

## ABSTRACT

### FUNDAMENTAL AND COMPLEMENTARY SCIENCE

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Maltepe University/Industrial Engineering Department, Istanbul, Turkey

#### **ANALYZING LOGISTICS FIRMS BUSINESS PERFORMANCE**

**Abstract:** The aim of this study is to determine logistics firms identify the most important evaluation criterion for achieving customer satisfaction using the causal relationships among the four dimensions of business performance in Balanced Scorecard and DEMATEL to construct the interrelations between criteria and synthetic utility of the criteria. Applying our approach to real life we find the interrelationships between business performances standpoint of logistics executives from Istanbul, Turkey. We would able to compare the results obtained from the respondents and come through with a conclusion.

**RALUCA APOSTOL-MATEŞ, ALINA BARBU**

Naval Academy, Constanta, Romania

#### **WORDS OF THE SEA TAKEN TO THE LAND**

**Abstract:** As teachers of ESP- maritime English, we deal with students who are adults having some acquaintance with English, and have to rely on their previous knowledge in order to acquire elements of vocabulary that is to build their communicative skills as professionals in the business. Our approach concentrates on teaching language in context. Being able to recognize and use elements of maritime English in their field increases our students' motivation.

**CARMEN ASTRATINEI**

Naval Academy, Constanta, Romania

#### **E-LEARNING MARITIME ENGLISH COURSE-FINAL RESULTS AFTER PILOTING STAGE**

**Abstract:** The shipping industry has become more and more demanding as far as the General and Maritime English are concerned. This is due to the fact that most merchant ships are owned by foreign companies and manned by multinational crews who need to be competent to communicate in English orally and in writing. In this respect, the IMO (International Maritime Organization) and the STCW'95 (Standards of Training Certification and Watch-keeping) convention and code imposed a number of requirements regarding the seafarers' Maritime English knowledge and adequate use. As a result of the international maritime bodies' requirements, the SMCP (Standard Marine Communication Phrases) has become mandatory for the shipping industry worldwide. The SMCP is a comprehensive standardized safety language, precise, concise, simple and unambiguous so as to avoid confusion and error. It consists of a set of terms, definitions, phrases used on board ships, for ship-to-ship and ship-to-shore communication. Therefore, the MET (Maritime Education and Training) teachers have to meet the challenge of designing attractive and efficient courses to motivate their students. It seems that on-line courses are becoming more and more popular with the 21st century students. Last year we piloted the first year deck cadet on-line course. We will present in this paper the final results and considerations after analyzing the students' feed-back commentaries and suggestions. In a learner-centered type of education, the students' involvement in teaching/learning materials development as well as in course design is a must. In this way, the learners become more responsible for the act of learning, more enthusiastic and more determined to achieve success.

**ELENA BAIBARAC**

"Politehnica" University of Bucharest, Bucharest, Romania

#### **A SURVEY ON SYMMETRIC TEXT ENCRYPTION ALGORITHMS**

**Abstract:** In this paper we consider a survey on encryption algorithms. Several security analysis are presented as secret key size, secret key sensitivity, frequency with histograms, autocorrelation analysis, information entropy analysis, differential analysis, classic attacks analysis, and encryption/decryption time. The framework for information entropy analysis is developed on new generalized entropy measures.

**ALINA BALAGIU, DANA ZECHIA**

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#### **CHARACTERISTICS OF MARINE ELECTRICAL ENGINEERING TERMINOLOGY**

**Abstract:** The marine electrical engineering terminology, as part of the engineering terminology, shares the characteristics of the main scientific field. In this paper we will try to depict some individual lexical traits of the electrical terminology applied to the maritime environment, more precise the electrical and electronic equipment used on boardships.

**GHEORGHE BARBU**

University of Pitesti

**COMPUTER SIMULATION A RANDOM VARIABLES BY COMPOSITION METHOD**

**Abstract:** *In building-up simulation models, as well as in various problems it is necessary to use the algorithms for computer generation of different types of random variables.*

*In this paper are presented two algorithms for simulation of random variables with values of Pearson XI and Burr distribution, using the composition method.*

**TANASE BUJDUVEANU**

„CAROL I” Commercial College, CONSTANTA

**ROMANIAN CULTURAL CENTRES FROM EUROPE**

**Abstract:** *The Romanian Spiritual Values have always been into Europeans’ public eye because of the documentary researches. In the same time the Romanian Cultural World would have liked to be recognized in Europe bringing its contribution to achieving some cultural centers in the period between wars. It is the period when Romania expressed itself strongly from the political and civilization point of view establishing its stability role in the South-East of Europe. The intellectuals consider that Romania should be recognized from the cultural point of view in order to support the information changes and European harmony. In 1911, an initiative is taken to open a Culture Institute at Bucharest dedicated to the south-east european issues. Those who took the initiative were Nicolae Iorga, Vasile Pârvan and G. Murgoci, in 1914 and their goal was to study this part of Europe taking into account the old traditions and Romanian present interests. The Romanian Researchers have considered an important connection to Italy because of both countries’ latin root. The first attempt of establishing such institution took place in 1914, but because of the war, the idea was abandoned. There were new attempts in 1917 and 1918. In 1920, Nicolae Iorga, as a deputy, proposed a law to found Romanian Superior Schools: one of Archeological Studies and the other of History and Filology and Belle Arte at Rome and Paris. Nicolae Iorga had a great role in the scientific activity of the Romanian School from Paris, the Institute from Albany from Saranda, Casa Romena from Venice.*

**MARIAN CATA**

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**A CLOUD SOLUTION FOR MONITORING ENVIRONMENTAL CONDITIONS IN A SMART UNIVERSITY**

**Abstract:** *Certainly, in the coming years, the Internet of Things will have a great involvement in many fields, including education. Gradually, every university will need to transform its entire campus in a smart environment, which will lead to a safer and more attractive space for carrying out all specific activities. The aim of the hereby paper is to describe a simple solution for cloud storage of data that can then be processed automatically and presented to decision makers from university.*

**ION COLTESCU, GHEORGHE DOGARU**

Naval Academy, Constanta, Romania

**TIME, LINEAR AND LEXICOGRAPHIC TRANSPORTATION PROBLEM WITH IMPURITIES**

**Abstract:** *An extension of the time transportation problem is considered when the goods may have some impurities and the final quantity of arrived goods reaching to the destination must have certain specifications. This time transportation problem is in relation with the lexicographical linear transportation problem with impurities. An algorithm is presented to solve this problem, taking into account the directions given by Isermann.*

**IOANA DANILA**

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**BAYESIAN ESTIMATION FOR A NEGATIVE-BINOMIAL MODEL WITH A WEIGHTED PROBABILITY DISTRIBUTION**

**Abstract:** *In the frame of the Negative-Binomial Model, we consider a Bayesian approach using Beta and Pearson type VI as priors. Taking them into consideration in terms of posterior densities, we shall reach the closed-form integration.*

*From there on, an expansion of polynomial type for the gamma function is introduced and further, different parameters of interest to re-parameterize the model are taken into account.*

*Often scientists cannot select sampling units in observational studies with equal probability. Well defined sampling frames often do not exist for human, wildlife, insect, plant, or fish populations. Recorded observations on individuals in these populations are biased and will not have the original distribution unless every observation is given an equal chance of being recorded.*

Therefore, when data are recorded according to a certain stochastic model, the recorded observations will not have the original distribution unless every observation is given an equal chance of being recorded.

Biased data arise in all domains of science. Often, sampling units cannot be selected with equal probability for statistical studies. The importance of using weighted distributions arises in such kind of situations. For this, we'll introduce a weighted distribution – with a new positive parameter. An a priori Gamma distribution for the new parameter  $c$  exists, and given that, the new formed distribution is also of Gamma type. For this, the line of Line is considered.

For each Poisson process with a rate parameter, it will be given a probability function and a marginal distribution which has a simple mixture probability function.

Beta and gamma priors are introduced for these parameters and afterwards, these parameters are estimated by using the Bayesian approach. Comparisons with the maximum likelihood and moment method estimates are performed.

The Bayesian estimates for the parameters of interest are analyzed via mean squared error and variance through computer simulation, the first model being used in order to model accident statistics. Since then, it has been applied to model phenomena as diverse as the purchasing of consumer package goods, salesperson productivity, in the Biological sciences and so on.

All in all, the Bayesian method for the Negative-binomial model provides alternatives to the maximum likelihood approach. Unlike the maximum likelihood estimates and the moment method estimates, the Bayes estimation produces values in the feasible regions of parameters. By using the proposed sampling procedure, the Bayesian approach for the Negative-binomial Model can be implemented with success in real life applications.

#### **T. DAVIDOVIĆ**

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#### **BEE COLONY OPTIMIZATION: RECENT DEVELOPMENTS AND APPLICATIONS**

**Abstract:** An extensive survey of the Bee Colony Optimization (BCO) algorithm, proposed for the first time in 2001 by Lučić and Teodorović, will be presented. BCO and its numerous variants belong to a class of nature-inspired meta-heuristic methods, based on the foraging habits of honeybees. It is a simple, easily understandable and implementable technique that has been successfully applied to many optimization problems. A detailed description of the BCO algorithm and its modifications, including the strategies for BCO parallelization and hybridization will be provided. The preliminary results regarding its convergence will also be discussed. In the second part of the talk, the successful applications of BCO to various hard combinatorial optimization problems, mostly in transportation, location and scheduling fields will be summarized, together with some recent applications in the continuous optimization field. This paper is an extension of two survey papers, co-authored by Professor Dušan Teodorović and Dr. Milica Šelmić, recently published in Yugoslav Journal of Operations Research (YUJOR).

#### **GHEORGHE DOGARU, ION COLTESCU**

Naval Academy, Constanta, Romania

#### **FUZZY INTEGER TRANSPORTATION PROBLEM**

**Abstract.** In this paper is presented an algorithm which solves the transportation problem with fuzzy values for supply and demand and with the integrability condition imposed to the solution. The algorithm is exact and calculable effective even if the problem is formulated into a general manner, i.e. the fuzzy values for supply and demand can differ one from another and they are fuzzy numbers of a certain type.

#### **JULIA DONCHEVA**

University of Ruse „Angel Kanchev“, Bulgaria

#### **EDUCATIONAL – PEDAGOGICAL WORK INTERACTION WITH CHILDREN WITH OPPOSITIONAL DEFIANT BEHAVIOR**

**Abstract:** In modern social conditions one of the most common concomitant problems seen in the deviant behavior is oppositional defiant behavior, aggression and aggressive actions of people. To a large extent the problem of challenging events associated with the specifics of human life, with systems of relations in which the person involved, as well as the situations in which it is present. The relations parents-children can be based on the mutual love, sincerity, kind-heartedness and understanding, and also on the rudeness, neglecting, antipathy, lack of understanding, scandals and other negative behavior towards the child. These are two diametric opposite type relations. They by radical different way characterized the upbringing-educational environment within the family and create different base for formation and development of the child's character. The inharmonious relations between the adults and the children in the family leaved strong traces on the children mentality. For the children from very young age any trouble, anxiety, and pain create

*strong traces in the children soul. These negative conditions reflect on the character and the understanding and on the entire shaping of the personality as well.*

**VIRGIL ENE-VOICULESCU, CARMEN ENE-VOICULESCU, ALEXANDRU ABRAMIUC**

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**PROFESSIONAL RECONVERSION - STUDY AND PERSPECTIVES ON SPORTS AGENTS**

**Abstract:** *For most people, the world of sports is regarded with great admiration, respect and emotional solidarity. Very few of us wonder what happens to these super humans after they reach the end of their sport career. Any company that hires a former athlete can soon after see the difference that such a person can make in a team of professionals. The aim of the study is therefore to examine the situation of sports agents in the Romania and European Union and to identify, analyse and describe the questions that their activities give rise to as well as the solutions that have already been provided by public and/or private actors, thus enabling the European Commission to assess – on the basis of the data collected, the problems identified and the analyses carried out – whether intervention is required and, if so, at what level and in what form.*

**E. GANIC, M. DOBROTA, O. BABIC**

University of Belgrade, Belgrade, Serbia

**IMPLEMENTING NOISE ABATEMENT MEASURES ON AIRPORTS: STATISTICAL ANALYSIS OF THE INFLUENTIAL FACTORS**

**Abstract:** *It is widely accepted that the most significant local environmental impact associated with the operation of airports arises from the noise generated by aircraft. In order to mitigate negative effect of noise, many airports have introduced a variety of measures. Although there are similarities between airports that are introducing some of the noise abatement measures (NAMs), the number and type of applied measures are very different among them. The research presented in this paper focuses on finding statistical evidence to support hypothesis that there is a significant correlation between implemented NAMs and specific characteristics related to airports. In order to determine the most influential factors for the introduction of NAMs in airport surroundings, logistic regression was used on data set for 246 European airports. For predictor variables, five specific characteristics related to airports (number of runways and aircraft operations, distance from the city and the population of the city that it serves, GDP per capita) and ten NAMs as a dichotomous variables have been used. The results of analyses have shown that there is a significant correlation between implemented NAMs and specific characteristics related to airports but also between NAMs themselves. The results of this research can be used to determine the likelihood of introduction of certain NAM for each airport based on the factors that showed significant correlation with that NAM.*

**L. GLAVAŠ, J. JOCKOVIĆ, P. MLADENOVIĆ**

University of Belgrade, Belgrade, Serbia

**A MODIFICATION OF HILL'S TAIL INDEX ESTIMATOR**

**Abstract:** *In this paper, we study a class of tail index estimators that contains the well-known Hill's estimator. We propose an estimator that, in several cases, has smaller mean squared error than commonly used estimators (obtained by Hill (1975), Pickands (1975), Dekkers, Einmahl and de Haan (1989) and C. de Vries), and confirm these findings in a simulation study.*

**G. GUREVICH, B. KEREN, Y. HADAD**

SCE - Shamon College of Engineering, Beer Sheva, Israel

**AN EXTENSION OF THE BINOMIAL MODEL FOR THE MACHINE INTERFERENCE PROBLEM**

**Abstract:** *In this paper an extension of the binomial model for the machine interference problem (MIP) is presented. A production system has several groups of identical machines. All the machines produce the same product and randomly request a service that is provided by a group of operators. Each group of machines has a different priority. The queue discipline is such that machines are served according to their priority (preemptive priority). The model enables calculation of the interference rate for each machine, depending on the number of operators and the priority.*

**IOANA ILEANA**

University of Bucharest, Doctoral School of Mathematics, Bucharest, Romania

**SUFFICIENT OPTIMALITY CONDITIONS FOR MULTI – OBJECTIVE PROGRAMMING PROBLEMS WITH BEN-TAL ALGEBRAIC OPERATIONS**

**ANA ION, CARMEN COJOCARU**

Naval Academy, Constanta, Romania

**STEREOTYPES IN INTERCULTURAL COMMUNICATION**

**Abstract:** *In human behavior stereotyping traces back in old times. People in all cultures, and in all times, have this tendency of categorizing and placing the others, i.e. their peers, into separate classes according to their behavior, or certain character traits. We should admit that our way of thinking may be altered by the existing assumptions about representatives of a certain group, nation, ethnicity, cultural background, without filtering the information we get about those people, or trying to see if certain characteristics also apply to them. It is in human nature to stereotype, to "label" our peers by applying generalizations to individuals. Stereotypes, be them racial, based on people's look, on gender, or religion, they still persist in any society, since it is easier for people to deal with a certain situation if they generalize a group of people. Not rarely may we hear people characterizing an overweight person as lazy, a Muslim as a terrorist, a Russian as a vodka drinker, a German as a Nazi, a Scottish as stingy, and so on. Sometimes we may refuse to think otherwise, considering that these characteristics have been verified by others. We hurry to pre-judge and include people in known and pre-set categories, not understanding and not considering cultural differences, of which we should be aware in communication. This paper aims to present information on different types of stereotypes, related concepts, i.e. prejudice, or discrimination, and the way they affect people, with an application to seafarers, and maritime cadets. Through exposure to seafarers of different nationalities, in multinational, multicultural crews, seagoing people must learn to cope with stereotypes in order to avoid misunderstandings, or potential conflict.*

**R. JANKOVIC, S.POKORNI, M. MILINOVIC**

Union University School of Computing, Belgrade, Serbia, ITS Information Technology School, Belgrade, Serbia, Faculty of Mechanical Engineering, Belgrade, Serbia

#### **ON MILITARY NETWORKS TWO-TERMINAL RELIABILITY AND AVAILABILITY ESTIMATION BY SIMULATION**

**Abstract:** *Two-terminal reliability (2TR) and two-terminal availability (2TA) are useful measures of performance of communication networks, especially in military applications, when a network, usually built of low-quality and repairable nodes and links, is primarily intended to provide information traffic between two important users – source and destination terminal nodes. There are analytical methods for 2TR and 2TA calculation, but only a few of them can be applied if the network is complex, and especially if its elements are repairable. An approach to 2TR and 2TA estimation by means of the discrete events simulation has been presented in the paper. The necessary definitions have been given, as well as the simulation models elements, the algorithms of the realized GPSS World program-simulators for 2TR and 2T as well as the algorithm of group of redundant network elements failure generator. To illustrate the proposed concepts, an example with a brief analysis of the executed experiments results has also been given. The realized simulators can be useful in military communication networks early conception phases, as well as in their exploitation and maintenance planning.*

**EDITH-HILDE KAITER**

Naval Academy, Constanta, Romania

#### **FEMINIST READING OF WILLIAM SHAKESPEARE'S KING LEAR**

**Abstract:** *Feminism has always had its defenders and foes, especially in literature. For example, the study of the individual women characters in Shakespeare's King Lear has become an increasingly important part of the play's scholarship. For more than 30 years, other different interpretations of the play have been found. On one hand, it is asserted that this is a play about power, property and inheritance; or it is thought that King Lear shows us the dangers of not following the old ways of the patriarchal order. Therefore, while reading King Lear we may ask ourselves, for instance, if the female characters are stereotyped or if we have to ascertain Cordelia as the representative of goodness and her sisters as evil women. The main objective of the present paper is to answer similar questions and to try to highlight aspects referring to human nature when dealing with feelings.*

**EDITH-HILDE KAITER**

Naval Academy, Constanta, Romania

#### **IN NEED OF MILITARY PSYCHOLOGY**

**Abstract:** *Military psychologists have a lot of responsibility. Their daily decisions affect individuals, families and the effectiveness of entire military units. Solid leadership skills are absolutely essential to the psychologists' ability to perform their military duties. The unique skills required of the military psychologist combine a mastery of traditional clinical psychology and an understanding of the functions and needs of the modern military. Although there are many challenges, a career in the armed forces is a very exciting and rewarding option for clinical psychologists. The hereby paper briefly describes the development of the profession of military psychology and various roles of the military psychologist through the years, starting from the Revolutionary War until the Vietnam War.*

**EDITH-HILDE KAITER**

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**WOODY ALLEN – HERO OR ANTI-HERO?**

**Abstract:** *By examining his collection of short stories and some of his films, Woody Allen's work can be placed within the context of American culture and history. His prose and films deal with broad social and cultural subjects, themes that comprise the core of contemporary life. In contrast to the classic myth of American manhood, Allen's hero finds love and identity by revealing rather than repressing pain, fear, and dependence. The central link among the major literary and cinematic works is the concept of the schlemiel as a hero. The purpose of the hereby paper is to present the way in which Allen uses the schlemiel figure as a metaphorical device in order to examine and criticize particular aspects of Jewish and American culture. The schlemiel's personality traits are deeply embedded in Jewish culture.*

**B. KEREN, Y. HADAD, Z. LASLO**

SCE - Shamon College of Engineering, Beer Sheva, Israel

**MULTI-CRITERIA ABC INVENTORY CLASSIFICATION USING RANKING METHODS**

**Abstract:** *Service facilities store thousands of items as inventory. It is impossible to dedicate the same management efforts and care to every item. Grouping the inventory into specific categories is a common solution for this problem. This paper presents methods for ABC inventory classification via the Data Envelopment Analysis (DEA) and ranking methods according to multi-criteria analysis. A numerical case study illustrates the proposed classification. Each ranking method may generate a different rank so it can be beneficial to use the average ranking method.*

**S. KORDIĆ, N. KOVAČ, T. DAVIDOVIĆ**

University of Montenegro/Maritime Faculty, Kotor, Montenegro, Serbian Academy of Sciences and Arts/Mathematical Institute, Belgrade, Serbia

**DIVIDE AND CONQUER APPROACH TO DISCRETE BERTH ALLOCATION PROBLEM**

**Abstract:** *The paper presents an application of the divide and conquers strategy to exactly solve the Discrete Berth Allocation Problem (DBAP). After partitioning a problem by divide and conquer strategy to sub-problems Sedimentation Algorithm solver is used to exactly solve these sub-problems. Experimental evaluation we performed completely justifies application of the proposed divide and conquer strategy for exactly solving DBAP. Computational results on two classes of DBAP and discussion of the most difficult problems entirely demonstrate the superiority of the divide and conquer strategy over the approach to solve DBAP without it. Its application considerably reduces average and maximal runtimes for all test instances. Efficient C implementation enabled us to solve instances of DBAP with up to 120 vessels, which is more than enough for big ports.*

**ION LAZAR, CARMEN LUMINITA COJOCARU, DAN NICOLAU**

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**A COMPLEX APPROACH TO SEE WHAT'S THE TEACHER PERSONALITY, INDEED PSYCHO-SOCIAL AND PSYCHOLOGICAL PROFILE OF THE TEACHER SPECIALIZED IN SPORTS TRAINING**

**Abstract:** *It is very well known that the physical training and sports teacher has a complex activity, touching almost all domains concerning the forming and perfecting the human being. The physical training and sports teacher coordinates the general way to reach the idea of the outstanding old saying of the latin antiquity „Mens sana in corpore sano”, which defines the forming branch of the human being. And, more than that he tries to train psycho-physically and also from intellectual point of view the human being in order to improve it constantly, until reaching the performance level from physical and psychical and intellectual point of view as well. The present work will try to offer as much thoroughly as possible the (partially) results of some larger researches and conducted observations, made by the authors in order to act as the multi-dicliplinarity character of the teacher and presenting the need he has to have very many qualities and a serious training in his position. And having his tasks to form and improve the necessary physical and psychological qualities to the young generations.*

**DELIA LUNGU, LAURA CIZER**

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**TO CHOOSE OR NOT TO CHOOSE? – OR HOW TO SELECT THE MOST APPROPRIATE INTERNET SITE FOR TEACHING PURPOSES**

**Abstract:** *The Internet nowadays has become the most resourceful data bank for teachers around the world. There is not any single topic that a teacher would think about which could not be found on the Internet. There are numerous sites which provide ready-made lesson plans, loads of grammar exercises, hundreds of*

quizzes and many other resources which can be easily turned into teaching materials. However, when it comes to deciding which site is best for use in class, teachers sometimes feel lost and not always the searching engines provide them with the best resources. The aim of this paper is to offer a selection of sites, grouped according to a specific purpose, with explanations about what can be found in each group.

**M. MARICIC, M. BULAJIC, M. MARTIC, M. DOBROTA**

University of Belgrade, Belgrade, Serbia

#### **MEASURING THE ICT DEVELOPMENT: THE FUSION OF BIASED AND OBJECTIVE APPROACH**

**Abstract:** Majority of studies support the viewpoint that Information and Communication Technologies (ICT) have a positive effect on the level of economic activity and the overall societal development. Accordingly, on the global level, the penetration of ICT in countries and regions is growing each day. Thus, measuring country's ICT development is an issue that attracts the attention of various stakeholders. One of the metrics developed to monitor and compare the level of ICT development between countries is the ICT Development Index (IDI). Several conducted studies put an accent on IDI's disadvantages, the main being its bias, and a major study was recently published that bypasses the bias and introduces the objectiveness to the measurement method of the IDI. Therefore, it suggests the Composite I-distance Indicator (CIDI) methodology to overcome the drawback of subjectivity within a composite indicator. However, it raised certain concerns regarding the possibility of excessive objectiveness that may not be in accordance with the nature of IDI measurement. Having in mind that the IDI comprises of pillars, which are comprised of indicators, the question arises whether weights on both indicator levels should be unbiased. Although CIDI could be applied on both levels, we propose a slightly different approach, the hybrid approach that incorporates both bias and objectiveness into the IDI methodology. Namely, our idea is that the indicator weights would be objective while the pillar weights would be left intact. The results of this paper might indicate that when scrutinizing composite indicators weighting schemes, researchers need not alter weights on all indicator levels. Better results could be obtained by mixing the appropriate amount of bias from experts and objectiveness from data itself. Our hybrid approach could be a foundation for further research that would take into account both approaches to assigning weights: the biased and the unbiased approach

**P.V. MARINOV**

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#### **MINING APPROACHES IN VISUAL DATA SETS**

**Abstract:** Quality and the speed of query reply in internet visual search is a problem with increasing importance due to the expanding of the shearing visual data. Searching advanced solutions of this problem, mining methods are recently widely used. The paper is dedicated to the applications of data mining approaches to frequent item sets in visual data. The description of the problem of the item set mining is given, firstly. Further, some efficient algorithms for solving the problem are discussed. In the end, several measures for evaluating the quality of the item sets and the effectiveness of the association rules are considered.

**N. MILENKOVIĆ, A. ĐOKOVIĆ, D. VUKMIROVIĆ**

Faculty of Organizational Sciences/Laboratory for statistics, Belgrade, Serbia

#### **CHOOSING APPROPRIATE ECONOMIC DEVELOPMENT INDICATORS - A MULTIVARIATE STATISTICAL APPROACH**

**Abstract:** Economic development of countries is a much discussed topic. Numerous researchers use variety of approaches to measure it, but they all agree that economic development is a multidimensional concept. Most common countries' rankings are based on their GDP. The aim of this paper is to present one synthesized indicator that is able to quantitatively demonstrate any country's economic development. The statistical I-distance method is thoroughly explained and applied to 28 European Union countries. Crucial ranking indicators are also elaborated.

**EMANOIL MUSCALU, ELISABETA-EMILIA HALMAGHI**

"Lucian Blaga" University, "Nicolae Bălcescu" Land Forces Academy, Sibiu

#### **CHANGE IN ORGANIZATIONAL CULTURE**

**Abstract:** Organizational culture has a number of effects on the socio-economic results of the organization as an open system on its employees and the management practiced in the organization. Research on organizational culture change are reduced. Therefore, creating a new corporate culture through an important change brought existing organizational culture is a complex and lengthy process.

**GEORGE-ANDREI PADUREANU, MONICA DUMITRESCU**

University of Bucharest, Bucharest, Romania

**ON ENTROPIC MEASURES FOR LOGISTIC SEMIPARAMETRIC REGRESSION MODELS WITH BINARY RESPONSE**

**Abstract:** *The paper introduces two measures for the informational properties of regression models which deal with a random vector (response, covariates) and are based on the assumption of the existence of an intrinsic relationship between covariates (causes) and response (effect). We define these measures in terms of conditional Shannon entropy and conditional  $\alpha$ -Renyi entropy. The regression models we address are logistic semiparametric regression models with binary response (LSpRModelsBR) and with two exogenous covariates. Conditional entropies are defined and calculated for discrete, binary covariates and for exponential distributed covariates, the issue of nonparametric estimation of the conditional quadratic Renyi entropy is discussed and we report the results of a simulation study. Based on their properties and on our simulation results, we conclude that these conditional entropies are able to measure the intensity of the connection "response ~covariates" within a regression model. Therefore, we can identify a new goodness-of-fit index for regression models, as well as a new quantitative criterion for statistical modelling:*

*"The larger conditional entropy  $H(\text{response} | \text{covariates})$ , the better fitted the regression model response ~covariates".*

**CLAUDIA PANTELIE, CAMELIA CIOBANU, IRINA CRISTEA**

Orange Romania, Naval Academy, Constanta, University of Nova Gorica, Slovenia

**SOLVING PRACTICAL PROBLEMS IN SHIPPING BY USING MATHEMATICAL MODELS**

**Abstract:** *The purpose of this paper is to highlight how using mathematical algorithms, some practical problems on board can be more easily solved.*

**MARIAN DORIN PIRLOAGA, MARIUS ROGOBETE, CIPRIAN RACUCIU, EMIL CREȚU**

Military Technical Academy, Bucharest, University Titu Maiorescu, Bucharest

**OPTIMAL CLASSIFICATION USING RBF FOR FACE RECOGNITION**

**Abstract:** *Classification analysis work performed by radial based function networks (RBF). I watched to obtain a minimum number of incorrect classifications based on image processing using features extraction algorithm using a variable number of pixels in each image analysis. I determined the optimal performance for a minimum number of pixels processed and RBF unit for radius. This was achieved by two representations of data: Gaussian function, Euclidean distance and Gaussian function, Manhattan distance.*

*At the same time I realized and a representation of performance by radius, number of RBF units and processing time. Finally we concluded the best efficacy experiment.*

**MARIUS ROGOBETE, CIPRIAN RACUCIU, MARIAN-DORIN PIRLOAGA, FLORIN MEDELEANU**

Alstom GRID Bucharest, "Titu Maiorescu" University, Bucharest, Military Technical Academy, Bucharest

**IMAGE PROTECTION A FRAMEWORK PROPOSAL**

**Abstract:** *Actually the image protection is based on the attached information to the main image information and presented as a container. Any player or browser uses plugins that extract the image in order to be properly played. But also it allows that the image to be saved separately, without additional info attached. More, basically all the pictures in Facebook or Twitter are detached by the extra information. Therefore the only way to keep the info into any image is to embed it, as the watermarking technology describe. Based on former research, here is presented a specific framework able to protect pictures and images stream.*

**M. RADOJICIC, G. SAVIC, RADOVANOVIC, V. JEREMIC**

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**A NOVEL BOOTSTRAP DBA-DEA APPROACH IN EVALUATING EFFICIENCY OF BANKS**

**Abstract:** *Efficiency evaluation has long been an issue of great concern for the banking sector (financial institutions and for the banks themselves). This is particularly the case for State financial institutions which can be able to act proactively and prevent severe turbulence in the market. That is a very important task in a small market where operates a large number of banks, such as the Serbian market. The aim of paper is to present new way in calculating efficiency using data envelopment analysis (DEA), as the most widely used efficiency evaluation method. We present a novel approach in obtaining weight restrictions for DEA, based on the bootstrapping distance based analysis (DBA). Analysis was conducted on 29 banks, which have been operating in Serbia during 2010.*

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### **CANONICAL MATHEMATICAL MODELS USED IN HARBOR ACTIVITIES**

**Abstract:** *The paper aims is to prove, once again, that the canonical-mathematical models could provide better solutions for the management of different activities in the harbour framework.*

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### **ELEMENTS AND RESOURCES FOR THE CREATION OF NEW TERMS IN THE ROMANIAN MARITIME TERMINOLOGY**

**Abstract:** *Like many other terminologies, the maritime terminology developed in the second half of the nineteenth century, through the translation of foreign textbooks related to the field of navigation. The translation of such documents was done in several ways, allowing the creation of new maritime terms in various ways: through linguistic loans, through word translations, through linguistic calques, by using the internal processes of derivation and composition, etc. Therefore, most of the Romanian maritime terms are neologisms. These lexical innovations are entrenched in the Romanian language because they needed to adapt to new realities and changing societal needs. The Romanian maritime terminology involves a certain multilingualism. Sailors, forced to communicate in a foreign language to understand and make themselves understood, tended to imitate the languages of those with whom they came into contact, be they French, Italian, German, Spanish, English etc. Consequently, because of the many loan words that have enriched its structure, the maritime vocabulary is highly heterogeneous. Some of these terms have a single etymological source, such as: abandon, alură, amara, anemograf, anemometru, baliză, banchet, barograf, bastingaj, belier, capot, cart, catapultă, carlingă, derivor, deroșeză, epavă, etambreu, hublou, iaht, lusin, madrieră, manșon, panou, pilot, ponton, radă, sabord etc. Other maritime terms have multiple possible etymologies, or more precisely an uncertain etymology, such as: Rom. balast < Fr. ballast, cf. Engl. ballast, Rom. balenieră < Fr. balenière, It. baleniera, Rom. bord < Fr. bord, It. bordo, Germ. Bord, Rom. bric < Fr. brick, It. brik, Germ. Brick, Rom. brigantină < It. brigantino, Fr. brigantine, Engl. brigantine, Germ. Brigantine, etc. A small part of the Romanian maritime terms have unknown origins. In the case of the following terms, for example, an acceptable etymon, both phonetic and semantical, couldn't be identified: rai „wooden wheel on which ropes are rolled”; rujar „port worker”; saulă, școndru, verfafor, bandulă, etc. There are also some maritime terms which have a controversial etymology. This type of neologisms can be explained either through loans or through internal means, such as the derivation or the semantic neology. Such is the case for the Romanian words braț, măr, picior, etc., whose forms come from Latin, but which have considerably enriched their meanings through the semantic calques of foreign origin, mostly French and English.*

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### **RISK NEUTRAL DENSITIES AND STATISTICAL HETEROGENEITY**

**Abstract:** *Statistical Physics and Information Theory commonly use Shannon's entropy which measures the randomness of probability laws, whereas Economics and the Social Sciences commonly use Gini's index which measures the evenness of probability laws. The problem of shifting from the "principal of maximum entropy" to the more general "principal of maximum heterogeneity", and explore the maximization of statistical heterogeneity was studied by Eliazar and Sokolov [2010]. We propose the framework of entropy pricing theory in this regard, introduced by Gulko [1996]. We consider various entropy maximization problems to obtain the risk neutral densities based on Eliazar and Sokolov methodology.*

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### **THE SIGNIFICANCE OF LANGUAGE AS A TOOL OF COMMUNICATION**

**Abstract:** *Language is essentially a means of communication among the members of a society. The purpose of this paper is to show that a common language is one of the most important features of a community and the ceaseless use of the same language is the most certain proof of the historical continuity of a community of people. The need to communicate triggers both the occurrence and the development of a language and this need arises and becomes stronger and stronger when one has someone else to communicate with, i.e. where there is a society. In terms of linguistics, the study of language is a multidisciplinary endeavour. Communication takes place not only orally, but also in writing. It is this plurality of aspects in studying the same object that makes language a perpetual phenomenon.*

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**STATISTICAL ANALYSIS IN ORAL LICHEN PLANUS**

**Abstract:** *The aim of this article is to present a statistical analysis of clinical parameters of patients with oral lichen planus (OLP). The study was performed on real data which included 92 patients. We intend to present the correlation between various clinical parameters in order to establish the most important factor which can influence the medical decision. The Model Selection Loglinear Analysis procedure is used to identify models for describing the relationship between variables. This is accomplished through analysis of the cell counts of the crosstabulation table formed by the cross-classification of the interested variables.*

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**THE TRANSMUTED GENERALIZED PARETO DISTRIBUTION. STATISTICAL INFERENCE AND SIMULATION RESULTS**

**Abstract:** *The generalized Pareto distribution was introduced by Pickands (1975) and it was used to model socio-economic phenomena, physical and biological processes, in reliability studies and the analysis of environmental extremes. Here we generalized this probability distribution using the quadratic rank transmutation map studied by Shaw et al (2009) [12]. Let a random variable  $X$  be, if  $c$  is the threshold or lower bound of  $X$ , then the distribution of  $X$  is the 3-parameter generalized Pareto distribution, given by*

$$G(x, a, b, c) = \begin{cases} 1 - \left(1 - \frac{a}{b}(x - c)\right)^{\frac{1}{a}} & \text{for } a \neq 0 \\ 1 - e^{-\frac{x-c}{b}} & \text{for } a = 0 \end{cases}$$

where  $c$  is a location parameter,  $b$  is a scale parameter,  $a$  is a shape parameter and  $G$  is the cumulative distribution function [13]. According to the quadratic rank transmuted map the cumulative distribution function of Transmuted Generalized Pareto Distribution can be expressed as [1]

$$F(x, a, b, c, \lambda) = (1 + \lambda)G(x) - \lambda G^2(x).$$

Some mathematical properties of the new distribution are presented in this paper.

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**ALGORITHM FOR GENERATING ALL  $k$  VERTICES SUBGRAPHS AND FINDING THE VALUES FOR EACH OF THE SUBGRAPHS**

**Abstract:** *In this paper we will prove how all subgraphs with  $k$  vertices and weighted edges of a graph can be generated and how can be computed the value of each subgraph. The paper will include a written C++ program that implements the presented algorithm. Moreover, a use case scenario for this algorithm will be described.*