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Recent Researches in Applied Economics & Management

Business Administration and Financial Management - Volume 1

**Proceedings of the 5th International Conference on
Applied Economics, Business and Development (AEBD '13)**

Chania, Crete Island, Greece, August 27-29, 2013

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Preface

This year the 5th International Conference on Applied Economics, Business and Development (AEBD '13) was held in Chania, Crete Island, Greece, August 27-29, 2013. The conference provided a platform to discuss business management, financial management, business ethics, electronic commerce, business law, economic and efficient energy systems, socio-economic aspects of energy, natural resources management etc with participants from all over the world, both from academia and from industry.

Its success is reflected in the papers received, with participants coming from several countries, allowing a real multinational multicultural exchange of experiences and ideas.

The accepted papers of this conference are published in this Book that will be sent to international indexes. They will be also available in the E-Library of the WSEAS. Extended versions of the best papers will be promoted to many Journals for further evaluation.

Conferences such as this can only succeed as a team effort, so the Editors want to thank the International Scientific Committee and the Reviewers for their excellent work in reviewing the papers as well as their invaluable input and advice.

The Editors

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Plenary Lecture 1

Approximation and Interpolation of Scattered n-Dimensional Economical Data



Professor Václav Skala

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Abstract: Data approximation and interpolation is one of the most often task in economical studies and engineering. Several techniques have been developed for data approximation and interpolation, but they expect some kind of data "ordering". In many economical problems, data are not given in an ordered way and they can be considered as scattered in n dimensional space, in general. Usually scattered data are tessellated using triangulation, tetrahedronization etc. but for n dimensional data interpolation this approach for is quite prohibitive because of the computational cost. An interesting technique is n dimensional data interpolation using Radial Basis Functions (RBF). RBF interpolation is computationally more expensive because interpolated data are not ordered, but offers quite interesting applications with acceptable computational cost.

We will shortly introduce RBF theory at the "application level" including some basic principles and computational issues. There are two main groups of interpolating functions: "global" and "local". Application of "local" functions, called Compactly Supporting Functions-CSFBB, can significantly decrease computational cost as they lead to a system of linear equations with a sparse matrix. The RBF interpolation will be demonstrated on practical applications.

Brief Biography of the Speaker: Prof. Vaclav Skala is a Full professor of Computer Science at the University of West Bohemia, Plzen and VSB-Technical University Ostrava, Czech Republic. He received his Ing. (equivalent of MSc.) degree in 1975 from the Institute of Technology in Plzen and CSc. (equivalent of Ph.D.) degree from the Czech Technical University in Prague in 1981. In 1996 he became a full professor in Computer Science. In 1997 the Center of Computer Graphics and Visualization (CCGV) was formally established and since then he is the Head of the CCGV in Plzen (<http://Graphics.zcu.cz>).

Prof.Vaclav Skala is a member of editorial of The Visual Computer (Springer), Computers and Graphics (Elsevier), Machine Graphics and Vision (Polish Academy of Sciences) and the Editor in Chief of the Journal of WSCG. He is a member of several international program committees of prestigious conferences and workshops. He is a member of ACM SIGGRAPH, IEEE and Eurographics Association.

Prof.Vaclav Skala has published over 200 research papers in scientific journal and at international conferences. His current research interests are computer graphics, visualization and mathematics, especially geometrical algebra, algorithms and data structures.

Details can be found at <http://www.VaclavSkala.eu>

Plenary Lecture 2

Stochastic and Fuzzy Models in Business Applications



Professor Michael Gr. Voskoglou

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Abstract: There used to be a tradition in science and engineering of turning to probability theory when one is faced with a problem in which uncertainty plays a significant role. This transition was justified when there were no alternative tools for dealing with the uncertainty. Today this is no longer the case. Fuzzy logic, which is based on fuzzy sets theory introduced by Zadeh in 1965, provides a rich and meaningful addition to standard logic and probability theory. The applications which may be generated from or adapted to fuzzy logic are wide-ranging and provide the opportunity for modelling under conditions which are imprecisely defined, despite the concerns of classical logicians.

Concerning the probability theory, Markov chains offer ideal conditions for the study and mathematical modelling of a certain kind of phenomena depending upon random variables. The basic concepts of the corresponding theory were introduced by Markov in 1907 on coding literary texts. Since that time the Markov chain theory was developed by a number of leading mathematicians such as Kolmogorov, Feller etc, but only from the 60's the importance of this theory to the Natural, Social and most of the other Applied Sciences has been recognized.

In this plenary lecture we shall present characteristic examples of applications of finite Markov chains to Business problems, which can be solved - as most of the problems concerning applications of Markov chains in general do - by distinguishing between two types of such chains, the ergodic and the absorbing ones. We shall also present two characteristic applications of fuzzy sets to problems of commercial enterprises. The former concerns the evaluation of the fuzzy data of a market's research, while the latter is a decision making problem in a fuzzy environment. The two types of models that we will use (stochastic and fuzzy ones) will be compared to each other by listing their advantages and disadvantages.

Brief Biography of the Speaker: Michael Gr. Voskoglou (B.Sc., M.Sc., M.Phil. , Ph.D. in Mathematics) is a Professor of Mathematical Sciences at the Graduate Technological Educational Institute (T. E. I.) of Patras, Greece. He has also taught at the Hellenic Open University, at the Mathematics Department of the University of Patras, at T. E. I. of Mesolonghi, etc. As a visiting professor he has taught in M.Sc. courses of the department of Operational Mathematics at the University of Applied Sciences in Berlin and of the School of Management at the University of Warsaw, while he worked for 3 years (1997-2000) as a post doctoral researcher in the Bulgarian Academy of Sciences in Sofia (under sabbatical).

He is the author of 8 books in Greek and English language and of more than 270 papers published in reputed journals and proceedings of conferences of 23 countries in 5 continents, with many references from other researchers.

He is also the Editor in Chief of the "International Journal of Applications of Fuzzy Sets and Artificial Intelligence" (e-journal), reviewer of the American Mathematical Society and member of the Editorial Board or referee in several mathematical journals. His research interests include Algebra, Fuzzy Sets, Markov Chains and Mathematics Education.

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Plenary Lecture 3

The Modal Split in Transportation and Cross Elasticity



Assistant Professor Zdenek Riha

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Abstract: It holds in general that for a perfect competition the following four conditions must hold: perfect information of buyers and sellers, zero transaction costs of provider change, homogenous product and big number of suppliers. If we aim at the condition of a homogenous product, i.e. all sellers supply products of the same features, we find out that this condition can be fulfilled in practice only in a very limited number of cases like e.g. the market of primary raw materials. Then it is interesting to analyse, whether the rival products are substitutes. This question is solved by the so called cross elasticity. This topic is also aimed at in this paper that analyses the development of oil and fuel prices and studies their impact on the output of passenger rail transport. If we mention the cross elasticity, two goods A and G are compared that are either substitutes (i.e. mutually replaceable), complements (or additional goods) or there is no similar relation between them. The cross elasticity indicates the volume that changes in the demand of the good B when it comes to a unit change of good A. The paper analyses in this way the transport market and presents another interesting statistics that have featured the transport in the past ten years.

Brief Biography of the Speaker: Ing. Zdenek Riha, Ph.D. was born on 12th April 1974. His dissertation (2005) was focused on the problems of externalities in transportation. He aims on relations between economics, transportation, environment and energy system. Zdeněk Říha is author or co-author of approximately 30 papers in special journals or international conferences and of one monograph. He devotes to popularization of transport and he created three exhibitions, which were focused on transportation system development from history (middle age) to present, it was seen by approximately 40 000 visitors.

Plenary Lecture 4

Management Models for Pricing in Mining Industry



Professor Catalin Popescu

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Abstract: Given that economic analysis of extractive industry is fundamentally different from the analysis of agriculture, manufacturing and services, this paper deals with finding and applying the political and economic principles of pricing in mining industry (in the first part), and with demonstrating the relationship between the level of extraction, depletion time and price trend resulted in time (in the second part).

Brief Biography of the Speaker: Dr. Catalin Popescu is Professor of Management at University of Oil and Gas from Ploiesti, Romania. His research and consulting interest include general management, engineering management, project management, quantitative methods for business and management, management information systems, human resource management, operations management, energy and environmental management. He received in 1991 a degree in Engineering, a degree in Management (2000) and a PhD (2001) in Automated Systems concern Modeling and simulation of production systems, from the University of Oil and Gas from Ploiesti, Romania. Dr. Popescu has published over 160 articles and conference papers, 8 books and he was involved in more than 28 scientific research grants and international projects. He is member of AMIER (Managers and Economical Engineers Association from Romania), COLEAD (International Research Society in Leadership and Organizational Culture), IBIMA (International Business Information Management Association) and IMTA Alumni Association (International Management Teachers Academy) from Slovenia. His international experience includes presentations and participation with papers in many places all over the world, in more than 25 countries. Dr. Catalin Popescu was plenary speaker, editor or participant to some conferences organized by WSEAS in collaboration with NAUN. He participated in 10 WSEAS Conferences and presented 12 papers and also he participated in international conferences organized by WSEAS and NAUN with 5 articles. On the other hand he published 12 papers in the WSEAS journals. Dr. Popescu is assessor in many academic and scientific organizations such as: WSEAS (World Scientific and Engineering Academy and Society), ANCS (National Agency for Scientific Research for the european projects under POS – CCE competition) and IBIMA (International Business Information Management Association).