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Guest Editorial: Selected Papers from the 14th International Student Conference on Applied Mathematics and Informatics

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## GUEST EDITORIAL: SELECTED PAPERS FROM THE 14TH INTERNATIONAL STUDENT CONFERENCE ON APPLIED MATHEMATICS AND INFORMATICS

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International Conferences for Undergraduate and Graduate Students of Applied Mathematics (SCAM and later on ISCAM) were organized by two faculties of the Slovak University of Technology in Bratislava. Professor Zdenka Riečanová from the Faculty of Electrical Engineering and Information Technology and professor Radko Mesiar from the Faculty of Civil Engineering were guaranties of these conferences in years 1999-2007. The original idea was to bring together graduate students in various areas of mathematics relevant for applications.

After one-year pause, the ISCAM was again organized in a new guise. Since 2009, the **ISCAMI** has extended its scope by informatics and it has been co-organized by the Department of Mathematics of Faculty of Civil Engineering (Slovak University of Technology in Bratislava) represented by Radko Mesiar and by the Institute for Research and Applications of Fuzzy Modeling (University of Ostrava) represented by Vilém Novák. It has been decided that the venue should alter between Slovakia to keep the original nature and tradition of the SCAM conference and a locality situated in mountains close to Ostrava to provide participants with manifold surroundings.

The ISCAMI 2013 was organized in Malenovice – a beautiful village situated on the root of the Lysá hora mountain, the highest mountain in Beskydy mountains. The number of participants exceeded the number of 80 from 8 countries, who gave 60 scientific talks. In this issue of *Kybernetika*, we present 4 articles based on 4 of the talks given at the conference.

The first paper *Relative cost curves: An alternative to AUC and an extension to 3-class problems* by Olga Montvida and Frank Klawonn focuses on performance evaluation of classifiers. The standard approaches using Receiver Operating Characteristic (ROC) curves and Area Under the ROC Curve (AUC) do not take into account that misclassification for different classes might have more or less serious consequences. This paper is deals with Relative Cost Curves (RCC) – a graphical technique for visualising the performance of binary classifiers over the full range of possible relative misclassification costs – and introduces the concept of Area Above the RCC (AAC) which is a scalar measure of classifier performance under unequal misclassification costs problem. The

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extension of RCC to multicategory problems when misclassification costs depend only on the true class is also presented.

The second paper *Consensus clustering with differential evolution* by Miroslav Sabo introduces a specific approach to consensus clustering algorithms that are widely used to improve properties of traditional clustering methods. The presented approach is based on a refinement of the set of initial partitions and uses differential evolution algorithm in order to find the most valid solution. The approach is empirically justified by experiments provided on four benchmark data sets.

The third paper *On a functional equation related to the distributivity of fuzzy implications over triangular norms and conorms* by Michał Baczyński, Tomasz Szostok and Wanda Niemyska focus on the distributivity of fuzzy implications over triangular norms and conorms. This purely theoretical research has a very strong applied motivation stemming from fuzzy control and other areas of application of approximate reasoning where these theoretical fields find wide application potential.

The last paper *On hierarchy of the positioned eco-grammar systems* by Miroslav Langer deals with the so-called positioned eco-grammar systems (PEG systems), i.e., with specific grammar systems motivated mainly by the description of the interplay between an evolving environment and the community of agents living in this environment, with the main focus on agents' positions in the environment. In this paper, the authors focus on the hierarchy of the PEG systems according to the number of agents presented in the environment and according to the number of types of agents in the system.

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