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RECENT ADVANCES IN APPLIED COMPUTER SCIENCE

PROCEEDINGS OF THE 9TH WSEAS INTERNATIONAL CONFERENCE ON APPLIED COMPUTER SCIENCE (ACS '09)

UNIVERSITÀ DEGLI STUDI DI GENOVA

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Preface

This year the 9th WSEAS International Conference on APPLIED COMPUTER SCIENCE (ACS '09) was held in the University of Genova, Genova, Italy, October 17-19, 2009. The conference remains faithful to its original idea of providing a platform to discuss programming languages, software methodologies, software engineering, fault tolerance, object-oriented analysis and design, modelling and simulation, operating systems, distributed multimedia 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

Live/Virtual Cognitive Systems Simulation

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Abstract: Evidence from neuroscience, physics, and cognitive sciences suggest that conscious experience involves a feedback loop between the sensor plane and the memories that hold the explanation of those sensory experiences. If modeled as a loop in time the resulting event provides a basis for a Whitheadean interpretation of Quantum Theory that eliminates the vonNeuman division between the classic and quantum worlds.
I will discuss this interpretation and show how live cognitive systems, taking the role of observer, can treated on the same footing as the quantum systems they observe. This implies our personal every day cognitive experiences must be recognized as quantum phenomena in a new integrated world view that provides a theoretical basis for quantum computation in biological systems at room temperature.
I will then discuss the applications for the simulation of the sensor-memory feedback loop in conventional computer machinery. Though such an implementations only mimics cognitive operations they can provide a new class of image recognition and real world knowledge generation algorithms that are useful in cases where simple real world models are adequate. One such applications is encountered on top down earth models describing the explanation for sensor measurements from Unmanned Aerial Vehicles (UAV). Experiments conducted in support of the development of UAV vision systems will then be reviewed and the future for cognitive vision systems discussed.

Brief Biography of the Speaker:
Dr. Baer received his Ph.D. in physics from the University of California at Berkeley. He worked at Ford Aerospace as a mission analyst for meteorological and communication satellites before starting a company to develop computer graphics and simulation software. He now holds a research professor position at the Naval Postgraduate School, Monterey California, where he builds high-resolution real world databases into cognitive vision systems for unmanned aerial vehicles and teaches special classes in quantum information theory.

Plenary Lecture 2

Smart Offices and Intelligent Workplaces

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Abstract: Smart offices and kinds of intelligent workplaces are one of the recent results of intensive research provided in the area of ambient intelligence (or its relating areas ubiquitous computing, etc.) Ambient intelligence approaches and technologies are more and more matured to be able of creating a really smart environment that is intelligently helpful to users surrounded by such an environment. There are well known applications of this concept in various areas, like smart home environment, or smart support to elderly or handicapped people, but in this talk we wish to concentrate on their suitability as a basis for intelligent workplaces. Such an intelligent workplace should be, among its other features, also helpful in managing knowledge that can be further on usefully exploited by the users working in the workplace. These environments inevitably need to be rich of knowledge; therefore a synergy of approaches and techniques from ambient intelligence as well as from knowledge management is necessary.
In our talk we wish to bring an overview of recent activities and research in the area of smart offices and other kinds of smart workplaces, including also smart classes at various types of educational institutions. We intend to present a number of recent approaches and a couple of recent interesting results in this challenging area.

Brief Biography of the Speaker:
Prof. Dr. Peter Mikulecky is a professor of Managerial Informatics at the Faculty of Informatics and Management at the University of Hradec Kralove, Czech Republic, since 1993. Here he leads the Department of Information Technologies since 1994, recently he serves also as Director for Research and Director of Postgraduate Studies at the same faculty. In the period of 1990 to 1993 he was the head of Department of Artificial Intelligence, Faculty of Mathematics and Physics at the Comenius University in Bratislava, Slovakia, where he worked in various positions since 1973. Recently he is also a member of the Accreditation Commission of the Government of Slovak Republic (since 2004) responsible for accreditations of Slovak higher educational institutions. Research of Professor Mikulecky covers ambient intelligence, artificial intelligence, knowledge-based systems and technologies, knowledge management, as well as human – computer interaction. He has published more than 150 papers in various journals and conference proceedings in these areas. He was one of the founders of a regular series of events called Ambient Intelligence Forum; he is also a member of programme committees for a number of international conferences. Professor Mikulecky is also a member of a number of scientific societies and scientific boards.