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Recent Advances in Computational Intelligence

Proceedings of the 4th WSEAS International Conference on Computational Intelligence (CI '10)

Universitatea Politehnica, Bucharest, Romania, April 20-22, 2010

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Facultatea IMST,
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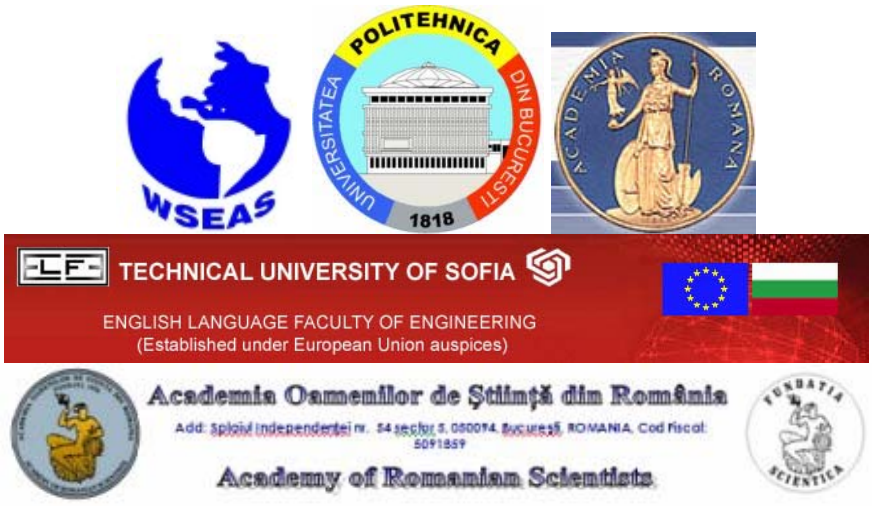

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Preface

This year the 4th WSEAS International Conference on COMPUTATIONAL INTELLIGENCE (CI '10) was held at Universitatea Politehnica, Bucharest, Romania, April 20-22, 2010. The conference remains faithful to its original idea of providing a platform to discuss supervised and unsupervised learning, algorithms, neurobiology and neurosciences, neuro-fuzzy systems, takagi-sugeno models and generalizations, information systems, image processing, parallel computing applications in identification & control, financial mathematics, industrial measurement, large scale systems, quintitative methods, robotics, mechatronics, multiobjective programming, game theory, electromagnetics, risk 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 indexed by ISI. Please, check it: www.worldses.org/indexes as well as in the CD-ROM Proceedings. They will be also available in the E-Library of the WSEAS. The best papers will be also promoted in many Journals for further evaluation.

A Conference 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

The Blocking Meta-Heuristics for Combinatorial Problems Solving

Professor Zurab Bosikashvili
Department of Information System
Georgian Technical University, Tbilisi
Georgia
E-mail: zurab.bosikashvili@ugt.ge

Abstract: The majority of the problems represented in the artificial intelligence is of combinatory nature and is characterized with exponential complexity. In the given lecture there are considered the meta-heuristics based methods of coping with dimensions of such problems. In particular, a combinatorial problem is considered as a sorting problem with constraints and is represented by means of a formalization of a searching of solutions in the state space. In the works we introduce a meta-heuristics of blocking, which allows a factorization of a state space and a reduction of an initial problem to a factor problem with a considerably smaller dimensions than it was an initial one. There is considered a mechanism of decomposition of an initial problem into the sub-problems and are represented conditions of correctness of merging sub-problems as well. Also in the lecture there is considered a usage of analogy principles in the process of solving combinatorial problems based on the blocking meta-heuristics.

Brief Biography of the Speaker:
Zurab Bosikashvili is a professor of Software Development and Artificial Intelligence at Information System Department, Georgian Technical University, Georgia. His area of expertise is the automatization of problem solving, pattern recognition, design of programming system and software development methodology. He authored or co-authored more 70 scientific papers published in reviewed journals or presented at local and international conferences. He has developed solutions searching methods and algorithms for combinatorial problems, particularly on their basis have been developed Georgian printed character and cursive script recognition system, logical blocks' control tests generation algorithm, system of conjunction tracing on the plane etc. He has participated more 30 projects in IT area of Georgia. He is a consultant and system architect in the software development company UGT.

Plenary Lecture 2

Fuzzy Type Set-Valued Integrals

Professor Anca Croitoru
Faculty of Mathematics
"Al.I. Cuza" University of Iasi
ROMANIA
E-mail: croitoru@uaic.ro

Abstract: Since Aumann introduced in 1965 the integral of a multifunction, the theory of set-valued integrals has become an interesting and important topic due to numerous applications in economics, probabilities, theory of control. The lecture is focused on presenting properties of fuzzy type set-valued integrals for real functions (multifunctions respectively) with respect to a fuzzy multimeasure (fuzzy measure respectively).

Brief Biography of the Speaker:
Anca Croitoru graduated the Faculty of Mathematics at "Al.I. Cuza" University of Iasi, Romania and received the Doctoral Degree in Mathematics in 2000 at the same university with a thesis in Romanian: Multifunctii aditive si neaditive de multime (Non-additive and additive set multifunctions), supervisor: prof. dr. Anca-Maria Precupanu. In present she is lecturer at the Faculty of Mathematics, "Al.I. Cuza" University of Iasi, Romania.
She is member of AMS, WSEAS, ROMAI, "Al. Myller" Mathematical Seminary
Foundation of "Al.I. Cuza" University of Iasi. She is author or co-author of 4 books (in Romanian), over 30 papers in national or international refereed journals and conference proceedings, co-editor of 7 conference proceedings. She is participant at over 40 national or international conferences and participant or coordinator of 4 national and 2 international research projects respectively.
Her research interest includes: continuity, measurability, fuzzyness, (pseudo)atoms, non-atomicity, Darboux property in set-valued analysis, non-additive set multifunctions, convergences of measurable functions, set-valued integrals of different types: Dunford, Gould, fuzzy.