of the leaves sampled can be measured by a simple ruler. After this, regression analysis of the data were done and a reliable equation were developed. The equation developed was found that the relationships between the actual leaf area and the predicted leaf area given by the equation developed were significant at a level of 0.1%. The predicted leaf area (LA) estimation model is: $LA = 0.090 + 0.028W + 0.183W^2 + 0.582W*L$, $r^2 = 0.989$, where LA is the leaf area. In addition, the model was validated by measurements of new leaf areas of other five pear cultivars. As a consequence of this study, the developed model can estimate accurately and reliably the leaf area of pears in relevant studies without the use of any expensive instruments.

Keywords: Leaf area; Estimation model; Pear; Pear cultivars

References

[1] Demirsoy, H., Demirsoy, L., Uzun, S., & Ersoy, B. (2004). Nondestructive leaf area estimation in peach. *European Journal of Horticultural Science*, 69 (4): 144–146.

[2] Serdar, U., & Demirsoy, H. (2006). Non-destructive leaf area estimation in chestnut. *Scientia Horticulturae, 108 (2): 227–230.*

[3] Sala, F., Arsene, G.G., Iordanescu, O., & Boldea, M. (2015). Leaf area constant model in optimizing foliar area measurement in plants: A case study in apple tree. *Scientia Horticulturae 193: 218–224.*

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THE LEAF AREA ESTIMATION MODELS DEVELOPED BY ONDOKUZ MAYIS UNIVERSITY, DEPARTMENT OF HORTICULTURE

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Plant leaves and leaf area are an important variable within land ecosystems mainly in relation to the interception of solar light and its conversion into biochemical energy. The leaf area can be measured by destructive methods based on leaf detachment planimetric, gravimetric, and non-destructive methods based on measurements or on imagery – calculation method, scanning method, imaging method. Measuring leaf area is time-consuming and costly depending on work methods and/or precision. Easy, rapid, accurate, non-destructive estimation of plant leaf areas offers researchers reliable and inexpensive alternatives in horticultural experiments. Leaf area estimation models were developed in some horticultural crops such as strawberry, sweet cherry, chestnut, peach, pear, blackberry, grape, pepper, aubergine, tomatoes by Horticulture Department of Ondokuz Mayıs University. These improved models can be used in reliably estimation of leaf area of horticultural plants in relevant studies such as respiration, transpiration, photosynthesis, light interception, water and nutrient use, flowering, fruit set, crop growth, yield, and quality without the use of any expensive tools.

Keywords: Leaf Area; Horticultural Crops; Leaf Area Models; Ondokuz Mayıs University

References

[1] Uzun, S., & Celik, H. (1999). Leaf Area Prediction Models (Uzçelik-I) For Different Horticultural Plants. *Turkish Journal of Agriculture and Forestry, 23, 645-650.*

[2] Pandey, S.K., & Singh, H. (2011). A Simple, Cost-Effective Method for Leaf Area Estimation. *Hindawi Publishing Corporation Journal of Botany, 2011, 1-6.*

[3] Spann, T.M., & Heerema, R.J. (2010). A simple method for non-destructive estimation of total shoot leaf area in tree fruit crops. *Scientia Horticulturae, 125: 528–533.*

*Presenter

CLUSTERING ALGORITHMS FOR CATEGORICAL DATA SETS AND AN APPLICATION

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The aim of the cluster analysis is to divide multivariate observations into groups that observations are similar. There are many cluster algorithms and the most of these have based on distances between multivariate observations. Because of this, traditional clustering algorithms give fallacious results in data sets which consist of categorical variables. In this study, we aim to introduce the clustering analysis algorithms for categorical attributes and to demonstrate that these algorithms are more useful than traditional algorithms in real data sets which consist of categorical attribute.

Keywords: K means Algorithm; K modes Algorithm; ROCK Algorithm; Categorical Data.

References

[1] Guha, S., Rastogi, R., & Shim, K. (1999, March). ROCK: A robust clustering algorithm for categorical attributes. In Data Engineering, 1999. Proceedings., 15th International Conference on (pp. 512-521). IEEE.

[2] Huang, Z. (1997). A fast clustering algorithm to cluster very large categorical data sets in data mining. DMKD, 3(8), 34-39.

[3] Huang, Z. (1998). Extensions to the k-means algorithm for clustering large data sets with categorical values. Data mining and knowledge discovery, 2(3), 283-304.

[4] Huang, Z., & Ng, M. K. (1999). A fuzzy k-modes algorithm for clustering categorical data. IEEE Transactions on Fuzzy Systems, 7(4), 446-452.

[5] Izenman, A. J. (2008). Modern multivariate statistical techniques (Vol. 1). New York: Springer.

*Presenter

ESTIMATING VALUE AT RISK FOR PORTFOLIO VIA COPULA APPROACH

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Since financial assets are correlated each other, modelling the relations contributes to investors in terms of funding accurately. In financial studies, determining dependence structure between variables is commonly investigated. Distributions of variables represent key point in specifying relations. For instance, ordinary correlation coefficient provides accurate dependence structure if distributions of interest variables are normally distributed. However, it is difficult to hold the assumption in actual data sets. Financial returns are insufficient to satisfy the assumption of multivariate normality since they are often skewed and heavy tailed. Copula is one of method used in modelling dependence structure between financial assets. Copula is a function that provides a link between multivariate distribution and its univariate marginals. According to Sklar's theorem (1959) which unearths the presence of copulas any n-dimensional joint distribution function can be decomposed to n-margins and a copula. This indicates that joint distributions for any variables can be generated via copula irrespective of marginal distributions of interest variables. This provides crucial advantage in modelling dependency. In this study, for the sake of application, value at risk for given portfolio is estimated by means of copula approach.

Keywords: Dependency; Copula Approach; Value at Risk.

References

[1] Genest, C., Bruno, R., David B., 2009. Goodness-of-fit tests for copulas: A review and a power study. Insurance: Mathematics and economics 44(2), 199-213..

[2] Joe, H., 1997. Multivariate models and multivariate dependence concepts. CRC Press.

[3] Manner, H., Reznikova, O., 2012. A survey on time-varying copulas: specification, simulations, and application. Econometric Reviews, 31(6), 654-687.

[4] Nelsen, R. B., 2006. An introduction to copulas, SpringerNew York.

[5] Huang, J. J., Lee, K. J., Liang, H., & Lin, W. F., 2009. Estimating value at risk of portfolio by conditional copula-GARCH method. Insurance: Mathematics and economics, 45(3), 315-324.

[6] Sklar, A., 1959. Fonctions de répartition à n dimensions et leurs marges. 8. Publications de l'Institut Statistique de l'Universite de Paris, 229–231.

*Presenter

MALMQUIST EFFICIENCY ANALYSIS OF WIND TURBINES IN TURKEY

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Renewable energy production has experienced rapid growth over the last two decades and this growth is likely to continue. Wind energy production contributed a significant share to this expansion and has attracted institutional investors. This study examines the efficiency of wind turbines energy production. Using non-parametric methodologies, Malmquist productivity index (MPI) based on Data Envelopment Analysis (DEA), we decompose the productivity index into technical change and technical efficiency components. The results show that electricity losses amount to 37% of the maximal producible electricity. Most of these losses are from changing wind conditions, while 8% are from turbine errors.

Keywords: Efficiency; Malmquist Productivity; Wind Turbines; Energy.

References

[1] Carvalho, A., González, M.C., Costa, P., Martins, A. (2009): Issues on Performance of Wind Systems derived from Exploitation Data. Industrial Electronics, 2009. IECON '09. 35th Annual Conference of IEEE: 3599-3604.

[2] Homola, M. C., Byström, J., Nicklasson, P. J., Sundsbø, P. A. (2009): An improved method for wind power estimation. Working Paper, Narvik University College, Norway, 1-13. **[3]** Borovkov A. A., 'On the asymptotic behaviour of the distributions of the first passage', Mat. Zametki, Vol.75, No.1, pp.24–39, (2004).

[3] Kusiak, A., Verma, A., Wei, X. (2012): Wind turbine capacity frontier from SCADA. Wind Systems Magazine. September 2012: 36-39.

[4] Staffell, I., Green, R. (2014): How does wind farm performance decline with age?, Renewable Energy, 66: 775-786. **[6]** Lotov, V. I., On some boundary crossing problems for gaussian random walks, The Annals of Probab., 24, 1996, pp.2154–2171, (1996).

*Presenter

DIFFERENTIAL EVOLUTION ALGORITHM FOR PARAMETER ESTIMATION IN DOUBLE EXPONENTIAL SMOOTHING

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Data analysis and estimation are required to make accurate predictions for the future. Time series are the series that observe the variation in time of a variable and the distribution of observation results according to time. In the presence of the trend component in the time series data, Holt Exponential Smoothing Method is needed. In this study, the smoothing parameters used in the Holt Exponential smoothing method and the initial values of series, the general smoothing, trend smoothing are determined by differential development algorithm method. The results obtained with an application are compared with other exponential smoothing methods.

Keywords: Time Series Analysis; Holt Exponential Smoothing Method; Differential Evolution Algorithm.

References

[1] A. Agapie, "Forecasting the economic cycles based on an extension of the Holt- Winters model. A genetic algorithms approach", (1997), 96–99.

[2] S. P. Kalekar, "Time series Forecasting using Holt-Winters Exponential Smoothing", Kanwal Rekhi School of Information Technology, (2004).

[3] D. Karaboğa , "Yapay Zeka Optimizasyon Algoritmaları", Atlas Yayın Dağıtım, İstanbul, (2004).

[4] K. A. Mansor and W. I. Ishak, , Forecasting Tourist Arrivals to Langkawi Island Malaysia. Cross-Cultural Management Journal Volume XVII, Issue 1 (7), (2015).

*Presenter

PERFORMANCE OF SUPERVISED MACHINE LEARNING ALGORITHMS FOR THE TURKEY'S TOP 100 INDUSTRIAL ENTERPRISES 2016

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The purpose of this study is to determine which variables are most important to enter the first hundred large industry establishments. In the study, the data of the first 500 large industrial establishments of Turkey in the year of 2015 were used. Machine learning techniques have been used to identify these variables. Machine learning a branch of artificial intelligence, relates the problem of learning from data samples to the general consept of the inference. There are two main common types of ML methods known as (i) supervised learning and (ii) unsupervised learning. In supervised learning, a labelled set of training data is used to estimate or map the input data to the desired output. In contrast, under the unsupervised learning methods, no labelled examples are provided and there is no notion of the output during the learning process. In this study, we used their most popular supervised machine learning algorithm which are (Support Vector Machine (SVM), Naïve Bayes and Decision Tree (J48)) were selected by literature review and compared with each other by considering accuracy rate. The 10-fold cross validation was used to calculate the accuracy of the classifiers.

Keywords: Machine Learning; Support Vector Machine, Naive Bayes, Decision Tree

References

[1] Alpaydın, E. 2011. Yapay öğrenme. Boğaziçi Üniversitesi Yayınevi, İstanbul.

[2] Balaban, M. E., ve Kartal E. 2015. Veri Madenciliği ve Makine Öğrenmesi Temel Algoritmaları ve R Dili ile Uygulamaları. Çağlayan Kitabevi, İstanbul.

[3] Burke HB, Goodman PH, Rosen DB, et al. 1997.Artificial neural networks improve the accuracy of cancer survival prediction. Cancer; 97(4):857–62.

[4] Coşkun, C. ve Baykal, A. 2011. Veri Madenciliğinde Sınıflandırma Algoritmalarının Bir Örnek Üzerinde Karşılaştırılması. Akademik Bilişim, Malatya.

[5] Faraggi, D. ve Simon, R. A neural network model for survival data. Stat Med 1995;14(1):73–82.

[6] Kattan, M., Hess, K. and Beck, J. 1998 Experiments to determine whether recursive partitioning (cart) or an artificial neural network overcomes theoretical limitations of Cox proportional hazards regression. Comput Biomed Res;31(5):363–73.

*Presenter

LMS AND LAD BASED ARTIFICIAL NEURAL NETWORK ROBUST LEARNING ALGORITHMS

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Regression is one of the most powerful test technique as long as its hypothesis is included by an analysis. Yet those hypothesis may diverge when practiced with real life data. Furthermore contradictory values existing in data may result in biased regression predictions. In the cases of the data sets can not be distributed normally and/or have outliers, robust regression estimators are needed. For that purpose some robust regression techniques have been developed in literature. Suggested method is based on artificial neural network (ANN). On the basis of learnability of human brain ANN is grounded on a base that machines can also learn, in other words they can produce new knowledge, too. Recently, ANN is the underlying reason of many technics from cell phones to finger print diagnose systems. In this method the consequences of using different functional forms of the data at the educational process of ANN, is researched. There is outlier in current dataset. For that reason by using least absolute deviations (LAD) and least median squares (LMS) estimators purposed functions, it is targeted to get better results than least squares (LS) estimator. Comparisons are made according to MAPE, MdAPE and MSE criterias.

Keywords: Robust Estimators; Artificial Neural Network

References

[1] Lin Y.L, Hsieh J.G, Jeng J.H & Cheng W.C (2015). *On least trimmed squares neural networks. Neurocomputing*, 161, 107-112.

[2] Öztemel E., (2016). *Yapay sinir ağları*. *PapatyaBilim Üniversite Yayıncılığı*.

[3] Maronna R.A, Martin R.D & Yohai V.J (2006). *Robust statistics theory and methods*. *John Willey&Sons*.

*Presenter

POSTER PRESENTATIONS

SAMPLE SIZE IN TWO-FACTOR EXPERIMENTS IN OC CURVES

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Searching; time, workforce, money, equipment-equipment, etc., due to the inadequate precious resources of the population to examine the sample with a suitable sampling method works by pulling. Success in a given research depends, for example, on how well the population is represented as well as possible. Because the results will be generalized to the population. In order to increase our ability to represent our population, we need to pay attention to the following points.

1- The individuals in the population being treated should have equal chance of entering the sample (random sample).

2. The researcher must have sufficient knowledge about the research material.

3-The degree of representation of the populated population, for example, also depends on its size.

The optimal sample size is the size of the sample, which we can decide with a certain level of confidence, leaving a certain margin of error. There are methods to determine the sample size with the aid of prepared graphs (OC curves), ready rulers or formulas.

In this study, the use of OC curves will be examined in determining the size of the sample in two-factorial Experiments. Statistical test for a given sample size versus a OC curve II. speak chart of type error probability. These curves help the investigator determine the number of repetitions. Thus, the trial will be sensitive to significant potential differences in the treatments.

Keywords: OC Curves; Size Of Sample; Two-Factorial Experiments.

References

[**1**] Büyüköztürk, Ş. vd. (2011). Bilimsel Araştırma Yöntemleri. Ankara: PegemA Yayıncılık.

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[**2**] Bal, H. (2012). Bilimsel Araştırma Yöntemleri, Nicel Araştırma Yöntemi. Isparta: Fakülte Kitabevi.

[**3**] D. Hosmer, S. Lemeshow, Applied Logistic Regression,Wiley,NY,20 bn.

[**4**] Efe,E. (2000). İstatistiks el Örnek Büyüklüğü e Yayın No: 73 Ders Kitapları Yayın No: 9 (özel baskı) Kahramanmaraş.

[**5**] Ekiz, D. (2009). Bilimsel Araştırma Yöntemleri. Ankara: Anı Yayıncılık.

[**6**] Karasar, N. (2010). Bilimsel Araştırma Yöntemi. Ankara: Nobel Yayıncılık.

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ALGORITHMS USED IN DECISION TREES

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The decision tree is a structure that transforms from very large data sets into smaller data sets by applying decision rules to create rules that will provide a statistical significance. The algorithms used to provide significance in the decision tree automatically select variables in the new learning period by eliminating the worthless variables automatically.

Decision trees algorithms start with a dependent variable and the application field with arguments that will help interpret this dependent variable. Principal algorithms for performing classification in decision trees; Id3 algorithm, C4.5 algorithm, C5.0 algorithm, Chaid algorithm, C & rt algorithm, Cal 5 algorithm, Random forest algorithm, Rotation tree algorithm, Hunt algorithm, Mars, Accelerated trees, Sprint, Sliq and Quest [1].

The algorithm determines the choice of variable itself in the new learning period by systematically removing the variables that do not make meaning. It is aimed to recognize the algorithms used for the purpose of this study [2].

Keywords: Algorithms; Decision Tree

References

[**1**] Akçapınar, G.,Coşgun, E., Altun, A., 2011. Prediction of Perceived Disorientation in Online Learning Environment with Random Forest Regression. In*EDM* (pp. 259-264).

[**2**] Safavian S.R. and Landgrebe D., 1991. "A Survey of Decision Tree Classifier Methodology", IEEE Transactions on Systems Man andCybernetics, 21, 660- 674.

[**3**] Quinlan J.R., 1993. "C4.5: Programs for Machine Learning", Morgan Kaufmann, San Mateo, CA, 302 s.

*Presenter

ASSOCIATION ANALYSIS METHOD FOR DETERMINING UNNECESSARY TEST ORDERS AND EFFECTIVE USE OF HBA1C TEST

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Nowadays, biochemistry laboratories have become one of the most important departments of hospitals, since they provide evidence to ease the disease identification process with the help of the tests they performed. Efficiency of the biochemistry tests are improved in terms of time and reliability with new laboratory equipment that are enhanced during last decades. Hence, doctors have begun to order biochemistry tests more often to make final decisions about diseases. However, some of the test orders are becoming useless with the increased number of test orders. These test orders cause considerable financial loss to hospitals and cause loss of time in terms of both laboratories and patients. In this study, we have examined all biochemistry test orders made by Emergency Unit of Farabi Hospital of Karadeniz Technical University in last three years. We used association analysis approaches to calculate the frequency of test order co-occurrence and to identify unnecessary test orders.

We identified many unnecessary test orders using association analysis. Especially, the HbA1C test, which is the one of the most powerful indicators of diabetes disease, has been ordered over 400 times from Emergency Unit that is considered as a mistake by laboratory experts. Health Practice Communique issued by the Ministry of Health suggests that the interval for the successive HbA1C test for a diabetic patient should be at least 3 months. In this study, we have also performed time-dependent frequency analysis for HbA1C test to measure its negative effects on hospital resources.

The significant increase of health-care costs caused by unnecessary test orders could be reduced by identification of the tests that do not contribute to diagnosis and treatment of diseases. Additionally, providing effective treatment with the right laboratory orders helps to decrease the patient's hospitalization time, per-patient costs and work power loss.

Keywords: Unnecessary Test Order Identification; Association Analysis; HbA1C.

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References

[1] [Demir, S., Zorbozan, N., and Basak, E., "Unnecessary repeated total cholesterol tests in biochemistry laboratory," Biochem. Medica, pp. 77–81, Jul. 2016.

*Presenter

[2] May, T. a. et al., "Reducing unnecessary inpatient laboratory testing in a teaching hospital," Am. J. Clin. Pathol., vol. 126, no. 2, pp. 200–206, 2006.

[3] Man, A. et al., "An evaluation of autoimmune antibody testing patterns in a Canadian health region and an evaluation of a laboratory algorithm aimed at reducing unnecessary testing," Clin Rheumatol, vol. 32, no. 5, pp. 601–608, 2013.

[4] Katz, R. I. et al., "Survey study of anesthesiologists' and surgeons' ordering of unnecessary preoperative laboratory tests.," Anesth. Analg., vol. 112, no. 1, pp. 207–12, 2011.

[5] **D**ivinagracia, R. M., Harkin, T. J., Bonk, S., and Schluger, N. W., "Screening by Specialists To Reduce Unnecessary Test Ordering in Patients Evaluated for Tuberculosis," Chest, vol. 114, pp. 681–684, 1998.

[6] Tsay, Y.-J. and Chiang, J.-Y., "CBAR: an efficient method for mining association rules," Knowledge-Based Syst., vol. 18, no. 2–3, pp. 99–105, 2005.

[7] Özekes, S., "Veri madenciliği modelleri ve uygulama alanları," İstanbul Ticaret Üniversitesi Derg., pp. 65–82, 2003.

[8] Mahmood, S., Shahbaz, M., and Guergachi, A., "Negative and positive association rules mining from text using frequent and infrequent itemsets.," ScientificWorldJournal., vol. 2014, p. 973750, 2014.

[9] Ma, I., Guo, M., Viczko, J., and Naugler, C., "Evaluation of a provincial intervention to reduce redundant hemoglobin A1c testing," Clin. Biochem., no. September, pp. 0–1, 2017.

*Presenter

A MONTE CARLO SIMULATION STUDY ROBUSTNESS OF MANOVA TEST STATISTICS IN BERNOULLI DISTRIBUTION

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The aim of this study is to compare the robustness of Manova test statistics against Type I error rate using the Monte Carlo simulation technique. In the method, numbers are generated according to constant and increasing variance for *g=3,4,5* group *p=3,5,7* dependent variables *n=10,30,60* sample size using the R. 2160000 numbers have been produced using these combinations. Pillai Trace test statistic has been the least deviating from the nominal α =0.05 value. Wilk Lambda and Hotelling-Lawley Trace test results were close to each other. The researchers can decide according to the comparison results of the analysis's suggested decision stage.

Keywords: MANOVA test statistics; Simulation Study; Monte Carlo

References

[1] Bartlett, M.S. (1954). A Note on the Multiplying Factors for Various chi-square pproximations. *Journal of the Royal Statistical Society* Series B (Methodological): 296-298.

[2] Davis, A.W. (1980). On The Effects Of Nonnormality On The Likelihood Ratio Criterion Wilks's Moderate Multyvariate. *The Journal Of the American Statistical Association* 67:419-427.

[3] Davis, A. W. (1982). On The Effects Of The Moderate Multivariate Nonnormality On Roy's Largest Root Tests. *The Journal Of the American Statistical Association* 77:986-990.

[4] Holloway, L.N., Dunn, O.J.(1967). The robestness of Hotelling's T^2. *The Journal Of the American Statistical Association* 62:124-136.

[5] Hopkins, J.W., Clay, P.P.F. (1963). Some Bivariate Distribution Of Emprical T^2 And Homoscedasticity Criterion M Under Unecual Variance And Leptokurtosis. *The Journal Of the American Statistical Association* 58:1048-1053.

[6] Hotelling, H. (1931). The generalization of student's ratio. *Annals of Mathematical Statistics* 2: 360-378.

[7] Ito, K. (1969). On The Effect Of Homoscedasticity And Nonnormality Upon Some Multivariate Procedures. *In Multivariate Analysis* 2:87-120

[8] Johnson, R. A., Wichern D. W. (1982). *Applied Multivariate Statistical Analysis*. Prentice-Hall, Inc. USA.

[9] Kanık, A.(1999). Çok Değişkenli Varyans Analizinde Kovaryans Matrislerinin Homejenliği Ön Şartı. PhD Diss., Ankara University.

[10] Korin, B.P. (1972). Some comment on the Homoscedasticity Criterion M and the multivariate analysis of varia as test T^2 , W. and R. *Biometrica* 59:215-216.

[11] Lawley, D. N. (1939). A generalization of Fisher's z test. *Biometrika* 30: 467-469.

*Presenter

[12] Mendeş, M. (2005). Uygun Simülasyon Sayısının Belirlenmesi: Monte Carlo Simülasyon Çalışması. *Journal Of Agricultural Sciences* 11 (1) :12-15.

[13] Morrison, F.D.(1976). *Multivariate Statistical Methods*. MC Graw_Hill Book Company, USA.

[14] Olson, C.L. (1974). Copperative Robustness Of Multivariate Analysis Of Six Tests In Variance. *The Journal Of the American Association* 69 (348): 894-907.

[15] Park, S. K.,Miller W. (1988). Random number generators: Good ones are hard to find. *Communications of the ACM* 31:1192-1201.

[16] Pillai, K.C.S. (1955). Some New Test Criteria in Multivariate Analysis. *The Annals of Mathematical Statistics* 26:117-121.

[17] Seber, G. A. F. (1984). *Multivariate Observations*. John Wiley & sons, Inc., USA.

[18] Stevans, J. (1986). *Applied Multivariate Statistic for the Social Sciences*. Lowrance Erlbaum Associates, Inc., London.

[19] Tatsuoka, M. M. (1989). *Multivariate analysis*. Macmillan,Inc., New York

[20] Ulutaş, D. (2004). Çok Değişkenli Değişke Çözümlemesi Sınama İstatistiklerinin Sağlamlığı, Master's Thesis, Gazi University.

[21] Wilks, S.S.(1932). Certain generalizations made in the analysis of variance, *Biometrica* 24:471-494.

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KINETIC STUDY OF CHICKEN MANURE PYROLYSIS USING DISTRIBUTED ACTIVATION ENERGY MODEL

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Chicken waste contains straw, fertilizer and feather. Turkey is the fourth largest poultry meat exporter in the world. It is reported that the number of chickens in Turkey is 266 million in 2013. Poultry animals produce approximately 70 kg of waste per animal per year. For this reason, large amounts of poultry litter are produced in Turkey as a consequence of the breeding of poultry, and their evaluation is an important problem. It is of great importance to develop alternative processes that allow the recovery of energy from the waste. One of the most important technologies used for the thermochemical processing of poultry litter is pyrolysis. Pyrolysis is the decomposition of substances in an inert environment. Pyrolysis kinetic studies are very useful for understanding degradation mechanisms, reaction rate and reaction parameters. It can facilitate the design, operation and optimization of the operating conditions of the reactors. Distributed Activation Energy Model (DAEM) which is based on Gauss distribution of activation energies of simultaneously occurring parallel reactions during thermochemical conversion, has been widely applied to analyze complex reactions such as combustion or pyrolysis of various materials (ie. coal, biomass or polymers). In this study pyrolysis behaviors of chicken waste-sawdust mixtures were investigated using thermogravimetric data at different heating rates (10, 20, 30 and 40 ºC / min). The kinetic parameters (Es and ko) for the chicken waste-sawdust mixtures pyrolysis process were estimated using the DAEM method. Techniques such as FT-IR, proximate and ultimate analysis were preferred for the characterization of raw chicken waste-sawdust mixtures [1-3].

Keywords: Chicken Waste; Distributed Activation Energy Model (DAEM); Pyrolysis.

References

[1] Yurdakul, S., 2016. Determination of co-combustion properties and thermal kinetics of poultry litter/coal blends using thermogravimetry. *Renewable Energy* 89, 215-223.

[2]Garcia-Maraver, A., Perez-Jimenez, J.A., Serrano-Bernardo, F., Zamorano, M., 2015., Determination and comparison of combustion kinetics parameters of agricultural biomass from olive trees. *Renewable Energy* 83, 897-904.

[3]Soria-Verdugo, A., Goos, E., García-Hernando, N., 2015. Effect of the number of TGA curves employed on the biomass pyrolysis kinetics results obtained using the Distributed Activation Energy Model. *Fuel Processing Technology* 134, 360–371.

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META-HEURISTIC METHODS IN THE ANALYSIS OF LARGE-SCALE GENOMIC DATA

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It keeps getting easier to obtain knowledge in the current state of the world. This increases the number of factors that affect a problem that needs to be solved. Thus, the difficulty levelalso increases in every extent of the solution methods. As the problem reaches the world standards, it almost becomes impossible to find the best solution. Finding the best or best possible solution in several solution spaces is a very time-consuming task. This task of researching for the best solutions with the determined constraints in mind belongs to the optimization field.

As computer and software technology advance, the application of optimization methods in health sciences has also been increasing. Fast and low-cost solutions to health problems are an important step in terms of being able to serve more people. It has gotten harder to obtain fast solutions through classic optimization methods. As an alternative to these time-consuming classic methods, a nature-inspired meta-heuristic method has started being used for modelling studies. Meta-heuristic methods have gained importance among optimizations methods for achieving fast and efficient problem solving.

The aim of this study is to contribute to a greater understanding of the genetic structure of complex illnesses through the use of meta-heuristic methods introduced in this paper.These methods, in general, have been evaluated under several groups such as social-based, physics-based, biology-based, swarm-based, etc.

Ant Colony Optimization (ACO), one of the swarm-based meta-heuristic methods, has become a rising trend and been used in large-scale genetic data studies. In genome-wide association studies (GWAS), there are difficulties in calculation due to hundreds of thousands of multiple testing of Single Nucleotide Polymorphism (SNP) per individual. Additionally, in this kind of studies, SNP numbers, linkage disequilibrium between genes, sample size, and gen x gen interactions should all be taken into consideration.

Ant Colony Optimization (ACO) can be used to find SNP combinations associated with disease in a population of thousands of people.

Keywords: Ant-Colony Optimization; Meta-Heuristic; Genome-Wide; Big Data.

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References

[1] Niel, C., Sinoquet, C., Dina, C., Rocheleau, G. (2015) A survey about methods dedicated to epistasis detection. *Front Genet*. 10(6), 285.

[2]Ustunkar,, G., Ozogur-Akyuz, S., Weber, G.W., Friedrich, C.M., Aydin Son, Y. (2011) Selection of representative SNP sets for genome-wide association studies: a metaheuristic approach. *Optimization Letters*, 6(6), 1207-1218.

[3]Sapin, E., Keedwell, E., Frayling,T.(2015) Ant colony optimisation of decision tree and contingency table models for the discovery of gene-gene interactions. *IET Syst Biol.* 9(6), 218-225.

[4] Yang, X.-S.,Chien, S. F.,Ting, T. O. (2014) Computational intelligence and metaheuristic algorithms with applications. *The Scientific World Journal*, 1-4.

[5]Gangwal, P. R.,Razvi, N. A. (2014) Applications of Advanced Statistical Techniques in Health Related Data: A Review. *MedPulse*. 1 (2), 40-42.

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PREDICTION OF HIGHER HEATING VALUE OF MICROALGAE USING ARTIFICIAL NEURAL NETWORK

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Biomass is an important source that has the potential to become a renewable, sustainable and clean energy source. In recent years, the use of biomass is increasing to generate energy and reduce CO_2 emissions. Among biomass sources, microalgae are considered as a promising feedstock. As a marine biomass, microalgae has several advantages over terrestrial biomass such as; high photosynthesis capability, high growth rate, no need for land or fresh water, potential to produce hydrocarbons with heating value. The higher heating value (HHV) can be defined as the energy released per unit mass or per unit volume of fuel when it is completely burned including the energy contained in the water vapor in the exhaust gases. HHV is an important fuel property which defines the energy content of the fuel. HHV can be measured with sophisticated experimental apparatus such as oxygen bomb calorimeter. However, availability of these equipments is not widespread due to their price and maintenance costs. Artificial Neural Networks (ANNs) are widely used to describe complex and non-linear systems that are difficult to model using conventional modeling techniques. In this study, a new model was developed by artificial neural network method to reduce or eliminate the need for time consuming and costly analyzes for determination of HHV values of microalgae species. Ash and ultimate analysis value (C%, H%, O%, N%, S%) were selected as input parameters. The model was consisted of 3 layers; an input layer with 6 inputs, two hidden layers with first one 20, second one 5 neurons and an output neuron with 1 neuron (20×25×1). We generated 87 different models. Among them, ANN28 gave the best results. The prediction results were in a good agreement with the experimental data [1-5].

Keywords: Microalgae; Artificial Neural Network; Higher Heating Value.

References

[1]Sanchez-Silva, L., López-González, D., Garcia-Minguillan, A.M., Valverde, J.L. 2013. Pyrolysis, combustion and gasification characteristics of Nannochloropsisgaditana microalgae, *Bioresource Technology*, 130, 321–331.

[2]Ceylan S., Kazan D. 2015. Pyrolysis kinetics and thermal characteristics of microalgae Nannochloropsisoculata and Tetraselmis sp., *Bioresource Technology*, 187, 1–5.

*Presenter

[3]Qing X., Xiaoqian M., Zhaosheng Y., Zilin C., 2014. A kinetic study on the effects of alkaline earth and alkali metal compounds for catalytic pyrolysis of microalgae using thermogravimetry, Applied Thermal Engineering, 73, 355-359.

[4]Ghugare S. B. &Tiwary S. &Elangovan V. &Tambe S. S., 2014. Prediction of Higher Heating Value of Solid Biomass Fuels Using Artificial Intelligence Formalisms. Bioenergy Research, 7, 681–692.

[5]Buratti C. ,Barbanera M. , Palladino D., 2014. An original tool for checking energy performance and certification of buildings by means of Artificial Neural Networks.Applied Energy. 120, 125–132.

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HEDONIC ANALYSIS OF HOUSING PRICE IN SAMSUN USING ROBUST REGRESSION

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Hedonic price model is used to investigate the effect of features of a heterogeneous commodity on price. This model assumes that the price of a heterogeneous commodity composes of sum of marginal price of each different feature that constructs it. In this study marginal effect of each variable which is effective in determining sale price of housing in province of Samsun and the contribution of these variables to sale price are searched. In this stage firstly physical and environmental qualities of housing and features of housing market are mentioned. Then by means of definitions made related to housing, data sets that contain sales prices specified according to features of housing in province of Samsun are acquired from "sahibinden.com" website. Using robust regression, data obtained is analysed with the help ofexact linear, linear logarithmic, logarithmic linear and exact logarithmic modelused in hedonic price model.

Keywords: Province of Samsun; Housing Price; Hedonic Price Model; Robust Regression.

References

[1] Huber, P.J., (1981). Robust statistics, New York, NY, John Wiley and Sons Inc, 313 p.

[2] Heikkila, J., (2010). Robust regression, graduate course on advanced statistical signal processing, http://www.ee.oulu.fi/~jth/robust.pdf 38 p.

[3] Daşkıran, F., (2015). Denizli Kentinde Konut Talebine Etki Eden Faktörlerin Hedonik Fiyatlandırma Modeli İle Tahmin Edilmesi, Uluslararası Sosyal Araştırmalar Dergisi.

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NEW APPROACH IN STUDIES WITH LONGITUDINAL DATA: MASAL

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The purpose of this study is to introduce a new approach called Multivariate Adaptive Regression Splines for Longitudinal Data, and compare this model to Generalized Estimating Equations (GEE) analysis by applying it on longitudinal data.

In recent years, studies in the health field utilize longitudinal data structure. Longitudinal data structure consists of data obtained from a sample case or respondent repeatedly over a period of time. Thus, longitudinal data is valuable in health field studies because it eliminates the individual differences over time. However, since this data structure contains observations of the same sample at different points in time, it also contains autocorrelation structure. GEE model is used in order to eliminate this problem. Recently, a new method used for a similar purpose as GEE has been devised by Zhang H (1996). This method used for analyzing longitudinal and growth curve data is called Multivariate Adaptive Splines for Analysis of Longitudinal Data (MASAL). This method is non parametric and also includes the multivariate adaptive regression splines (MARS) method. Therefore, MASAL calculates one or more knots for all the independent variables included in this model. A freely available data set (Hedeker and Gibbons-1997) is used in this study. 413 schizophrenic patients, 101 of which are placebo and 312 of which are drug patients, were tested for overall severity of illness in weeks beginer,1, 3, and 6.

MATLAB 6.0 software package has been used for data analysis. GEE analysis results indicate that both the duration of treatment (week) and the drugs administered have effects on the severity of illness ($p<0.001$, $p<0.001$). MASAL model results, contrastingly, only indicate that the duration of treatment has an effect on the severity of illness, but the drugs administered do not.

GEE is effective in eliminating autocorrelation. However, MASAL model not only eliminates autocorrelation but also is able to evaluate main and interaction effects collectively. MASAL is also an important model since it provides the knot values that belong to these effects.

Keywords: MASAL; GEE; Longitidunal Data; Autocorrelation.

*Presenter

References:

[1] Zhang, H. (1997), Multivariate Adaptive Splines For Analysis of Longitidunal Data. *Journal of Computational and Graphical Statistics*, *6*(1),74-91.

[2] Zhang ,H.(2004) Mixed effects multivariate adaptive splines model for the analysis of longitudinal and growth curve data. *Statistical Methods in Medical Research* , *13*(1), 63-82.

[3] Zhu, W., Zhang, H.(2013) A nonparametric regression method for multiple longitudinal phenotypes using multivariate adaptive splines. *Front. Math. China* ,*8*(3), 731–743.

[4] https://onlinecourses.science.psu.edu/stat504/node/181 Erişim Tarihi:13.10.2017.

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SOME PROBLEMS AND SOLUTION APPROACHES IN PRODUCTION PROCESSES AT SMES

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SMEs which in both developed and developing countries, rapid adaptation to changing market conditions, flexible production structures, balanced growth between regions, positive effect of employment and due to the positive impact of employment and contributions to the opening of new business areas, are the basis of economic and social development of countries.

SMEs, which are small economic units alone, constitute as basis of the economy. Businesses usually start as small businesses, then become medium and large businesses in time at country economies. In this development and changing process, businesses have to deal with many problems.

Some of the major problems of SMEs are technological insufficiency, management organisation problems, bureaucratic problems, qualified personnel problems, market and marketing problems and production problems.

In this study, production problems in SMEs manufacturing modern stoves in the Central Black Sea Region are examined. Within this research, 4 month production process was investigated. The reasons for hindering and causing the waiting in production have been determined.

Results shows that; the biggest factor causing the production hindering is that 70% of the ordered raw and supplementary materials are not delivered on time. Then, due to the fact that empty work machines due to irregular work load on workstations with 11%. And 10% was to execution of the qualification element in other tasks.

According to the obtained findings; there are three major reasons to hinder production are inadequate qualification workforce and lack of planning with 91%. It is obvious that SMEs will overcome these problems only through institutionalization and qualified staff recruitment.

Key Words: SMEs; Process; Production; Planning.

References

[1] SARIASLAN, H. , (1994) ,Financial Problems of Medium and Small Scale Enterprises: A Financial Package Proposal for the Solution, Ankara: TOBB Publications, No: Generic 281

*Presenter

[2] MÜFTÜOĞLU, T. , (1998) , Small and Medium Sized Enterprises (SMEs) in Turkey, Ankara: Turhan Bookstore

[3] KARABIYIK, L. , (1998) , Investigation of the Effects of the Customs Union on the Turkish Economy in terms of SMEs, Ankara: AB Ofset Publishing.

[4] ALKIBAY, S. N. SONGÜR ve İ. ERTÜRK, (1999) , Middle East Industry and Trade Center (OSTİM) 's Profile and Problems, KOSGEB, Ankara.

[5] ÖZDOĞAN, O. , (18–21 Ekim 2001) , "Angel Financing as an Alternative Financing Tool and Financing Methods of SMEs Operating in Kuşadası". Central Anatolia Congress - Financing and Marketing Problems of SMEs, Nevşehir.

[6] OZGÜLBAŞ, N., A. S. KOYUNCUGİL, ve F. YILMAZ (2006), "Identifying the effect of firm size on financial performance of SMEs" The BusinessReview

[7] KOYUNCUGİL, A.S. ve N. ÖZGÜLBAŞ (2007a) "Detecting Financial Early Warning Signs in Istanbul Stock Exchange by Data Mining", International Journal of Business Research, VII, No:3.

[8] KOYUNCUGİL, A.S. ve N. ÖZGÜLBAŞ (2008) "Early Warning System for SMEs as a Financial Risk Detector" in Data Mining Applications for Empowering Knowledge Societies, Hakikur Rahman, Ed, Idea Group Inc., USA, 2008.

[9] Turkısh Statıstıcs Councıl (Turkstat) (2003), Census of General Industry and Business Places, Turkstat Publications, Ankara.

[10] Salim Şengel, 17-18 November 2006, (İstanbul 2008), 'Evaluation of Small and Medium Enterprises in terms of Accounting Practices within Basel II Regulations: Bilecik Example': 3. SMEs Productivity Congress, EU's Innovations for SME Finance, Congress Book, p. 90-96.

*Presenter

SMOKING CONSUMPTION HABITS RESEARCH AND TEXT MINING IN SAMSUN

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The smoking habits vary among people according to several features of the brands. The customer views for the smoking habits are usually assessed via classical statistical methods. In this study, we used text mining technique to investigate the smoking habits of the smokers. The textual features of the smokers are extracted and after that statistical dimension reduction methods are employed. The implementation part of the study is performed using R programming language. The results unveil the effective factors on smoking habits of the smokers.

Keywords: Smoking consumption; Word system; analysis; Commentary.

References

[1] Resolution: Action Plan for a Tobacco-free Europe, "WHO Regional Committee for Europe-Forty-Second Session". Copenhagen, 14-19 September 1992 (EUR/RC 42/Conf. Doc/7 Rev 2)

[2] Sholom M.W., Indurkhya N., Zhang T., Damerau & F. (2004), Text Mining: Predictive methods for analyzing unstructured information, *springer*.

[3] Fan W., Wallace L., Rich S., & Zhang Z. (2006), Tapping into the power of text mining, *Communications of ACM*, 49(9), 76-82.

*Presenter

ASSESSMENT OF MEDICAL WASTE MANAGEMENT: A CASE STUDY IN ISTANBUL

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There is an increasing rate of medical waste formation due to increase in population. Estimation of medical waste quantity to be generated in the future is critical in terms of the storage, transport or disposal capacity and accomplishment of effective waste management. However, due to effect of different parameters on waste formation such as population, bed occupancy, gross domestic product (GDP), and number of hospitals etc. a non-linear relation is expected. Artificial intelligence tools are widespread and effective methods which have capability in revealing complex, non-linear and unknown relationships between input and output parameters with high accuracy and success. In this study, medical waste quantity in the biggest city of Turkey, Istanbul at 2023 was predicted by using hybrid Genetic Algorithm (GA) and Adaptive-Network-Based Fuzzy Inference System (ANFIS). Statistical measurements including MAE, RMSE and R^2 were used to evaluate performance of applied models. GA-ANFIS showed high performance measure values, especially a correlation coefficient of 0.99 value of R^2 for training and testing, which confirms the good fit of the data. Results approved the reliability of GA-ANFIS in problem solving which provides the opportunity for relating independent variables to dependent ones non-linearly. In conclusion, results of study may help decision makers to develop an effective waste management strategy.

Keywords: Medical waste; Genetic algorithm; ANFIS.

References

[1] Ali, M., Wang, W., Chaudhry, N., & Geng, Y. (2017). Hospital waste management in developing countries: a mini review. *Waste Management & Research*.

[2] Awodele, O., Adewoye, A. A., & Oparah, A. C. (2016). Assessment of medical waste management in seven hospitals in Lagos, Nigeria. *BMC Public Health*, *16*, 269.

[3] Ozder, A., Teker, B., Eker, H. H., Altındis, S., Kocaakman, M., & Karabay, O. (2013). Medical waste management training for healthcare managers - a necessity? *Journal of Environmental Health Science and Engineering*, *11*, 20.

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A VARIABLE SELECTION APPROACH IN POISSON REGRESSION ANALYSIS USING INFORMATION COMPLEXITY TYPE CRITERIA

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Modeling count responses is widely performed via Poisson regression models. This paper covers the problem of variable selection in Poisson regression analysis. The basic emphasis of this paper is to present usefulness of information complexity based criteria for Poisson regression. Particle swarm optimization (PSO) algorithm is adopted to minimize the information criteria. A real dataset example and two simulation studies are conducted for highly collinear and lowly correlated datasets. Results demonstrate the capability of information complexity type criteria. According to results, information complexity type criteria can be effectively used instead of classical criteria in count data modeling via PSO algorithm.

Keywords: Poisson Regression; Variable Selection; Particle Swarm Optimization.

References

[1] Hilbe, J. M. (2014). Modeling count data. Cambridge University Press.

[2] Bozdogan, H. (2000). Akaike's information criterion and recent developments in information complexity. Journal of mathematical psychology, 44(1), 62-91.

[3] Marini, F., & Walczak, B. (2015). Particle swarm optimization (PSO). A tutorial. *Chemometrics and Intelligent Laboratory Systems*, *149*, 153-165.

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DETERMINATION OF THE KEY FINANCIAL RATIOS IN THE SUCCESS OF FIRMS IN DIFFERENT SECTORS THROUGH DATA MINING

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It is aimed to determine the level of significance of sectoral financial ratios of the firms which are traded in stock exchange during 2016 period. Within the scope of the research, the financial ratios of the firms traded in the BIST in the period of 2016 were calculated and the Altman-Z score method was used for determining the success and failure of the firms. CHAID analysis technique was applied from data mining techniques in determining the importance of financial ratios according to sectoral success cases. As a result of the study, the importance ratios of the financial ratios in the sectors have been determined.

Keywords: Financial Ratios; CHAİD, Datamining; Altman Z Score

References

[1] Altman, Edward, (1968), Financial ratios, discriminant analysis and the prediction of corporate bankruptcy, Journal of Finance

[2] HAUGHTON Dominique and OULABI Samer, (1999) "Direct marketing modeling with CART and CHAID", Journal of Direct Marketing

[3] https://www.kap.org.tr/tr

[4] http://www.borsaistanbul.com

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INVESTIGATION OF SOME FACTORS AFFECTING MICROVASCULAR COMPLICATION RISK IN DIABETIC PATIENTS

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In this study, the risk of developing microvascular complications in diabetic patients was examined. 55 patients (%2.9) from 1867 patients with diabetes mellitus had microvascular complications. The mean age of the patients was 55,70 ± 13,10 (years). It was determined that the HbA1c value of 752 patients (%40.3) was 7% and above. The mean HbA1c of the patients was 7,11 ± 1,75 (%).Parameters such as HbA1c, fasting blood glucose, and satiety blood glucose are higher in diabetic patients with microvascular complications than patients without microvascular complications. Parameters such as LDL and cholesterol are lower in diabetic patients with microvascular complications than patients without microvascular complications. It was determined that the effect of binary logistic regression result sex, HbA1c, LDL and cholesterol level on the risk of microvascular complication according to the development of microvascular complication.

Keywords: Logistic Regression; Diabetes Mellitus; Microvascular Complication.

References

[1] Özcan, Ş. (2002). Diyabet Hemşireliği Derneği Kitabı, Bölüm 13, 145, İstanbul.

[2] Selim, S. (2017). Frequency and pattern of chronic complications of diabetes and their association with glycemic control among adults with type 2 diabetes in Bangladesh. Diabetes and Metabolic Syndrome: Clinical Research and Reviews.

*Presenter

MULTIVARIATE OPTIMIZATION OF COPPER DETERMINATION BY FLOW-INJECTION POTENTIOMETRIC SYSTEM

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In the present study, a procedure for copper determination by using flow injection potentiometric system (FIA) has been developed. The system was optimized by multivariate method based on two level full-factorial experimental design. Three significant parameters, concentration of the carrier solution, injection volume and flow-rate were selected. The most excellent performance of the FIA system for the determination of copper was obtained. Pharmaceutical samples and water samples were analyzed successfully under the optimized conditions. The methodology was validated by analysis of certified reference material of waste water.

Keywords: Multivariate Optimization; Copper Determination; Flow Injection Analysis.

References

[1] Everitt, B. S., & Hothorn T. (2011). *An Introduction to Applied Multivariate Analysis with R.* Springer.

[2] Juan J. P., Carlos M., Manuel G. V. (2004). A very sensitive flow system for the direct determination of copper in natural waters based on spectrophotometric detection. *Talanta*. 64, 562–565.

[3] Kamble G.S., Kolekar S.S., Anuse M.A. (2011). Synergistic extraction and spectrophotometric determination of copper(II) using 1-(2,4-dinitro aminophenyl) 4,4,6-trimethyl-1,4 dihydropyrimidine-2-thiol: Analysis of alloys, pharmaceuticals and biological samples. *Spectrochim Acta A*. 78, 1455-1466.

[4] Coldur F. & Andac M. (2013). A Flow-Injection Potentiometric System for Selective and Sensitive Determination of Serum Lithium Level, *Electroanalysis.* 2013, 25 (3), 732 – 740.

*Presenter

IN SILICO ANALYSIS OF AP2 TRANSCRIPTION FACTORS IN HAZELNUT

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Apetala2/ethylene-responsive element binding factor (AP2/ERF) family is among pivotal plant specific transcription factors that have crucial roles in regulation of stress-responsive gene expression upon exposure to abiotic stress such as high-salt content, drought, temperature fluctuation, disease resistance and floral development [1,2]. In this study, we carried out a comprehensive genome-wide analysis of AP2 transcription factors in European hazelnut by using RNA-seq data. We identified 76 AP2 protein-encoding genes by using in silico comparative genomics tools in hazelnut genome. Number of amino acids, molecular weight and theoretical pI in AP2 proteins ranged from 74 to 1118, 8708 to 129623 kDa and 5.08 to 10.21, respectively. Additionally, it was estimated that most of the hazelnut AP2 proteins is not stable in a test tube. Based on the in silico miRNA analysis, most of the AP2 genes was targeted by miRNA172, important repressor of AP2 genes.

Keywords: AP2; Hazelnut; Leaf Development; Transcriptome

References

[1] Zhu, Q., Zhang, J. T., Gao, X. S., Tong, J. H., Xiao, L. T., Li, W. B., & Zhang, H. X. (2010). The Arabidopsis AP2/ERF transcription factor RAP2.6 participates in ABA, salt and osmotic stress responses. *Gene, 457*(1-2), 1-12. doi:10.1016/j.gene.2010.02.011

[2] Zhuang, J., Peng, R. H., Cheng, Z. M., Zhang, J., Cai, B., Zhang, Z., . . . Yao, Q. H. (2009). Genome-wide analysis of the putative AP2/ERF family genes in Vitis vinifera. *Scientia Horticulturae, 123*(1), 73-81. doi:10.1016/j.scienta.2009.08.002

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SOME GEOMETRIC PROPERTIES IN WEIGHTED LEBESGUE SEQUENCE SPACES

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Let $l_{p,w}$, $p \geq 1$ be the set of real sequences $x = (x_k) = (x_1, x_2, \cdots)$ such that $\sum_{k=1}^{\infty} |x_k|^p w_k < \infty$ where $w = (w_k) = (w_1, w_2, \cdots)$ and $w_k > 0$. In this work, it was shown that $l_{p,w}$ weighted Lebesgue sequence space is Banach space according to $\|x\|_{p,w} = \left(\sum_{k=1}^{\infty} |x_k|^p w_k \right)^{1/p}$ the norm for $x = (x_k) \in l_{p,w}$. Furthermore the space $l_{p,w}$ was shown seperable space and the geometrical properties such as convexity, strictly convex were examined. Thus same inequality obtained.

Keywords: Weighted Lebesgue Sequence Spaces; Geometrical Properties; Strictly Convex; Uniformly Convex.

References

[1] Clarkson, J. (1936). *Uniformly Convex Spaces*. American Mathematical Society.

[2] Agarwal, P.R., O'Regan, D., & Sahu, D.R. (2009). *Fixed Point Theory for Lipschitzian-type Mapping with Applications*. Springer.

[3] Castillo, R.E. & Rafeiro, H. (2016). *An Introductory Course in Lebesgue Spaces*. Springer.

[4] Carother's, N.L. (2005). *A Short Course on Banach Space Theory*. Cambridge University Pres, Cambridge.

[5] Mitrinovic, D.S., Pecaric, J.E. & Fink, A.M. (1993). *Classical and New Inequalities in Analysis*. Kluwer Academic Publishers.

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NONPARAMETRIC MULTIPLE COMPARISON METHODS

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Nonparametric tests are used when the data in multiple independent or dependent groups with quantitative data do not have normal distribution or when the data have ordinal scale. In comparison of multiple groups, first type margin of error increases when tests which compare groups in two are used. Thus, methods which process k number of samples at the same time have been proposed.

This study is about multiple comparison tests mostly based on ordinal numbers which are recommended to be used after nonparametric tests. After Kruskal-Wallis test and Friedman test, which are nonparametric tests, when H_0 hypotheses which are called null hypothesis are rejected, it is necessary to check which of the k number factor levels will have the same effect and which ones will have different effects. Multiple comparison methods are used for this purpose. A choice of suitable multiple comparison tests based on the dependency or independency of groups or equal or different numbers of observations has been recommended.

Keywords: Nonparametric Tests; Multiple Comparisons; Dunn Test; Nemenyi Test; Friedman Test.

References

[1] Kıroğlu, G. (2001). Applied Nonparametric Statistical Methods. *Mimar Sinan University Science and Literature Faculty*, İstanbul.

[2] Doğan İ. & Doğan N. (2014). Multiple comparison methods, 1, Detail publishing, Ankara, 65-89.

[3] Hollander, M., Wolfe, D. A., & Chicken, E. (2013). *Nonparametric statistical methods (Third edition).* John Wiley & Sons, 256-316.

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THE IMPLEMENTATION OF OPERATIONAL RESEARCH TECHNIQUES IN LAND CONSOLIDATION

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Some precaution should be taken to increasing the productivity in agriculture satisfied the needs of the rapidly growing world population. The productivity reduce in agricultural area because of the fragmentation and shareholding. In addition to, these factors cause to difficulties in machine farming and increase production costs. Also, the scattered agricultural land is excessively increase the costs of investments. Therefore, land consolidation has great importance in terms of increasing agricultural productivity. The distribution process is very important step in the land consolidation. This step provides to protect of landowners rights and turned the investments from consolidation projects to the country economy. The distribution process in Land consolidation can be made different methods as operational research techniques, genetic algorithms etc. The distribution process using operational research techniques is considered as a transportation problem, which is a special case of linear programming. The transportation model is an optimization problem that aims to minimize the costs of transportation to demand points from sources. In this study, the solution of distribution process was explained using operational research techniques. This solution was taken as the transport problem and solved with linear programming. Also, the numerical application was made using real land consolidation project data and the methods advantages of selected method were concluded. The Matlab and NetCad programs were used in solution of the numerical application.
Keywords: Land Consolidation; Land Allocation; Operations Research; Linear Programming.

References

[1] Şişman, A. (1997). Arazi toplulaştırma çalışmalarında yöneylem araştırması uygulaması. *Karadeniz Teknik Üniversitesi, Fen bilimleri Enstitüsü, Yüksek Lisans Tezi,* Trabzon.
[2] Taha. H. A.,(2017). Yöneylem araştırması. (Ş.A. Baray, Ş. Esnaf, Çev.) İstanbul: Literatür.
[3] Ayranci, Y. (2007). Re-allocation aspects in land consolidation: a new model and its application. *Journal of Agronomy 6* (2): 270-277.
[4] Gniadek J., Harasimowicz S., Janus j., Pijanowski j. M. (2013). Optimization of the parcel layout in relation to their average distance from farming settlements in the example of Mściwojów village, Poland. *Geomatics, Landmanagement and Landscape 2* , 25–35

[5] Cay T., Ayten T., Iscan F. (2006). An Investigation of reallocation model based on interview İn land consolidation. *Shaping the Change XXIII FIG Congress Munich, Germany, October* 8-13

[6] Mihajlovıć R., Miladinović M., Šoškić M. (2011). Optimization of land distribution in land consolidation. *Geod.etski list , 2,* 109–121.

[7] Avci, M. (1999). A new approach orientated to new reallotment model based on block priority method in land consolidation, *Turkish Journal of Agriculture and Forestry, 23,* 451–457.
[8] MathWorks, (2017). https://www.mathworks.com/help/optim/ug/linprog.html?s_tid=doc_ta. Access date: 19.10.2017.

*Presenter

ARTIFICIAL NEURAL NETWORK MODELLING OF LIGNITE COAL-PISTACHIO SHELL CO-PYROLYSIS

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The rapid exhaustion of fossil fuel resources and fossil fuel consumption related environmental problems such as global warming and release of greenhouse gas emissions are driving the search for alternative and renewable energy sources. Biomass is considered as renewable, clean and cheap feedstock which can be an alternative to fossil fuels. However, due to low energy content it must be utilized with coal. This co-processing lowers the amount of fossil fuel used which reduces its environmental effects but also helps economic sustainability. Pyrolysis is a thermochemical conversion technic applied by heating materials under intert atmosphere for obtaining liquid, solid and gas products. By pyrolysis, low rank coals such as lignite can be valorized. However, the products must be improved. In various studies in literature, it is reported that co-pyrolysis of coal and biomass will lead to more valuable products. Thus in this study an industrial by biomass product pistachio shells were co-pyrolyzed with low rank Elbistan lignite coal with different blend ratios. Samples were blended at different blend ratios and analyzed in a thermogravimetric analyzer (TGA) to investigate mass loss beahviour with temperature and blend ratio. The mass loss of biomass fuels is a significant factor in the techno-economic analysis and subsequent development of bioenergy applications. Obtaining the optiumum blend ratio is a diffucult task. Therefore, artificial neural networks (ANN) were employed to model coal and pistachio shell co-pyrolysis. The ability of artificial neural networks (ANN) to learn from experience rather than from mechanistic descriptions is making them as preferred choice to model processes with complicated variable interrelations. Different blend ratios (20,40,60,80,100 % (w/w)) and temperature were used as input parameters to predict output parameter, mass loss. Different transfer fuctions for hidden and output layers and different number of neurons in a hidden layer were tested to optimize the network structure. After training and testing of model, we perfomed estimation of the mass loss curve of and untrained sample. The success of the application was tested with well known statistical tools such as, MAE, MSE, RMSE, and R^2. The estimated curve and experimental results were in a good agreement [1-3]

Keywords: Co-Pyrolysis, Coal, Waste Pistachio Shell, Artificial Neural Network,

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References

[1] Buyukada, Musa, 2016. Co-combustion of peanuthull and coal blends: Artificial neural networks modeling, particle swarm optimization and Monte Carlo simulation, BioresourceTechnology, 216, 280-286

[2] Kasmuri, N.H. - Kamarudin, S.K. - Abdullah, S.R.S. - Hasan, H.A. - Som, A.Md, 2017.Process system engineering aspect of bio-alcohol fuel production from biomass via pyrolysis: An overview ,Renewable and Sustainable Energy Review ,79 , 914-923

[3] Uzun, Harun - Yıldız, Zeynep- Goldfarb, Jillian L.- Ceylan, Selim, 2017.Improved prediction of higherheating value of biomass using an artificial neural network model based on proximate analysis,Bioresource Technology,234,122-130

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SOME CHARACTERIZATIONS FOR THE SCROLL SURFACES VIA BISHOP II FRAME

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In this paper, we introduce the ruled surfaces which are called ζ_1-scroll and ζ_2-scroll according to the Bishop II frame. We compute Gaussian curvature and Mean curvature of these surfaces and obtained the necessary conditions for the ζ_1-scroll and ζ_2-scroll surfaces to be minimal surface. Finally, we give some theorems and results that characterize the curves on these surfaces.

Keywords: Bishop II Frame; Scroll; Ruled Surface.

References

[1] O'neill, B. (2006). *Elementary differential geometry*. Academic press.

[2] Yılmaz, S., & Turgut, M. (2010). A new version of Bishop frame and an application to spherical images. *Journal of Mathematical Analysis and Applications*, *371*(2), 764-776.

[3] Özyılmaz, E. (2011). Classical differential geometry of curves according to type-2 Bishop trihedra. *Mathematical and Computational Applications*, *16*(4), 858-867.

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THE INTERSECTION OF TWO NULL SCROLLS

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This study presents an algorithm that computes the intersection curve of two null scrolls in 3-dimensional Minkowski space. The algorithm reduces the intersection problem to a zero-set finding problem for a bivariate function. With the help of this algorithm, some results about the intersection of two null scrolls are obtained and these results are illustrated with an example.

Keywords: Null Scroll; Surface Intersection; Minkowski Space.

References

[1] Heo, H. S., Kim, M. S., & Elber, G. (1999). The intersection of two ruled surfaces. *Computer-Aided Design*, *31*(1), 33-50.

[2] Balgetir, H., Bektas, M., & Ergüt, M. (2003). Null Scrolls in the 3-dimensional Lorentzian space. *Appl. Sciences*, *5*(1), 1-5.

[3] O'neill, B. (1983). *Semi-Riemannian geometry with applications to relativity* (Vol. 103). Academic press.

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DERIVATIVE EQUATIONS OF TIMELIKE RULED SURFACES IN R_1^n

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In this study, we examine the problem of finding the properties of subspaces of generating spaces for timelike ruled surfaces in the n-dimensional Minkowski space $\mathbb{R}_1^n$ by means of derivative equations. We define the (k+1)-dimensional timelike ruled surfaces with the timelike generating space and state the asymptotic bundle and tangential bundle of this surfaces in generating space. Thereafter, considerable characteristic results related to derivative equations are given.

Keywords: Timelike Ruled Surface; Derivative Equations; Tangential Bundle; Asymptotic Bundle.

References

[1] Frank, H., & Giering, O. (1976). Verallgemeinerte Regelflächen. *Mathematische Zeitschrift*, *150*(3), 261-271..

[2] O'neill, B. (1983). *Semi-Riemannian geometry with applications to relativity* (Vol. 103). Academic press.

[3] Thas, C. (1978). Minimal monosystems.

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ESTIMATION OF SOIL SALINITY BY ARTIFICIAL NEURAL NETWORKS OF GRASSPEA (*Lathyrus sativus L.*) PLANT GROWN IN GREENHOUSE CONDITIONS

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Soil salinization is an important worldwide environmental problem, especially in arid and semi-arid regions. This study was carried out to estimate soil salinity with artificial neural network (ANN). Five different levels of irrigation water salinity (T_0 = 0.65; T_1 = 2.0; T_2 = 4.0; T_3 = 6.0 and T_4 = 8.0 dS m^{-1}) and irrigation water amounts had been used as inputs for this purpose. Datas subdivided in two sets: 30% of the datas for testing and the remaining 70% of the datas were used for training. Three different training algorithms (Levenberg-Marquardt, Resilient Back Propagation and Scaled-Conjugate Gradient) were selected. To evaluate the performance of models, the statistical parameters root mean square error (RMSE), mean absolute error (MAE) and coefficient of determination (R^2) were used. Levenberg Marquardt algorithm with multi-layer perceptron (2-8-1) network structure had been gave the best results by calculating RMSE, MAE and R^2 values in the range 0.09, 0.08 and 0.85 respectively. These findings have shown that ANN models can be applied to estimate soil salinity.

Keywords: Artificial Neural Network; Irrigation Water Salinity; Soil Salinity; Training Algorithm

References

[1] Allbed, A., & Kumar L. (2013). Soil Salinity Mapping and Monitoring in Arid and Semi-Arid Regions Using Remote Sensing Technology: A Review, Advances in Remote Sensing, 2(4), 373-385. doi: 10.4236/ars.2013.24040.

[2] Safi, S., Şimşek, H., & Ünlükara, A. (2012). Determining the effects of water and salinity stress on plant growth, development, yield and water consumption in grasspea (Lathyrus sativus L.). (MSc thesis), Gaziosmanpaşa University, Graduate School of Natural and Applied Sciences, Department of Agricultural Structures and Irrigation, Tokat.

*Presenter

[3] Shahabi, M., Jafarzadeh, A. A, Neyshabouri, M. R., Ghorbani, M. A., & Kamran, K. V. (2017). Spatial modeling of soil salinity using multiple linear regression, ordinary kriging and artificial neural network methods. Archives of Agronomy and Soil Science, 63(2), 151-160.

[4] Patel, R. M., Prasher, S. O., God, P. K. & Bassi R. (2002). Soil salinity prediction using artificial neural networks. Journal of the American Water Resources Association, 38(1), 91-100. doi: 10.1111/j.1752-1688.2002.tb01537.x.

[5] Rhoades J. & Loveday, J. (1990). Salinity in Irrigated Agriculture, In: B. A. Stewart and D. R. Nielsen, Eds., American Society of Civil Engineers, Irrigation of Agricultural Crops, Monograph, American Society of Agronomists, Madison, 30, 1089-1142.

[6] Zhu, J. K. (2001). Plant Salt Tolerance, Trends in Plant Science, 6(2), 66-71. http://dx.doi.org/10.1016/S1360-1385(00)01838-0

[7] Jahangir M., & Jagath, K. (1998). Application of Artificial Neural Network and Genetic Algorithm in Flow and Transport Simulations. Advances in Water Resources 22(2), 145-158.

[8] Jain A., Mao J., & Mohiuddin K. M. (1996). Artificial neural networks: a tutorial. Computer 29(3), 31-44.

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APPLICATION OF GENETIC ALGORITHM FOR THE TRAVELLING SALESMAN PROBLEM: A CASE STUDY

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Traveling Salesman Problem purposes to find the shortest route, among n cities with known distances between each city, where the salesman leaves a city, visits each of the cities exactly once and returns back to the starting point. The Traveling Salesman Problem is one of the very important NP-hard problems in optimization. It is used in major areas such as distribution, planning and logistics. A variety of heuristic and metaheuristic algorithms are available for solving Travelling Salesman Problem. In this study, genetic algorithm which is one of the metaheuristic methods was used to solve the Traveling Salesman Problem. A genetic algorithm is a metaheuristic inspired by the process of natural selection that belongs to the larger class of evolutionary algorithms. Genetic algorithms are commonly used to generate high-quality solutions to optimization and search problems by relying on bio-inspired operators such as mutation, crossover and selection. A real life application of the study was done on a company that sells agrochemicals in Ankara. This company distributes agrochemicals to 19 different districts. The routes that the company currently uses and the routes that are found using genetic algorithms are compared. As a result, it has been shown that the genetic algorithm gives an effective result.

Keywords: Genetic Algorithm; Travelling Salesman Problem; Metaheuristic Methods.

References

[1] Cevre U., Özkan B. ve Uğur A., 2007. "Gezgin satıcı probleminin genetic algoritmalarla eniyilemesi ve etkileşimli olarak internet üzerinde görselleştirilmesi", XII. "Türkiye'de İnternet" Konferansı 8-10 Kasım 2007, Ankara.

[2] Chatterjee S., Carrera C. ve Lynch L., 1996. "Genetic algorithms and traveling salesman problems." European Journal of Operational Research, 93:490–510.

[3] Croes G. A., 1958. "A method for solving traveling salesman problems", Operations Research, 6:791–812.

[4] Çolak S., 2010. "Genetik Algoritmalar Yardımı ile Gezgin Satıcı Probleminin Çözümü Üzerine Bir Uygulama", Çukurova Üniversitesi Sosyal Bilimler Enstitüsü Dergisi, 19(3): 423-438.

[5] İşçi Ö. and Korukoğlu S., 2003, "Genetik Algoritma Yaklaşımı ve Yöneylem Araştırmasında Bir Uygulama", Celal Bayar Üniversitesi Yönetim ve Ekonomi Dergisi, 10(2): 191-208.

*Presenter

[6] Johnson D.S. ve McGeoch L.A., 1995. "The traveling salesman problem: a case study in local optimization", Local Search in Combinatorial Optimization, 215-310.

[7] Király A. ve Abonyi J., 2010, "A Novel Approach to Solve Multiple Traveling Salesman Problem by Genetic Algorith", Computational Intelligence in Engineering, 313: 141-151, Springer Berlin / Heidelberg.

[8] Kuzu S., Önay O., Şen U. and Tuncer M., "Gezgin Satıcı Problemlerinin Metasezgiseller ile Çözümü", İstanbul Üniversitesi İşletme Fakültesi Dergisi, 43(1) : 1-27.

[9] Larranaga P., Kuijpers C.M.H., Murga R.H., Inza I., Dizdarevic S., 1999. "Genetic algorithms for the traveling salesman problem: A review of representations and operators", Articial Intelligence Review, 13: 129 -70.

[10] Tsai H.K., Yang J.M., Tsai Y.F. ve Kao C.Y., 2004. "Some issues of designing genetic algorithms for traveling salesman problems", Soft Computing, 8: 689-697.

*Presenter

SOME GROWTH MODELS WITH OBLIQUE ASYMPTOTE COMPARED TO THE MODELS WITH HORIZONTAL ASYMPTOTE BY USING THE DATA SET OF A LOCAL LAYER HYBRID

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Growth models generally have horizontal asymptote. In this study, in addition to some growth models with horizontal asymptote, these models were transformed into the growth models with oblique asymptote. These models with oblique asymptote were compared with the growth models with horizontal asymptote. For this aim, the data set of a Local Layer Hybrid (ATAK-S) in terms of egg weights measured at intervals of four weeks between the ages of 24-80 weeks, were used. The results obtained from used growth models were given comparatively.

Keywords: Growth Models; Oblique Asymptote; Mean Square Error; Egg Weight.

References

[1] Dubeau, F., & Mir, Y. (2013). Growth models with oblique asymptote. *Mathematical Modelling and Analysis*, 18 (2): 204-218.

[2] Ismail, Z., Khamis, A., & Jaafar. M. Y. (2003). Fitting nonlinear Gompertz curve to tobacco growth data. *Pakistan J. Agronomy*, 2:223-236. http://dx.doi.org/10.3923/ja.2003.223.236.

[3] Jain, R.C., Agrawal, R., & Singh,.K. N. (1992). A whitin year growth model for crop yield forecasting. *Biom. J.*, 34:789-799, 1992. http://dx.doi.org/10.1002/bimj.4710340705.
[4] Khamis, A., Ismail, Z., Haron, K., & Mohammed, A. T. M. (2005). Nonlinear growth models for modeling oil palm yield growth. *J. Math. Stat.*, 1:225-233. http://dx.doi.org/10.3844/jmssp.2005.225.233.
[5] Kuhi, H. D., Porter,T., Lopez, S., Kebreab, E., Strathe, A. B., Dumas, A., Dijkstra, J., & France, J. (2010). A review of mathematical functions for the analysis of growth in poultry. *World's Poultry Sci. J.*, 66:227-239. http://dx.doi.org/10.1017/S0043933910000280.
[6] Mischan, M. M., Pinho, S. Z., & Carvalho, L. R. (2011). Determination of a point sufficiently close to the asymptote in nonlinear growth functions. *Sci. Agric. (Piraci-caba, Braz.)*, 68:109-114. http://dx.doi.org/10.1590/S0103-90162011000100016.
[7] Dubeau, F. & Mir, Y. (2011). Least squares fitting with single inflection point growth curve I - The models. *Math. Model. Appl. Comput.*, 2:269-281.
[8] Dubeau, F., Mir, Y., Assani, A. A., & Chalifour, A. (2011). Least squares fitting with single inflection point growth curve II - An application. *Math. Model. Appl. Comput.*, 2:283-301.
[9] Dubeau, F., Mir, Y., Assani, A. A., & Chalifour, A. (2012). Modelling stage-discharge relationship with single inflection point nonlinear functions. *Int. J. Hydrology Sci. Technol.*, 2:153-167, 2012. http://dx.doi.org/10.1504/IJHST.2012.047430.

*Presenter

THE EFFECT OF SUBJECTIVE NORM ON USER SATISFACTION IN THE DISTANCE EDUCATION SYSTEM: STRUCTURAL EQUATION MODELING WITH R

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Distance learning is also called by various names such as distance learning and distributed learning. It is defined as the application of information technology that connects teachers and students in different locations with various educational activities[1]. The distance education system is being used more and more every day in our country and across the world [2]. Due to it becoming more widespread, many universities and institutions are trying to use and develop the distance education system. This research was conducted on 261 distance education students studying at Ankara University. The purpose of the study is to investigate the effect of subjective norm on the satisfaction of students using the distance education system. The subjective norm consist of interpersonal effect and external effect. The data was reported using the R program with the utilization of Structural Equation Model Analysis. According to the results of the research, it was seen that the interpersonal and the external effect had a positive effect on the satisfaction of the users.

Keywords: Distance Education; R Programming; Structural Equation Modeling; Subjective Norm; Satisfaction

References

[1] Schlosser, L. A. and Simonson, M. (2006). *Distance Education: Definition and Glossary of Terms*. United States of America: IAP-Information Age Publishing, Inc.

[2] Akgün-Özbek, E. (2015). Çevrimiçi uzaktan öğrenme: bir araştırma gündemine doğru. *Açıköğretim Uygulamaları ve Araştırmaları Dergisi*, 1(1), 119-120

*Presenter

IMPROVEMENT OF NOISY EMG SIGNALS BY USING KALMAN FILTER

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Electromyography (EMG) is a signal used to diagnose muscle health during neuromuscular activities. The central nervous system is responsible for the activity of the muscle. Therefore, the EMG signals are complicated signals depend on the anatomical and physiological properties of the muscles. The EMG may contain noise when recorded with electronic devices. The noise of the signal which is obtained with degradation of the EMG signal is an important problem for clinical decision. In this context, first stage in the signal analysis is noise filtering process. Kalman Filter is an estimation method which uses the previous state of the system, input and output, to predict the next state of the system. It is commonly used to solve problems of different engineering. In this study, White Gaussian Noise is added to the noiseless EMG signal, and then the noisy EMG signal is cleaned with Kalman filter. The results are shown that the Kalman Filter can clean with 45-46% correction rate at noisy EMG signals.

Keywords: EMG Signal; Kalman Filter; Signal Processing; White Gaussian Noise.

References

[1] Çayıroğlu, İ. (2012) Kalman Filtresi ve Bir Programlama Örneği. *Fen ve Teknoloji Bilgi Paylaşımı* ,2012-1.

[2] Papoulis, A. (1965). Probability, Random Variables and Stochastic Processes. *McGraw Hill*
Book Company.

[3] Jazwinski, A. H. (1970). Stochastic Processes and Filtering Theory. *Acedemic Press*

[4] Li, Z., Guiraud, D., Andreu, D., Benoussaad, M., Fattal, C., Hayashibe, M (2016) Real-time estimation of FES-induced joint torque with evoked EMG. *Journal Of Neuroengineering And Rehabilitation* Vol.13, 60

[5] Misgeld, BJE., Luken, M., Riener, R., Leonhardt, S. (2017) Observer-Based Human Knee Stiffness Estimation *IEEE Transactions On Biomedical Engineering* Vol.64, 1033-1044

[6] Anderson, B. D. O. and Moore, J. B. (1979). Optimal Filtering. *Prentice Hall*.

*Presenter

[7] Chui, C. K. and Chen, G. (1991). Kalman Filtering with real-time Applications. *Springer-Verlag*.

[8] Janacek, G. and Swift, L. (1993). Time Series forecasting, simulation, applications. *Ellis Horwood Limited*.

[9] Kalman, R. E. (1960). A new Approach to linear Filtering and Prediction Problems, *Journal of Basic Engineering*, Vol.82, 35-45.

[10] Nguyen, NH., Dogancay, K. (2017) Improved Pseudolinear Kalman Filter Algorithms for Bearings-Only Target Tracking *IEEE Transactions On Signal Processing* Vol.65, 6119-6134

[11] Güllü, M.K., E. Yaman, S. Ertürk. (2002) Bulanık denetleç uyumlaması kullanan Kalman filtresi ile görüntü stabilizasyonu , *Elektrik-Elektronik-Bilgisayar Mühendisliği Sempozyumu*, Eleco2002, Bursa, 2002 Elektronik Cildi,pp. 1-5

[12] S. Ertürk, T. J. Dennis,(2000) Image Sequence Stabilisation based on DFT filtering, *IEE Proc. on Vision, Image, and Signal Processing*, 147, (2), 95-102

[13] Goh, YH., Goh, YL., Lee, YK., Ko, YH. (2017) Robust speech recognition system using multi-parameter bidirectional Kalman filter *International Journal Of Speech Technology* Vol.20, 455-463

[14] Raez MB, Hussain MS, Mohd-Yasin F. (2006) Techniques of EMG signal analysis: detection, processing, classification and applications. *Biol Proced Online*. 2006;8:11-35.

[15] Theodoridis, T. (2011, 07 27). EMG Physical Action Data Set. (09 15, 2017) UCI Machine Learning Repository: “https://archive.ics.uci.edu/ml/datasets/EMG+Physical+Action+Data+Set”

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DETERMINING DEPENDENCY BETWEEN GOLD PRICE AND EXCHANGE RATE USING COPULA

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There exists a large amount of relations among variables. In literature, many methods are used in determining dependence structure between variables. In financial time series, MGARCH (Multivariate Generalized Autoregressive Conditional Heteroscedasticity) model are commonly used in modelling relations among financial assets. Although this method provides robust estimations, satisfying assumptions such as multivariate normality is necessary for the method. However, it is difficult to hold this assumption in actual data sets. Copula is one of crucial methods used in modelling dependency between financial assets. Since satisfying multivariate normality for copula is not necessary, it has been widely used as effective tool in modelling dependency recently. Copula is a function that links multivariate distribution to its univariate marginals which are uniformly distributed. Since copulas allow for different dependence structure such as tail dependency and they are quite flexible in modelling dependency, use of copulas has been increased in literature. In this study, for the application, dependence structure between gold price and exchange rates is estimated via copula approach.

Keywords: Dependence Structure; Copula Modelling; Gold Price; Exchange Rate.

References

[1] Engle, R.F., 2002. Dynamic conditional correlation: a simple class of multivariate generalized autoregressive conditional heteroskedasticity models. Journal of Business & Economic Statistics, 20, 339–350.

[2] Joe, H., 1997. Multivariate models and multivariate dependence concepts. CRC Press.

[3] Manner, H., Reznikova, O., 2012. A survey on time-varying copulas: specification, simulations, and application. Econometric Reviews, 31(6), 654-687.

[4] Nelsen, R. B., 2006. An introduction to copulas, SpringerNew York.

[5] Patton, A.J., 2006. Modelling asymmetric exchange rate dependence. International. Economic Review, 47, 527–556.

[6] Wang, D., Svetlozar T.R., Frank J. F., 2009. Pricing of credit default index swap tranches with one-factor heavy-tailed copula models. Journal of Empirical Finance 16(2), 201-215.

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PREDICTION OF BIODIESEL HIGH HEATING VALUE BY ARTIFICIAL NEURAL NETWORK

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Biodiesel is a biofuel has potential to be an alternative to fossil fuels and may replace fossil based diesel. Biodiesel production is performed generally by using waste cooking vegetable oils (WCO). However, composition and properties of this feedstock varies and significantly affects final product. Therefore, to perform an efficient production for a quality product, an appropriate estimation must be accomplished for determination characteristic properties of biodiesel. Higher heating value (HHV) is one of the main fuel properties which is the amount of heat released by full burning of a fuel. A successful estimation of biodiesel HHV before production will help selecting or preparing a suitable WCO feedstock. There are various studies reported in literature for determination of different fuel properties of biodiesel such as HHV, cetane number, flash point. Artificial neural network technique which is an efficient tool for revealing non-lineear and complex releationships between parameters is widely applied in previous studies. However, these studies are mainly based on WCO composition use it as input parameters. Composition of WCO can be determined by gas chromotography-mass spectrometer, which is an expensive tool and not widely available. In this study, we studied prediction of biodiesel HHV by using easily obtainable WCO experimental parameters such as density, viscosity, acidity.etc as input parameters. These parameters can be determined with less labor work and widely available laboratory apparatus and not time consuming. Model was optimized by determining number of hidden layers and neurons by trial and error. Statistical tools R2, RMSE, MAE and MBE were used to evaluate prediction accuracy. Results showed that formed ANN model is successful in estimation of biodiesel HHV by using feedstock properties.

Keywords: Biodiesel; Higher Heating Value; Artificial Neural Networks.

References

[1] Huseyin Sanli, Mustafa Canakci, Ertan Alptekin, Predicting the higher heating values of waste frying oils as potential biodiesel feedstock, In Fuel, Volume 115, 2014, Pages 850-854.

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