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RECENT ADVANCES IN ARTIFICIAL INTELLIGENCE, KNOWLEDGE ENGINEERING & DATA BASES

Proceedings of the 9th WSEAS International Conference on Artificial Intelligence, Knowledge Engineering and Data Bases (AIKED '10)

University of Cambridge, UK, February 20-22, 2010

Artificial Intelligence Series
A Series of Reference Books and Textbooks

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Preface

This year the 9th WSEAS International Conference on ARTIFICIAL INTELLIGENCE, KNOWLEDGE ENGINEERING and DATA BASES (AIKED '10) was held at the University of Cambridge, UK, February 20-22, 2010. The conference remains faithful to its original idea of providing a platform to discuss supervised and unsepervised learning, algorithms, implementation, time series analysis, information and knowledge engineering, information retrieval systems, image processing, knowledge and information management techniques, data mining techniques 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 conferences is 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.

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

Emotion Modeling in Neural Networks

Professor Adnan Khashman
Founder and Head of Intelligent Systems Research Group (ISRG)
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Abstract: An artificial neural network (ANN) mimics the structure and function of a biological brain. They form a vital information and data processing unit in the future robots. The perception of input data, analysis and decision making can be performed by a trained ANN. The problem with such systems, regardless of how "intelligent" they could be, is their lack of emotions; a feature specific to biological systems like ours. What if machines have emotions? Would they perceive information in a human way? Would their decision be more correct that non-emotional systems? Are we, the humans, ready to accommodate systems with emotions in our daily life? These questions, and more, will be discussed during the lecture.
Moreover, a review of our recently developed emotional ANN model will be presented. This emotional ANN has embedded emotional parameters that model human responses such as anxiety, confidence, and first impression during learning a new task and also decision making. A real-life implementation of this novel emotional ANN will also be presented, where the developed system is used to identify blood cells.

Brief Biography of the Speaker:
Adnan Khashman received his Ph.D. and M.Sc. degrees in electronic engineering from University of Nottingham, England, UK, in 1992 and 1997, respectively, and his B.Eng. degree in electronic and communication engineering from University of Birmingham, England, UK, in 1991. During 1998-2001 he was an Assistant Professor and the Chairman of Computer Engineering Department, Near East University, Nicosia, N. Cyprus. Since 2001 he is an Associate Professor and Chairman of Electrical and Electronic Engineering Department at the same university. From 2007 till 2008 he was also the Vice-Dean of Engineering Faculty. He is the founder (in 2001) and Head of the Intelligent Systems Research Group (ISRG) at the same university.
As of 2009 he is a full Professor at the Engineering Faculty. His current research interests include emotion modeling in neural networks and their engineering applications, intelligent systems, image processing and pattern recognition. Prof. Dr. Khashman has authored and co-authored more than 65 scientific publications in books, journals, and conference proceedings.

Plenary Lecture 2

The Mathematical Foundation and a Step by Step Description for 26 Algorithms on Artificial Neural Networks

Professor Nicolae Popoviciu
Co-author: Floarea Baicu
Hyperion University of Bucharest, ROMANIA
E-mail: nicolae.popoviciu@uahoo.com

Abstract: We present a description of a set of 26 algorithms on neural networks and indicate the area where the algorithms could be applied. All algorithms are a part of the monograph (2009) Neural Networks. Mathematical Foundation, Algorithms and Applications, authors Nicolae Popoviciu and Floarea Baicu. Each algorithm has its mathematical foundation and the algorithms treat many aspects related with neural networks. We enumerate several directions: separable sets, supervised learning, BKP, MLP geometric algorithm, SOM competitive learning, ISODATA , Kohonen competitive algorithm, ART1 competitive algorithm, stock-recall problem, sales traveling problem, c-means algorithm for prototype vectors, RBF algorithms in batch version and sequential version, Householder decomposition etc. All algorithms are described step by step and are illustrated by many numerical examples.

Brief Biography of the Speaker:
Popoviciu Nicolae is PhD in mathematics (from 1976), professor at Hyperion University of Bucharest, Romania, Faculty of Mathematics-Informatics and the dean of this faculty. His area of competence contains: stochastic processes and Markov decision problems, integral transforms (continuous, discrete) and field theory, mathematical programming and optimization models, artificial neural networks and applications. He is the first author of 18 books (all in Romanian language) and the first author of 89 papers (almost all in English language). His recently book Neural Networks. Mathematical Foundation, Algorithms and Applications (2009) is a monograph on the algorithms of neural networks with application. Professor Popoviciu is member of Romanian Society of Mathematics and member of the Romanian Probability and Statistics Society. He has participated to many WSEAS International Conference as plenary speaker or author (Romania, Greece, Turkey, Bulgaria etc.).

Plenary Lecture 3

Knowledge Based Multimedia System for Teacher's Education

Professor Danimir Mandic
Informatics and didactic
University of Belgrade
Kraljice Natalije 43
SERBIA
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Abstract: This paper deals with a concept of Knowledge system which is created to support medern learning and teaching. Educational technology is constantly changing and improving in line with the development of science and information technology. Traditional teaching is most often criticized for insufficient activity of students, inadequate teaching intuition and dynamism, the impossibility of individualisation of teaching, lack of continuous feedback on the achievements of students and others. Intensive development of telecommunications technology and computer systems, permanent connection to the Internet and WEB based learning systems enabled better use of computer technology in teaching. Computer based knowledge systems provide flexible organization of activities, lectures and study materials and a complex evaluation of students.
Teaching is often formalized, verbalized and not sufficiently visual, reducing knowledge durability as well as possibility of connecting theory with real life. Multimedia knowledge systems is created for personal computers offer possibility for making electronic text books involving text, pictures, sounds, animations and films, in such a way that learners can individually proceed in learning teaching contents, they can return to contents which are not clear enough to them, they can receive feedback and additional information in accordance with their own capabilities and interests. Interactivity and quality of presented materials, using multimedia and hypertext, offer considerably richer contents compared with teaching carried out in traditional classroom.

Brief Biography of the Speaker:
Danimir Mandic graduated at the Faculty of Mechanical engineering in Sarajevo, in the area of Information systems. Masters degree got at the University of Belgrade in the area of Information systems in traffic engineering. At the Faculty of technical sciences in Novi Sad he got a DSc in the area of Information systems in traffic engineering, and he got PhD at the University of East Sarajevo in the area of Educational technology. He was a postgraduate student at the Michigan State University at the department of Computer Sciences.
Currently he is a full professor of Informatics and educational technology at the University of Belgrade in Serbia and a chief of Department of Didactics and Educational Technology. From 1987. up to 1992 he was assistant at the Faculty of Traffic Engineering in Sarajevo (Bosnia and Herzegovina). From 1992. he is professor at the Faculty of Teacher Training in Belgrade (Serbia).
Danimir Mandic published more than 50 scientific papers and 16 books in the area of Informatics and Educational Technology. He was a leader in three scientific projects: Educational software for students, Interactive multimedia classroom and Distance education systems for high education. Currently he is the leader in scientific project: Evaluation of the Curriculum at the Teacher Training faculties in Serbia using modern technologies and distance education. He is the author of several innovations in education. Currently he is developing a WEB portal for teachers, pupils, parents...
Danimir Mandic is advanced tester and coordinator for European Computer Driving Licence in Serbia.

Plenary Lecture 4

A World of Choice: Practical Aspects about Complex IS and OS

Associate Professor Claudia-Georgeta Carstea
Dean Faculty of Economics
"George Baritiu" University of Brasov
ROMANIA
E-mail: carstea.claudia@yahoo.com

Abstract: Up to now, most open source software (OSS) deployments have been in invisible infrastructure applications running on back-office servers (GNU/Linux, Apache, and so on). In many cases, the extra functionality available in OSS systems allows for a richer feature set. Much has been written about the motivation of individual OSS developers; in this case, the primary drivers behind an organizations decision to implement OSS solutions are principle and pragmatism. Open source systems lack the comfort zone that a commercially acquired solution provides; rather, support comes from bulletin boards and the like.
However, open source software has been widely used for a long time in academic institutions. In this way, the usage of this type of software comes with drastically lower cost than usual. Also, because open source software is more or less free, there is often the mis-perception that service and support should also be correspondingly priced, which is a difficult mindset to break. Although the open source phenomenon is sometimes characterized as a threat for the software development industry, small to medium-sized enterprises anywhere in the world leverage the innovative open source model as an infrastructure on which to create new business opportunities. Being the most complete and most popular open source development technology, Java platform is used and describe specific technologies and products used in software development and production. In the following section we describe conditions in which this information system is being developed. In addition, we explain architecture of the system devised to allow successful development in this environment. The third section describes technologies used to implement the system according to constraints and goals set by its architecture. The fourth section introduces specific tools used to develop and deploy components of the information system together with the discussion and reasons why these products are used.

Brief Biography of the Speaker:
Claudia Carstea is Associate Professor in Databases and Management Information Systems at "George Baritiu" University, Brasov, Romania. Received her Ph.D. In Cybernetics, Statistics and Economic Informatics, AES, Bucharest, Romania. Research activities focus in the fields of: performance management and measurement in design information systems, business networks, databases, risk evaluation in project management, process control in management information systems.
She is Dean of Faculty of Economics, "George Baritiu" University of Brasov, Romania. Also she is Head of ECDL Department at the same university.
She is author and co-author of numerous research papers published in referred journals and conference proceedings, and he has been author and editor of national and international books.
Assoc. Prof. Dr. Claudia Carstea has authored and co-authored 82 scientific publications in books, journals, and conference proceedings.