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RECENT ADVANCES in NEURAL NETWORKS

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Preface

This year the 10th WSEAS International Conference on NEURAL NETWORKS (NN'09) was held in Prague, Czech Republic. The Conference remains faithful to its original idea of providing a platform to discuss theoretical and applicative aspects of learning theory, supervised and unsupervised learning, architectures of NN, clustering, hybrid and knowledge based networks, neuro-fuzzy systems, neurodynamics and attractor networks, neurobiology and neurosciences 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

Advances in Automated Diagnostic Systems

Associate Professor Elif Derya Ubeyli
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Abstract: ANN models are computational modeling tools that have recently emerged and found extensive acceptance in many disciplines for modeling complex real-world problems. ANNs produce complicated nonlinear models relating the inputs (the independent variables of a system) to the outputs (the dependent predictive variables). ANNs are valuable tools in the medical field for the development of decision support systems. Important tools in modern decision-making, in any field, include those that allow the decision-maker to assign an object to an appropriate group, or classification. Clinical decision-making is a challenging, multifaceted process. Its goals are precision in diagnosis and institution of efficacious treatment. Achieving these objectives involves access to pertinent data and application of previous knowledge to the analysis of new data in order to recognize patterns and relations. Practitioners apply various statistical techniques in processing data to assist in clinical decision-making and to facilitate the management of patients. As the volume and complexity of data have increased, use of digital computers to support data analysis has become a necessity. In addition to computerization of standard statistical analysis, several other techniques for computer-aided data classification and reduction, generally referred to as ANN, have evolved. The ANN model discussed above has expanded in two directions. First, time series analysis and medical image analysis supply important parameters to medical decision making process and the parameters can be used as the input of the ANN model. The second direction of expansion includes databases available locally or through internet access. In the present study, advances in automated diagnostic systems will be presented.

Brief Biography of the Speaker: Elif Derya Ubeyli (http://edubeyli.etu.edu.tr/) is an Associate Professor at the Department of Electrical and Electronics Engineering, TOBB University of Economics and Technology. She obtained Ph.D. degree in Electronics and Computer Technology from the Gazi University in 2004. She has worked on variety of topics including biomedical signal processing, neural networks, optimization and artificial intelligence. She has worked on several projects related with biomedical signal acquisition, processing and classification. Dr. Ubeyli has served (or is currently serving) as a program organizing committee member of the national and international conferences. She is editorial board member of several scientific journals (Journal of Engineering and Applied Sciences; International Journal of Soft Computing; Research Journal of Applied Sciences; Research Journal of Medical Sciences; Scientific Journals International/Electrical, Mechanical, Manufacturing, and Aerospace Engineering; The Open Medical Informatics Journal; Bulletin of the International Scientific Surgical Association). She is Associate Editor of Expert Systems. She is serving as a guest editor to the Expert Systems on a special issue on “Advances in Medical Decision Support Systems”. Moreover, she is voluntarily serving as a technical publication reviewer for many respected scientific journals and conferences. She has also published 118 journal and 44 conference papers on her research areas.

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