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Reinhard Neck

Mathematics and Computers in Contemporary Science

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Plenary Lecture 1

Web Mining Usage in Course Development

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Abstract: The development of e-Learning, the use of Learning Management System and Learning Content Management System are becoming more and more dominant in engineering education, especially since “caned” solutions are easy to “configure” for desired purposes. However, the quality issue is only a second criterion in development process, making content and conventional teaching strategies to be the main issue. The two main criterion is “content and form” – the precise pedagogic aims, didactic structure and suitably tailored environment. Apart from these, we should also evaluate the customs of accessing the system and course pages of users, both tutors and learners. Thus we obtain some usability indicators by usage of web mining methods in order to recognize and understand the users’ activities and behavior, to identify learning strategies and problems in virtual learning environment. By this approach the web mining method accommodates organically to a development model of virtual learning environment. This presentation shows such indicators and their relationship to the efficiency and the effectiveness of virtual courses.

Brief Biography of the Speaker: Dr. habil. Peter Toth is Professor of Centre for Engineering Education at Obuda University, Hungary where he is participating in technical initial teacher training and in-service training courses. Currently he is a principal director of the Centre.
He earned his MSc in Engineering Education at the Budapest University of Technology and Economics, and Peter Toth has Ph.D and habil. degree in Educational Research from Eötvös Loránd University.
He plays leading role in planning, development and managing traditional and virtual engineering programs. Dr. Toth is doing research on pedagogy of virtual learning environment, improvement of problem-solving thinking and analyzing of spatial abilities in engineering education. His actual research area is analysis of students’ activities and behavior in virtual learning environment by web mining methods.
He has been contributing in some European researches and projects on pedagogical aspects of e-learning and development of creativity and abilities of future engineers and teachers as well. He is member of Committee for Teacher Training of Hungarian Rectors’ Conference and secretary of Informatics Section of Pedagogical Committee of Hungarian Academy of Sciences. Dr. Toth has issued about 75 papers in several journals and conference proceedings.
Prof. Dr. Imre J. Rudas graduated from Bánki Donát Polytechnic, Budapest in 1971 and received the Master Degree in Mathematics from the Eötvös Loránd University, Budapest while the Ph.D. in Robotics from the Hungarian Academy of Sciences in 1987. He is active as the President of Obuda University and as a professor of John von Neumann Faculty of Informatics.
Prof. Rudas is a Fellow of IEEE, Administrative Committee member of the Industrial Electronics Society, member of the International Board of the Robotics & Automation Society, Chairman of the joint Hungarian Chapter of these Societies, and RAS and IES Chapter Coordinator of Region 8. He is also a registered expert of the United Nations Industrial Development Organization and the EU.
He is the President of the Hungarian Fuzzy Association and Steering Committee Member of the Hungarian Robotics Association and the John von Neumann Computer Society.
Prof. Rudas serves as an associate editor of IEEE Transactions on Industrial Electronics, member of editorial board of Journal of Advanced Computational Intelligence and Control Engineering Practice, member of various national and international scientific committees. He is the founder of the IEEE International Conference Series on Intelligent Engineering Systems Prof. Rudas was the General Co-chair of ICAR2001, and also serves as General Chairman and Program Chairman of numerous scientific international conferences.
His present areas of research activity are: Robot Control, Soft Computing, Computed Aided Process Planning, Fuzzy Control and Fuzzy Sets. Prof. Rudas has published more than 290 papers in various journals and international conference proceedings.

Plenary Lecture 2

Perceptions of E- Marketing, Social Media, Individuals and Purchase Intention - What Can We Learn From Research?

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Abstract: Social media began as a tool for people to communicate, engage socially and play. Although the enthusiasm in social media initially began with the younger age group, the interest has expanded to others as well. In the last two or three years, the role of social media has given rise to social commerce phenomenon. It has been pervasively associated as electronic marketing (e-marketing). Besides, it has been regarded as a powerful tool to enhance brand presence. Examples of social media presence at Websites include “visit us on Facebook” or “Follow us on Twitter”.In the next five years, retailers may expect further explosive growth of social media contributed through users’ use and view.
Given the notion that social media has been the subject of much zeal to both researchers and practitioners, the research undertakes to examine the contexts of e-marketing perceptions and individuals’ characteristicsin the context of social media.This in turn clarifies the e-marketing perceptions and aspects of individuals’ characteristics. Built on prior literature, the present research proposed, developed, tested and validated a theoretical model to explain purchase intention at social media. The results and implications for researchers and practice will be further discussed during the plenary lecture.

Brief Biography of the Speaker: Dr. Norshidah Mohamed is Associate Professor of Management Information Systems and Information Technology Manager at the International Business School UniversitiTeknologi Malaysia. Prior to joining the academia, she spent more than 10 years in financial and information technology industries.Throughout the span of her career in the industries, she has worked with local, multinational and foreign organizations in several information systems consulting projects that covers a wide spectrum: Business Process Improvement, Business Process Re-engineering, Information Technology Security, Strategic Information Technology Planning, feasibility studies in privatization of information technology functions, facilitation of decision in total outsourcing of information technology functions, prototype development, chartering the change management course and implementation of application development process for MS ISO 9001, implementation of knowledge management systems, investment systems and functional systems, executive information systems and information technology post-implementation review and assessment.
Dr. Norshidah has published more than 50 papers in local and international journals and conferences. This includes in Computers in Human Behavior, Information Management and Computer Security, Campus-Wide Information Systems, Journal of Information Technology Research, NAUN’s International Journal of Mathematics and Computers in Simulation, Transforming Government, People, Process and Policy, Business Process Management Journal and International Journal of Electronic Government Research. Her research has continuously attracted funding. She is also the recipient of local and international awards. Dr. Norshidah holds Doctor of Philosophy in Management Information Systems from the International Islamic University Malaysia, Master of Business Administration from Ohio University (USA), Bachelor of Science in Mathematics from University of Utah (USA) and Graduate Certificate in Management Consultancy from the Institute of Management Consultants Singapore.

Plenary Lecture 3

The Challenge of Hyperbolic Cellular Automata: From NP-Problems To Bacteria

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Abstract: In this talk, we remind how to implement cellular automata in hyperbolic spaces. We survey the results obtained in this field from already 14 years. The research addresses theoretical questions as well as applied ones.
The tools intorduced to implement hyperbolic cellular automata allowed us to solve theoretical problems as tiling problems and universality issues. The tools also address the NP=P questions onto which they shed a new light. Many applications can be listed from communication networks to bacteria colonies.

Brief Biography of the Speaker: MARGENSTERN Maurice, was graduated with a PhD in mathematics in 1974 at the University Paris-Sud. Until 1995, he belonged to the department of mathematics, becoming there associate professor in 1982. From 1995 until 2011, he was full professor at the University of Metz, France, in the field of computer science, ending his carrier as professor of exceptional class, a degree he was given by the National Council of Universities in France. He is now professor emeritus of the University of Lorraine, starting from 2011. His scientific activity deals with the frontier between decidability and undecidability which is studied in various models of discrete computations. He has important results in Turing machines, in cellular automata and in (bio)molecular computing. He is very active in the field of cellular automata. He introduced an original method in order to implement these automata in hyperbolic spaces. He wrote more than 200 papers, among them 72 in well known international journals, 59 in international conferences with proceedings. He also wrote three books in the field of cellular automata in hyperbolic spaces. He is a member of the Editorial Board of the Journal of Universal Computer Science, of the Journal of Cellular Auotmata and he is a member of the Advisory Board of the Computer Science Journal of Moldova. He is a member of WG 1.5 in the TC1 of IFIP.

Plenary Lecture 4

Data Mining in Medicine Domain Using Decision Trees - The Case of CART and C4.5

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Abstract: Comprehensibility of decision trees is a good ingredient for data mining of data sets in medicine domain. Decision trees can be very useful data mining tools to diagnose disease, because the knowledge structure is represented in tree shape so that human expert could interpret the data well for more accurate diagnosis and better understanding of major factors in diagnosing the disease. For better knowledge in diagnosing disease CART that has been considered very good decision tree generator in medicine domain is investigated. Integrating several data sets from different sources is a major task in data mining for more significant discovery. In this sense, CART could be very a useful tool for the task. CART uses surrogate variables for missing values so that it might be good for the cases of integrating different set of data records where some uncommon features exist. The performance of CART is compared that of C4.5 which is more favored decision tree algorithm in other domains than CART. Different data sets in medicine domain are used to compare the performance of the two decision tree algorithms.

Brief Biography of the Speaker: Dr. Hyontai Sug: received BS degree in computer science and statistics from Busan National University, Korea in 1983, and MS degree in applied computer science from Hankuk University of Foreign Studies, Korea in 1986, majoring natural language processing, and Ph.D. degree in computer and information science and engineering from University of Florida, USA in 1998, majoring data mining. He was a researcher of Agency for Defense Development, Korea from 1986 to 1992, and a full-time lecturer of Pusan University of Foreign Studies, Korea from 1999 to 2001. Currently, he is an associate professor of Dongseo University, Korea from 2001. He published several noticeable articles in the field of data mining, so that he has been listed in Marquis who's who in the world since 2006. His research interests include data mining especially in the field of decision trees and association rules, and he is also interested in database application development.