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Recent Advances in Electrical Engineering

- Proceedings of the 4th International Conference on Circuits, Systems, Control, Signals (CSCS '13)
- Proceedings of the 1st International Conference on Electronics and Electrical Engineering (ELEL '13)

Valencia, Spain, August 6-8, 2013

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Plenary Lecture 1

Software Implementations for Detecting and Correcting Codes

Assistant Professor Mirella Amelia Mioc
Department of Computer Science
Faculty of Automatics and Computers
"Politehnica" University of Timisoara
ROMANIA
E-mail: mirella.mioc@cs.upt.ro

Abstract: In software development, the data on past current problems are still scarce.
Despite the important strides witnessed in the detecting and correcting codes, the issue of performance still remains perfectible.
Coding theory is widely used in data communications and storage devices. Beginning with the famous theorem of Shannon, many different software implementations for detecting and correcting codes were developed. The approaches methods for implementing the channel coding are widely tested.
The kernel execution should be scheduled considering the reconfiguration overheads. Suitable tasks scheduling are analyzed as well to showcase their success.

Brief Biography of the Speaker: Mirella Amelia Mioc graduated in 1981 the Faculty of Electrotehnics, Computer Science, of the „Traian Vuia" Polytehnic Institute of Timisoara.
Presently she is Assistant Professor in the Department of Computer Science from „Politehnica" University of Timisoara.
The main field of interest consists of analizing the use of shift registers in cryptography and coding theory, the subject of her PhD.
Her scientific activity concerns: Number Theory,Numerical Methods for mathematics,Information Theory,Programming languages: Pascal, C, C++, Lisp, ML, Java, Fundamental concepts of programming languages,Study of using shift registers in cryptography and coding theory.
She is the author of:3 books about Programming Languages Pascal and C, 4 guiding laboratories - Numerical Methods and Programming Languages, 27 scientific papers published in conference proceedings and journals in country and abroad.
She performed scientific activities in some foreign univesities:Technische Universität Berlin, Germany, Technical University of Budapest, Hungary, Université Libre de Bruxelles, Belgium, Université de Liège, Belgium, Université Pierre et Marie Curie (VI) of Paris, France.
She participated in several EU founded projects in TEMPUS, LEONARDO and ERASMUS and also took part in some grants and agreements in research.
She was member in the implementations team of the Project "WETEN – Western-Eastern Teacher Education Network", 145035 - TEMPUS – 2008 – LT – JPTHN in the period 2009 – 2011.
She has papers presented in WSEAS Conferences in 2008, 2009 and also published in WSEAS Journals.
She was invited Plenary Speaker in the 13th WSEAS International Conference on COMPUTERS in Rhodes in July 2009 and also in the 11th WSEAS International Conference on DATA NETWORKS, COMMUNICATIONS, COMPUTERS (DNCOCO '12) in Sliema, Malta, September 7-9, 2012.

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Plenary Lecture 2

Research Experiences in Control Systems Engineering from IIT (1965) to ISU (2012)

Professor D. Subbaram Naidu
Measurement and Control Engineering Research Center
Idaho State University
USA
E-mail: naiduds@isu.edu

Abstract: An overview of the author's journey of education and research experiences in Control System Engineering (CSE) from 1965 at Indian Institute of Technology (IIT), Kharagpur to 2012 at Idaho State University (ISU) is presented. A Master of Technology or Science (MTech/MS) program in CSE within the Department of Electrical Engineering at IIT started in 1958 is perhaps one of the oldest graduate programs in CSE. Over the past nearly 50 years, the author had the fortune of working in various leading institutions and centers of excellence around the world in the areas of the theory and applications of Control Systems to a wide spectrum of fields in science and engineering such as aerospace, electrical, mechanical and biomedical engineering, and welding, ecology, and biological sciences.

Brief Biography of the Speaker: Desineni "Subbaram" Naidu received MTech and PhD degrees in Electrical Engineering (Control Systems Engineering), from Indian Institute of Technology (IIT), Kharagpur. Dr. Naidu taught, visited and/or conducted research at IIT; Guidance and Control Division at NASA Langley Research Center; Old Domain University; Center of Excellence in Advanced Flight Research at United States (US) Air Force Research Laboratory; Center of Excellence for Ships and Ocean Structures at Norwegian University of Science and Technology; Measurement and Control Laboratory at Swiss Federal Institute of Technology; Nantong University, China; the University of Western Australia in Perth, Center for Industrial and Applied Mathematics at the University of South Australia in Adelaide; Jiangsu College of Information Technology, Jiangsu, China; Center for Applied and Interdisciplinary Mathematics at East China Normal University, Shanghai, China; Institute of Systems Science, Academy of Mathematics and Systems Science, Chinese Academy of Sciences, Beijing, China; Shanghai Jiao-Tong University, Shanghai, China, Russian Academy of Sciences and Moscow State University, Moscow, Russia.
Since 1990, Professor Naidu has been with Idaho State University, where he is Director of School of Engineering and Director of Measurement and Control Engineering Research Center. Professor Naidu received twice the Senior National Research Council Associateship award from the US National Academy of Sciences, and is an elected Fellow of the Institute of Electrical and Electronic Engineers (IEEE) and an elected Fellow of the World Innovation Foundation, UK. He has over 200 journal and conference publications including 6 books. He has been on the editorial boards of several journals including the IEEE Transactions on Automatic Control and Optimal Control: Applications and Methods.

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Plenary Lecture 3

From Modeling and Simulation to Adaptive Control of Nonlinear Processes

Assistant Professor Jiri Vojtesek
Department of Process Control
Faculty of Applied Informatics
Tomas Bata University in Zlin
Czech Republic
E-mail: vojtesek@fai.utb.cz

Abstract: The lecture will describe the procedure from the modeling and simulation of the static and dynamic behavior to the designing of the adaptive controller applied on the nonlinear system. Knowledge about the static and dynamic properties is a necessary condition for design of a controller. One possibility how to obtain such information about the system is the investigation of the real system. Unfortunately, measurements on the real system are not always feasible. The only way how to obtain static and dynamic behaviour of these systems is the use of simulation, i.e. experiments on their mathematical model. Simulations have several advantages over experiments on the real system. Among them are the lower costs, increased safety and less time consumption. The adaptive approach here is based on external linear model (ELM) of the originally nonlinear system. The parameters of this model are identified recursively and controller parameters are recomputed in each step. Polynomial, pole-placement and Linear-Quadratic (LQ) approaches are employed for controller synthesis. All results come from simulations but they could be easily used for controlling of similar real nonlinear processes.

Brief Biography of the Speaker: Jiri Vojtesek, PhD is an Assistant Professor at the Department of Process Control, Faculty of Applied Informatics, Tomas Bata University in Zlin, Czech Republic. His research areas are modeling, simulation, identification and control of technological processes in which he published 1 monograph, 12 journal papers including impact journals and 70 conference papers. He gave several invited lectures and stayed in Cologne, Germany in 2003 and Milan, Italy in 2004 for long-term study stays. He is member of IASTED International Program Committee in number of conferences and track chair of the “Modelling, Simulation and Control of Technological Processes” track on the European Conference on Modelling and Simulation ECMS.

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Plenary Lecture 4

Topology, Signaling and Computing

Professor Guennadi A. Kouzaev
Department of Electronics and Telecommunications
Norwegian University of Science and Technology (NTNU)
Norway
E-mail: guennadi.kouzaev@iet.ntnu.no

Abstract: The emerging field of applications of topology for computation, signaling and computing is reviewed. In all these applications, some important characteristics of the systems are associated with the spatial or spatio-temporal topology, which, being stable, allow the rough, but accurate models to be used for computations. Topology, being changed only discretely, is a natural carrier of digital information, and it allows communications and computing with improved noise-immunity. In this lecture, the analyzed material touches, mostly, upon the micro- and nano-electronic components and the systems which are built on the ideas of topology for advanced communications and computing.

Brief Biography of the Speaker: Guennadi A. Kouzaev received the Ph.D. degree from the Institute of Radioengineering and Electronics, the USSR Academy of Sciences, Moscow, in 1986, in Physics and Mathematics, and the Doctor of Sciences degree from the Moscow State Institute of Electronics and Mathematics (Technical University), Moscow, in 1997, in Microwave Techniques and Computer Engineering. He has gained his research and engineering experience from the space and electronic industry of Russia and Canada, and he worked at the Universities of these countries. Currently, he is a full Professor with the Department of Electronics and Telecommunications, Norwegian Technology and Science University-NTNU, Trondheim, Norway.
His research interests are in Electromagnetics, Microwave Techniques, Computer Engineering, and Quantum Electronics. He has authored or co-authored more than 160 papers, abstracts, and patents, and a Springer book on Advanced Electromagnetics. He co-chaired several international conferences, and he has been a member of many international conference boards.Professor Kouzaev is a Russian Government Prize Winner (1997) and a Winner of the Soviet Union Prize for Young Scientists (1990) awarded for his contributions to the developments of the first three-dimensional microwave integrations and for invention of the space-time topologically modulated electromagnetic signals and topological computing.

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