



RECENT RESEARCHES in ARTIFICIAL INTELLIGENCE, KNOWLEDGE ENGINEERING and DATA BASES

**10th WSEAS International Conference on ARTIFICIAL
INTELLIGENCE, KNOWLEDGE ENGINEERING and DATA
BASES (AIKED '11)**

**Cambridge, UK
February 20-22, 2011**

RECENT RESEARCHES in ARTIFICIAL INTELLIGENCE, KNOWLEDGE ENGINEERING and DATA BASES

**10th WSEAS International Conference on ARTIFICIAL
INTELLIGENCE, KNOWLEDGE ENGINEERING and DATA
BASES (AIKED '11)**

**Cambridge, UK
February 20-22, 2011**

Published by WSEAS Press
www.wseas.org

Copyright © 2011, by WSEAS Press

All the copyright of the present book belongs to the World Scientific and Engineering Academy and Society Press. All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior written permission of the Editor of World Scientific and Engineering Academy and Society Press.

All papers of the present volume were peer reviewed by two independent reviewers. Acceptance was granted when both reviewers' recommendations were positive.
See also: <http://www.worldses.org/review/index.html>

ISSN: 1792-8117
ISBN: 978-960-474-273-8



World Scientific and Engineering Academy and Society

**RECENT RESEARCHES in
ARTIFICIAL INTELLIGENCE,
KNOWLEDGE ENGINEERING and
DATA BASES**

**10th WSEAS International Conference on ARTIFICIAL
INTELLIGENCE, KNOWLEDGE ENGINEERING and DATA
BASES (AIKED '11)**

**Cambridge, UK
February 20-22, 2011**

Editors:

Prof. Zoran Bojkovic, University of Belgrade, SERBIA
Prof. Janusz Kacprzyk, International Fuzzy Systems Association, POLAND
Prof. Nikos Mastorakis, Technical University of Sofia, BULGARIA
Prof. Valeri Mladenov, Technical University of Sofia, BULGARIA
Prof. Roberto Revetria, University of Genoa, ITALY
Prof. Lotfi A. Zadeh, University of California, USA
Prof. Alexander Zemliak, Autonomous University of Puebla, MEXICO

Associate Editors:

Prof. Imre J. Rudas, Obuda University, HUNGARY
Prof. Rong-Jyue Fang, Southern Taiwan University of Technology, TAIWAN
Prof. Hua-Lin Tsai, National Kaohsiung Normal University, TAIWAN

International Program Committee Members:

Lotfi A. Zadeh, USA
Leonid Kazovsky, USA
Charles Long, USA
Roberto Revetria, USA
M. Isabel Garcia-Planas, SPAIN
Miguel Angel Gomez-Nieto, SPAIN
Akshai Aggarwal, CANADA
Pierre Borne, FRANCE
Valeri Mladenov, BULGARIA
Zoran S. Bojkovic, SERBIA
G. Stavrakakis, GREECE
Janusz Kacprzyk, POLAND
Angel Fernando Kuri Morales, MEXICO
Arie Maharshak, ISRAEL
Fumiaki Imado, JAPAN
Toly Chen, TAIWAN
Isak Taksa, USA
G. R. Dattatreya, USA
Shivanand Hiremath, INDIA

Preface

This year the 10th WSEAS International Conference on ARTIFICIAL INTELLIGENCE, KNOWLEDGE ENGINEERING and DATA BASES (AIKED '11) was held in Cambridge, UK, February 20-22, 2011. The conference remains faithful to its original idea of providing a platform to discuss neural networks, mathematical foundation, time series analysis, fuzzy systems, information retrieval systems, image processing, data security, business architectures, video databases, content management, privacy issues, interoperability issues, knowledge classification tools, digital watermarking, electronic publishing, artistic imaging, digital typography, geographic information systems, wireless networks 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

Table of Contents

Plenary Lecture 1: Aggregation in Intelligent Systems	14
<i>Imre J. Rudas</i>	
Plenary Lecture 2: Cosmology, Holography, the Brain and the Quantum Vacuum	15
<i>Antonio Alfonso-Faus</i>	
Plenary Lecture 3: Content Delivery Networks: Evolution, Technology, Functions, Potential Solutions, Research Areas	16
<i>Zoran Bojkovic</i>	
Plenary Lecture 4: Case-Based Reasoning Framework for Medical Diagnosis for Virtual Doctor System	17
<i>Hamido Fujita</i>	
Thoughts and Thinking	19
<i>Roger Ellman</i>	
A Genetic Algorithm for the Job Shop Scheduling with a New Local Search using Monte Carlo Method	26
<i>Jorge Magalhaes-Mendes</i>	
Using Some Data Mining Techniques for Early Diagnosis of Lung Cancer	32
<i>Zakaria Suliman Zubi, Rema Asheibani Saad</i>	
A Development of Portable Three Dimensional Position Data Measurement Device for Character or Object Modeling in Computer Animation	38
<i>Suriyong Lertkulvanich, Nithi Buranajant, Suwanna Sombunsukho</i>	
The Development of the Equipment Reservation System for Computer and Information Technology Department	41
<i>Chanin Tungpantong, Kullanit Laohaphiboonrattana, Chananda Pinta, Teeraporn Wattanasopa, Napapol Sonjai</i>	
The Development Information System for Digital Media Service	45
<i>Kasemsak Sritaratorn, Inthira Paleenud, Suwanna Sombunsukho, Nithi Buranajant</i>	
The Development Information System Student Care Center Project The case of Computer and Information Technology Department	49
<i>Suwanna Sombunsukho, Oraya Petchurai</i>	
The Development Information System for Administrative	52
<i>Suwanna Sombunsukho, Kingkaew Phontrakoon</i>	
The Development Computer Assisted Instruction on Introduction to Programming Subject	55
<i>Suwanna Sombunsukho, Warong Thavara, Prapatsorn Aninbon</i>	
A Study on the Innovative Design Processes by Using Su-Field Modeling Method Integrated with Extension of Matter-Element	59
<i>Chang-Tzuoh Wu, Hung-Jen Yang, Hsueh-Chih Lin, Shang Ming Su</i>	

A Study on the Geometry Model for Accuracy Evaluation in Numerically Controlled Milling Machines	66
<i>Chang-Tzuoh Wu, Hung-Jen Yang, Hsueh-Chih Lin, Shang Ming Su</i>	
Mining of Frequent Itemsets with JoinFI-Mine Algorithm	73
<i>Supatra Sahaphong, Gumpon Sritanratana</i>	
A Convergence Theorem for Jungck-Ishikawa Iteration	79
<i>Bhagwati Prasad, Ritu Sahni</i>	
A Particular Proposal Towards the Internal Architecture of the Inferential Motor Learning Process and its Entropy Congruence with the Procedural Refactoring of Computerization Field	85
<i>Nicolae Neagu, Dana Badau, Cristina Branea, Virgil Tudor, Elena Sabau, Gabriel Marin Manolache</i>	
A Study of Effect Affecting to Energy in Drying Process by Failure Modes and Effect Analysis (FMEA)	91
<i>Vanchai Laemlaksakul</i>	
Neural Cognitions of Perceiving Chinese Characters: Phonological versus Logographical Effects	95
<i>Shu-Yu Lyu, Wun-Tsong Chaou, Hao-Yu Yang</i>	
Status, Needs and Problems for Using Online Course of Industrial Technology Filed at Rajamangala University of Technology Isan	98
<i>Supreeya Siripattanakunkajorn, Khomsan Reetanon, Santirat Nansaarnng</i>	
Optimal Operation of Chiller System Using Fuzzy Control	109
<i>Zazilah May, Nursyarizal Mohd Nor, Kamaruzaman Jusoff</i>	
The Obstructed & Required Competence of Skills Development trainers Department of Skill Development, Thailand	116
<i>Montree Prajugjit, Sittichai Kaewkuekool</i>	
Risk Perception of the E-Payment Systems: A Young Adult Perspective	121
<i>Aw Yoke Cheng, Noor Raihan Ab Hamid, Eaw Hooi Cheng</i>	
Contribution to Content Delivery Network Analysis	128
<i>Zoran Bojkovic, Zoran Milicevic</i>	
Risk Management of Internet Banking	134
<i>Shapoor Zarei</i>	
Clustering with Complex Centers	140
<i>Issam Dagher</i>	
Extraction of Interpretable Rules from Piecewise-Linear Approximation of a Nonlinear Classifier Using Clustering-Based Decomposition	145
<i>Andrey Bondarenko, Vilen Jumutc</i>	
The Advantage of the New Technologies in Learning	150
<i>Florin Radu, Valentin Radu, Gabriel Croitoru</i>	

Lattices and Patterns <i>Sylvia Encheva</i>	156
Dominance Relations in Rough Sets Approximations for Assessing Students Knowledge <i>Sylvia Encheva</i>	162
Galois Sub-Hierarchy and Orderings <i>Sylvia Encheva</i>	168
Interval Data and Nested Lattices <i>Sylvia Encheva</i>	172
Some Fuzzy Logic based Predictions <i>Sylvia Encheva</i>	176
Technology Development Model used for a Small Company in Romania (Creation and Use of an On Line Shop) <i>Rozalia Nistor, Costel Nistor, Mihaela-Carmen Muntean</i>	181
Modern Computer Systems, Support of Seeking Competitive Advantage in the Romanian Railway Transportation <i>Costel Nistor, Rozalia Nistor, Mihaela-Carmen Muntean</i>	187
A Learning System of Digital Designing and Manufacturing for Creative Products <i>Wei-Yuan Dzan, Hsueh-Chih Lin, Lung-Hsing Kuo, Shang Ming Su, Chang-Tzuoh Wu, Hung-Jen Yang</i>	193
Adaptive Neuro-Fuzzy Modeling for Crop Yield Prediction <i>Kefaya Qaddoum, Evor Hines, Daciana Illiescu</i>	199
Informing and Socializing in Interactive Spaces: Delivering the Right Information to the Right Users <i>Fernando Ribeiro, Monica Costa, Jose Metrolho</i>	205
Ways to Increase the Efficiency of Information Systems <i>Manole Velicanu, Iulia Surugiu, Daniela Litan, Ovidiu Raduta, Larisa Copcea Teohari, Mihai Teohari, Aura-Mihaela Mocanu Virgolici</i>	211
Server Farms' Power Consumption Minimized Via Best Allocation of Servers and Ancillary Equipments <i>Sondos A. Moreb, Stuart O. Walker</i>	217
Implementation of Spatio-Temporal Data Types with Java Generics <i>Kresimir Krizanovic, Zdravko Galic, Mirta Baranovic</i>	228
Improving the Performance of Minor Class in Decision Tree Using Duplicating Instances <i>Hyontai Sug</i>	234
An Efficient Discovery of Class-Restricted MARS <i>Hyontai Sug</i>	238
Seeking for Fundamental Factors behind the Co-Movement of Foreign Exchange Time Series, using Blind Source Separation Techniques <i>Vasile Georgescu, Alice Dalina Matei</i>	243

Cosmology, Holography, the Brain and the Quantum Vacuum <i>Antonio Alfonso-Faus</i>	249
An Overview of Migrative Triangular Norms <i>Imre J. Rudas, Janos Fodor</i>	255
On Possibilistic Correlation Coefficient and Ratio for Fuzzy Numbers <i>Robert Fuller, Istvana Harmati, Jozsef Mezei, Peter Varlaki</i>	263
The AHP Extended Fuzzy Based Risk Management <i>Marta Takacs, Tothne Laufer Edit</i>	269
An Introduction in the Design of Decision Support Systems Mixed with Soft Computing, for Extreme Risk Management (DSS-ERM) <i>Prelipcean Gabriela, Boscoianu Mircea</i>	273
A Simple Algorithm for Pitch Distance Determination <i>Gyula Hermann</i>	279
Information Technology In Supporting Knowledge Management <i>Vasile Horga, Mihaela Horga, Maria Gabriela Horga</i>	283
Financial Control In Preventing And Combating Money Laundering <i>Vasile Horga</i>	288
Bioclimate Weather Classification of Dobož for Helth Spa Tourism <i>Milovan Pecelj, Milica Pecelj, Milisav Cutovic, Mila Pavlovic, Dragica Zivkovic, Ljiljana Zivkovic, Snezana Vujadinovic, Jelena Pecelj, Mirjana Gajic, Danimir Mandic</i>	292
HOSVD Based Image Processing Techniques <i>Andras Rovid, Imre J. Rudas, Szabolcs Sergyan, Laszlo Szeidl</i>	297
Applying Big 6 on Digital Book for Supporting Learning <i>Lung-Hsing Kuo, Shao-Chun Yang, Wen-Chen Hu, Chang-Tzuoh Wu, Hung-Jen Yang, Hsueh-Chih Lin</i>	303
Decision Support System in Physical Education <i>Danimir Mandic, Dragan Martinovic, Nenad Lalic, Veljko Bandjur</i>	309
Towards Human Controlled Intelligent Product Engineering Systems <i>Laszlo Horvath, Imre J. Rudas</i>	314
Towards a Hierarchical Temporal Memory Based Self-managed Dynamic Trust Replication Mechanism in Cognitive Mobile Ad-Hoc Networks <i>Ricardo J. Rodriguez, James A. Cannady</i>	320
The Role of Contemporary Information and Communication Technologies in Marketing Decision in the Enterprise <i>Radovan Tomic, Dragica Tomic, Maja Durica, Gordana Tomic</i>	329
Algorithm and Program for the Temperature Analysis in a Fire Compartment <i>D. Pintea, R. Zaharia</i>	334
Semantical Case Based Reasoning related to Virtual Doctor System (VDS) <i>Hamido Fujita, Jun Hakura, Masaki Kurematsu</i>	340

Cloud based Unsupervised Learning Architecture based on Mirroring Neural Networks <i>K. Eswaran, C.Chaitanya</i>	350
In the Artificial Society of Choosing Digitalized Teaching Materials with Theory of Planned Behavior <i>Rong-Jyue Fang, Hua- Lin Tsai, Chi -Jen Lee, Chin An- Lin</i>	354
In the Artificial Society of E-Learning Enhances the Learning Effect <i>Rong-Jyue Fang, Hua- Lin Tsai, Chi -Jen Lee, Chien Cheng-Wu</i>	359
In the Artificial Society of Whiteboard to Improve Teaching <i>Rong-Jyue Fang, Hua- Lin Tsai, Chi -Jen Lee, Cheng-En Hung</i>	366
In the Artificial Society of Elementary Schools have a Trouble in Life Course Teaching <i>Rong-Jyue Fang, Wen-Jiuh Chiang, Hua- Lin Tsai, Wan Ching Wu</i>	374
A Study of The Artificial Society for Teaching Multimedia Network <i>Rong-Jyue Fang, Wen-Jiuh Chiang, Hua- Lin Tsai, Yung-Sheng Chang</i>	382
In the Artificial Society of Impetus Electronic Textbook in Widespread Use <i>Rong-Jyue Fang, Yi-Hsing Chang, Hua- Lin Tsai, Tien-Sheng Tsai</i>	389
A Descriptive Model for Predicting Popular Areas in a Web Map <i>Ricardo Garcia, Juan Pablo De Castro, Maria Jesus Verdu, Elena Verdu, Luisa Maria Regueras, Pablo Lopez</i>	397
A Computational Framework for Academic Accreditation and Assessment in Higher Education (A3-HE) – Part 1 Academic Processes <i>Aboubekour Hamdi-Cherif</i>	403
A Computational Framework for Academic Accreditation and Assessment in Higher Education (A3-HE) – Part 2 Technologies <i>Aboubekour Hamdi-Cherif</i>	411
Normalization of Relations and Ontologies <i>Lule Ahmedi, Edmond Jajaga</i>	419
An Analysis of the Performances of Intelligent Hybrid Decision Support Systems with Applications in Crisis Management <i>Prelipcean Gabriela, Boscoianu Mircea</i>	425
Authors Index	431

Plenary Lecture 1

Aggregation in Intelligent Systems



Professor Imre J. Rudas
Rector
Obuda University, Hungary
E-mail: rudas@uni-obuda.hu

Abstract: The problem of aggregating information represented by fuzzy sets in a meaningful way has been of central interest since the late 1970s. In most cases, the aggregation operators are defined on a pure axiomatic basis and are interpreted either as logical connectives (such as t-norms and t-conorms) or as averaging operators allowing a compensation effect (such as the arithmetic mean).

On the other hand, it can be observed by some empirical tests that the above-mentioned classes of operators differ from those ones that people use in practice. Therefore, it is important to find operators that are, in a sense, mixtures of the previous ones, and allow some degree of compensation.

This talk summarizes the research results of the author and his co-workers that have been carried out in recent years on generalization of conventional aggregation operators. This includes, but is not limited to, the class of uninorms and nullnorms, absorbing norms, distance- and entropy-based operators, quasi-conjunctions and nonstrict means.

Brief Biography of the Speaker: Imre J. Rudas graduated from Banki Donat Polytechnic, Budapest in 1971, received the Master Degree in Mathematics from the Eotvos Lorand University, Budapest, the Ph.D. in Robotics from the Hungarian Academy of Sciences in 1987, while the Doctor of Science degree from the Hungarian Academy of Sciences in 2004. He received his first Doctor Honoris Causa degree from the Technical University of Kosice, Slovakia and the second one from "Polytechnica" University of Timisoara, Romania.

He is active as a full university professor. He served as the Rector of Budapest Tech from August 1, 2003 for a period of four years, and was reelected for three years in 2007. From 2010 Budapest Tech is changed to Obuda University and he was elected as the rector for five years.

He is a Fellow of IEEE, Senior Administrative Committee member of IEEE Industrial Electronics Society, member of Board of Governors of IEEE SMC Society, Chair of IEEE Hungary Section and Vice-President of the Hungarian Academy of Engineering.

He is the treasurer of IFSA (International Fuzzy System Association), he had been the President of Hungarian Fuzzy Association for ten years.

He serves as an associate editor of some scientific journals, including IEEE Transactions on Industrial Electronics, member of editorial board of Journal of Advanced Computational Intelligence, member of various national and international scientific committees. He is the founder of the IEEE International Conference Series on Intelligent Engineering Systems (INES) and IEEE International Conference on Computational Cybernetics (ICCC), and some international symposia. He has served as General Chairman and Program Chairman of numerous scientific international conferences.

His present areas of research activity are Computational Cybernetics, Robotics with special emphasis on Robot Control, Soft Computing, Computed-aided Process Planning, Fuzzy Control and Fuzzy Sets. He has published books, more than 450 papers in books, various scientific journals and international conference proceedings. He received more than 600 citations for his publications.

Plenary Lecture 2

Cosmology, Holography, the Brain and the Quantum Vacuum



Professor Antonio Alfonso-Faus

"Ad Honorem" Madrid Technical University (UPM)

SPAIN

E-mail: aalfonsofaus@yahoo.es

Abstract: Cosmology, as a science, started at the beginning of the last century with the advent of the Einstein cosmological equations. Based on these equations, the present main stream cosmological model is the well known big-bang (this name unwillingly coined by Fred Hoyle many years ago). Relatively recent additions to this model have been inflation, dark matter and dark energy.

This talk presents a smoothly behaved new cosmological model that mainly takes into account the "dark" part of the Universe. We consider it as the background frame, the substrate, of what we see. The inclusion of the holographic principle clarifies the entropy problem that we also apply to the human brain. We take it as an engineering information center. Finally, the inclusion of the quantum vacuum in this scene creates an important challenge, an opportunity for future research in the knowledge of the Universe.

Brief Biography of the Speaker: Antonio Alfonso-Faus graduated from the Technical University of Madrid (UPM), Spain, in 1964. He received the Diploma Space Science (Physics and Dynamics) from the University College, London, U.K., in 1965. Then he received the Master of Science Degree in Physics and Mathematics from the University of Minnesota, U.S.A., in 1967, followed by the Ph.D. Degree (Physics and Mathematics) at the same University, in 1968. He also holds a Doctor of Aeronautical Engineering Degree from the Technical University of Madrid (UPM), Spain, in 1969. Presently he is active as an Ad Honorem Professor (2010), at the same UPM, where he has served teaching and researching for the last 35 years. He served as academic positions: member of the board (6 years), coordinator of the Mechanical Engineering Unite (10 years) and Director of the "Aerotecnia" Department (6 years) at the E.U.I.T. Aeronautica, UPM.

He was a collaborator (5 years, 1968-1973) for the National Technical Institute for Aerospace (INTA, Spain), worked for Iberia L.A.E. (22 Years, 1973-1995) bridging knowledge between the University and the Industry. Member of the S.A.E. (U.S.A.) for aircraft engines technical specification for the Industry, Chairman of the Engine Trend Monitoring Team (ATLAS, four years), referee for various international scientific journals, chairman of various scientific international conferences (Frontiers of Fundamental Physics, Science for Health), full professor of Mechanical Engineering at the UPM (1995-2009), Golden Medal Award (UPM, 1999).

Research activities: Solar Wind, Interplanetary Magnetic Field, Lunar Wake, Cosmology and Astrophysics.

Plenary Lecture 3

Content Delivery Networks: Evolution, Technology, Functions, Potential Solutions, Research Areas



Professor Zoran Bojkovic

Full Prof. of Electrical Engineering

University of Belgrade, Serbia

E-mail: z.bojkovic@yahoo.com

Abstract: Content delivery network (CDN) is a comprehensive, end- to-end solution for optimizing global networks for Web content delivery. Users requesting information from a Web site may have those requests served from a location closer to them than the original server on which it is generated. By serving content from points a lot closer to the user, a CDN reduces the likelihood of hot spots by dispersing the different points of convergence and by distributing the workload among multiple servers. Delivering content from the edge of the network instead of the original server has the added benefit of additional reliability. The probability of the lost packets is decreased, while the performance of streaming audio and video is improved.

CDNs deploy servers in multiple geographically diverse locations in order to redirect users requests to the nearest available servers. End users observe higher QoS, while content providers offer more reliable and larger volumes of the service. At the same time, Internet service providers (ISPs) can also benefit from deploying CDN servers in their networks, as the total amount of the traffic transmitted in the backbone is reduced. In order to address the issue faced by many content providers, companies started to provide a service called content distribution network service. Content distribution network is a "shared" infrastructure in that the mirror servers (also called replica servers) belonging to a network service provider are usually "shared" between multiple content providers. The value provided by the network service providers is measured by the amount of content downloaded from the major servers and the peak bandwidth needed to serve the content from the mirror servers. One of the main challenges for providers is to be able to find the "nearest" mirror server corresponding to a client. Typically, the IP address of the client is used to identify the location of the client.

This plenary speech is organized as follows. After the introduction, showing the current status in the area, the next section will describe the evolution of content delivery technologies, together with content delivery network functions. The fact that the content delivery technique offers the service of large scale based on IP networks is taken into account. In order to satisfy QoS requirements for heterogeneous Internet applications, system performances are improved. The second part deals with potential solutions to problems in IP networks. The emerging applications require varying amounts of reliability, functionality, speed, efficiency, cost, effectiveness and scalability. Therefore, it is necessary to bridge the gap between the emerging heterogeneous applications with various demands of service capacity and IP networks. The emerging challenges are server placement and organization, content distribution, request routing and system management. Several approaches are opened for consideration like: efficient streaming in future Internet, end-to-end multimedia communications across complex combinations of networks, peer-to-peer hybrid or fully distributed networking for content handling, content adaptation to facilitate content capabilities, etc.

Brief Biography of the Speaker: Prof. dr Zoran Bojkovic is full professor of Electrical Engineering, University of Belgrade, Serbia. Also, he is a permanent visiting professor at the University of Texas at Arlington, TX, USA, EE Department. Until now, he has taught a number of courses in Electrical Technology, Telecommunication Systems, Image and Video Processing, Multimedia Wire/Wireless Communication Systems. He is the author or co-author of 6 international books published in USA, Canada, Singapore, China, India, Greece and Romania. Also, he has published 2 national monographies, 13 textbooks as well as more than 400 papers in peer-reviewed journals and conference proceedings. He has been Editor-in-Chief in 2 and Associate Editor in 3 WSEAS Journals. At present, he is a member of Editorial Board in 6 International Journals. He is co-editor in 51 International Books and International Conference Proceedings. He has conducted workshops/tutorials and seminars worldwide and participated in more than 70 research and industrial projects all over the world. Also, he has been a consultant to industry, research institutes and academia. Prof. Bojkovic is an active researcher in wire/wireless multimedia communications. He is a Senior Member of IEEE and WSEAS member of EURASIP. He is a full member of Engineering Academy of Serbia and a member of Serbian Scientific Society.

Plenary Lecture 4

Case-Based Reasoning Framework for Medical Diagnosis for Virtual Doctor System



Professor Hamido Fujita
Iwate Prefectural University
Iwate, Japan
E-mail: HFujita-799@acm.org

Abstract: This plenary talk will provide an outline on our experience to build a virtual doctor system based on semantic case based reasoning (CBR) framework. Patients and users are categorized based on mental ontology framework and mental ontology framework. These two frame works are represented in OWL, (Ontology Web Language) for reasoning purpose. The CBR are categorized based on these ontologies. The reasoning has used Bayesian network based on collected relative decisions related to CBRs instantiated in relations to the observed parameters reflected on alignment of physical ontology and mental ontology. The resulted alignment namely the medical ontology represents a semantic CBR reflecting the patient symptoms. This talk gives an overview of these techniques and how to deploy them to build a prototype that can be used in local regional medical hospital in Japan.

Brief Biography of the Speaker: Dr. Hamido FUJITA, is a professor at Iwate Prefectural University (IPU), Iwate, Japan. He is director of ARISES (Advanced Research Institute on Software Strategies.)
<http://www.fujita.soft.iwate-pu.ac.jp/arises/index.htm>

He is the director of Intelligent Software Laboratory. He was associate Professor at the University de Montreal, Canada. On 1997 he moved back to Japan to become an executive committee member to establish Iwate Prefectural University on 1997. Then after from April 1998, he joined Iwate Prefectural University (IPU), Faculty of Software and Information Science, as Professor and head of Information System, directing at IPU two laboratories, Intelligent Software System Laboratory and Cognitive Systems Laboratory. He was a committee of establishing the Graduate School of Software Science, of IPU from 2000 for new Master and Doctor Programs that used Software practices Approach (SPA) concept as it main educational system in education. He has directed and led many project sponsored by the Ministry of Science, Education and Culture of Japan, and others from International sponsors and industry sponsors project on new software methodologies and intelligent systems. He contributed in software related inventions and got several international industrial Patents on new software methods on tableau related development. He has founded the SOMET (Software Methodologies, Tools and Techniques) organization on year 2000 in Paris, France marched to its 10th Anniversary. He has been invited to many universities in EU, and North America. He has supervised Ph.D students jointly with University of Laval, (Canada) University Technology, Sydney (UTS) Australia, He is also Professor at the University of Laval, Quebec, Canada supervising Graduate Studies students, he was a visiting Professor at the University of Paris_1, Sorbonne, 2003~2004. He worked as opponent for Ph.D student examination at Stockholm University, Sweden. He edited several special issues in International Journals on many hot issues in related to Knowledge based system and software technologies. He is currently heading a project on Intelligent HCI, and a project related to Mental Cloning as an intelligent user interface between human user and computers, supported by MEXT (Ministry of Education, Culture, Sports, Science and Technology), and SCOPE project on Virtual Doctor Systems, supported by Ministry of Internal Affairs, and Communications of Japan. He also, has several joint industrial projects with Japanese industry.

Authors Index

Ab Hamid, N. R.	121	Hakura, J.	340	Nistor, R.	181, 187
Ahmedi, L.	419	Hamdi-Cherif, A.	403, 411	Paleenud, I.	45
Alfonso-Faus, A.	249	Harmati, I.	263	Pavlovic, M.	292
Aninbon, P.	55	Hermann, G.	279	Pecelj, J.	292
Badau, D.	85	Hines, E.	199	Pecelj, M.	292
Bandjur, V.	309	Horga, M.	283	Pecelj, M.	292
Baranovic, M.	228	Horga, M. G.	283	Petchurai, O.	49
Bojkovic, Z.	128	Horga, V.	283, 288	Phontrakoon, K.	52
Bondarenko, A.	145	Horvath, L.	314	Pinta, C.	41
Boscoianu, M.	273, 425	Hu, W.-C.	303	Pintea, D.	334
Branea, C.	85	Hung, C.-E.	366	Prajugjit, M.	116
Buranajant, N.	38, 45	Illiescu, D.	199	Prasad, B.	79
Cannady, J. A.	320	Jajaga, E.	419	Qaddoum, K.	199
Chaitanya, C.	350	Jumutc, V.	145	Radu, F.	150
Chang, Y.-H.	389	Jusoff, K.	109	Radu, V.	150
Chang, Y.-S.	382	Kaewkuekool, S.	116	Raduta, O.	211
Chaou, W.-T.	95	Krizanovic, K.	228	Reetanon, K.	98
Cheng, A. Y.	121	Kuo, L.-H.	193, 303	Regueras, L. M.	397
Cheng, E. H.	121	Kurematsu, M.	340	Ribeiro, F.	205
Chiang, W.-J.	374, 382	Laemlaksakul, V.	91	Rodriguez, R. J.	320
Chien, C.-W.	359	Lalic, N.	309	Rovid, A.	297
Chin, A.-L.	354	Laohaphiboonrattana, K.	41	Rudas, I. J.	255, 297, 314
Copcea Teohari, L.	211	Lee, C.-J.	354, 359, 366	Saad, R. A.	32
Costa, M.	205	Lertkulvanich, S.	38	Sabau, E.	85
Croitoru, G.	150	Lin, H.-C.	59, 66	Sahaphong, S.	73
Cutovic, M.	292	Lin, H.-C.	193, 303	Sahni, R.	79
Dagher, I.	140	Litan, D.	211	Sergyan, S.	297
De Castro, J. P.	397	Lopez, P.	397	Siripattanakunkajorn, S.	98
Durica, M.	329	Lyu, S.-Y.	95	Sombunsukho, S.	38, 45, 49
Dzan, W.-Y.	193	Magalhaes-Mendes, J.	26	Sombunsukho, S.	52, 55
Edit, T. L.	269	Mandic, D.	292, 309	Sonjai, M.	41
Ellman, R.	19	Manolache, G. M.	85	Sritanratana, G.	73
Encheva, S.	156, 162, 168	Martinovic, D.	309	Sritaratorn, K.	45
Encheva, S.	172, 176,	Matei, A. D.	243	Su, S. M.	59, 66, 193
Eswaran, K.	350	May, Z.	109	Sug, H.	234, 238
Fang, R. -J.	354, 359, 366	Metrolho, J.	205	Surugiu, I.	211
Fang, R.-J.	374, 382, 389	Mezei, J.	263	Szeidl, L.	297
Fodor, J.	255	Milicevic, Z.	128	Takacs, M.	269
Fujita, H.	340	Mocanu Virgolici, A.-M.	211	Teohari, M.	211
Fuller, R.	263	Mohd Nor, N.	109	Thavara, W.	55
Gabriela, P.	273, 425	Moreb, S. A.	217	Tomic, D.	329
Gajic, M.	292	Muntean, M.-C.	181, 187	Tomic, G.	329
Galic, Z.	228	Nansaang, S.	98	Tomic, R.	329
Garcia, R.	397	Neagu, N.	85	Tsai, H.-L.	354, 359, 366
Georgescu, V.	243	Nistor, C.	181, 187	Tsai, H.-L.	374, 382, 389

Tsai, T.-S.	389	Walker, S. O.	217	Yang, S.-C.	303
Tudor, V.	85	Wattanasopa, T.	41	Zaharia, R.	334
Tungpantong, C.	41	Wu, C.-T.	59, 66	Zarei, S.	134
Varlaki, P.	263	Wu, C.-T.	193, 303	Zivkovic, D.	292
Velicanu, M.	211	Wu, W. C.	374	Zivkovic, L.	292
Verdu, E.	397	Yang, H.-J.	59, 66	Zubi, Z. S.	32
Verdu, M. J.	397	Yang, H.-J.	193, 303		
Vujadinovic, S.	292	Yang, H.-Y.	95		