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Recent Advances in Automatic Control, Information and Communications

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Proceedings of the 14th International Conference on Automation & Information (ICAI '13)

Proceedings of the 13th International Conference on Applied Informatics and Communications (AIC '13)

Valencia, Spain, August 6-8, 2013

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Published by WSEAS Press
www.wseas.org

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All papers of the present volume were peer reviewed by no less than two independent reviewers. Acceptance was granted when both reviewers' recommendations were positive.
See also: <http://www.worldses.org/review/index.html>

ISSN: 1790-5117
ISBN: 978-960-474-316-2

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Preface

This year the 14th International Conference on Automation & Information (ICAI '13) and the 13th International Conference on Applied Informatics and Communications (AIC '13) were held in Valencia, Spain, August 6-8, 2013. The conferences provided a platform to discuss circuits and systems, wireless communication, signal processing, computer networks, intelligent control, programming languages, educational software, optical computers, security problems, cryptography, optical fiber systems, communication electronics, military communications, simulation techniques in telecommunications etc with participants from all over the world, both from academia and from industry.

Their 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 these conferences are published in this Book that will be sent to international indexes. They will be also available in the E-Library of the WSEAS. Extended versions of the best papers will be promoted to many Journals for further evaluation.

Conferences such as these 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

<u>Plenary Lecture 1: Impact of Tropospheric Scintillation towards Earth To Space Communication Links</u>	14
<i>Mandeep Jit Singh</i>	
<u>Plenary Lecture 2: Design and Implementation of a New Performed IT Service Management Framework</u>	15
<i>Anel Tanovic</i>	
<u>Plenary Lecture 3: Research on Regression Models of Force in Drilling Mineral Composite Material 2% Glass Fiber Reinforced</u>	16
<i>Mihaiela Iliescu</i>	
<u>Plenary Lecture 4: Architecture and Protocol Design for LTE Based Public Safety Service</u>	17
<i>Michel Kadoch</i>	
<u>Security Review of the SHA-1 and MD5 Cryptographic Hash Algorithms</u>	19
<i>Roman Jašek, Libor Sarga, Radek Benda</i>	
<u>APT Detection System using Honeypots</u>	25
<i>Roman Jasek, Martin Kolarik, Tomas Vymola</i>	
<u>System, System Model and Process Control</u>	30
<i>Zdeněk Úředníček</i>	
<u>Physical Model of Differential Wheel Vehicle Motion Control</u>	36
<i>Zdeněk Úředníček</i>	
<u>Predictor Design in Predictive Control with Measurable Disturbances</u>	42
<i>Marek Kubalčík, Vladimír Bobál</i>	
<u>Adaptive Predictive Control of a Coupled Drives Apparatus</u>	48
<i>Marek Kubalčík, Vladimír Bobál</i>	
<u>Two-Degree-of-Freedom Control for Systems with Parametric Uncertainty</u>	54
<i>Radek Matušů, Roman Prokop</i>	
<u>Control of Comfort Parameters in Interiors</u>	60
<i>Hruska Frantisek</i>	
<u>Utilization of the Comsol Mutiphysics Programme as a Tool for Modelling of Thermal Behaviour of Buildings</u>	64
<i>Martin Zalesak, Vladimír Gerlich</i>	
<u>Contribution to Problems of Accuracy of Temperature Measurement in Flowing Liquids</u>	69
<i>Martin Zalesak</i>	

<u>Improved LTI TDS Model Identification using a Saturation Relay: An Application Example</u>	75
<i>Libor Pekař, Roman Prokop</i>	
<u>Information Support in Terms of Personality Typology</u>	81
<i>Alena Paduchova, Sevcik Jiri, Svoboda Petr</i>	
<u>The Simulation Case Study of the Complex Production System with Regeneration Plants</u>	85
<i>Robert Bucki, Bronislav Chramcov</i>	
<u>Possible Way of Control of Multi-Variable Control Loop by Using RGA Method</u>	91
<i>Pavel Navratil, Libor Pekar</i>	
<u>Wind Turbine Control with Multiple Model Predictive Control</u>	97
<i>Jakub Novak, Petr Chalupa</i>	
<u>Rubber Injection Molding Influenced by Mold Surface Roughness</u>	103
<i>Michal Stanek, David Manas, Miroslav Manas, Kamil Kyas, Vojtech Senkerik, Adam Skrobak, Jan Navratil</i>	
<u>Effect of Index of Non-Newtonian Behavior of Rubber Compound on Curing Rate</u>	107
<i>Kamil Kyas, Michal Stanek, Miroslav Manas, David Manas, Adam Skrobak, Jan Navratil, Vojtech Senkerik</i>	
<u>Recyclation of Irradiated HDPE - Influence on Impact Toughness</u>	111
<i>Jan Navratil, Michal Stanek, Miroslav Manas, David Manas, Kamil Kyas, Adam Skrobak, Vojtech Senkerik</i>	
<u>Tensile Behavior of Recycled Irradiated HDPE</u>	115
<i>Jan Navratil, Michal Stanek, Miroslav Manas, David Manas, Kamil Kyas, Adam Skrobak, Vojtech Senkerik</i>	
<u>Comparison of PA11 and PA12 Properties after Radiation Cross-Linking</u>	119
<i>A. Mizera, M. Manas, D. Manas, M. Stanek, J. Navratil, M. Bednarik, M. Reznicek</i>	
<u>Properties of LDPE with the Filler of Recycled Irradiated HDPE</u>	123
<i>A. Mizera, J. Navratil, M. Manas, D. Manas, M. Stanek, M. Bednarik, M. Reznicek</i>	
<u>Adhesive Properties and Strength of Bonded Joints of Polymers Treated with Ionizing Beta Radiation</u>	127
<i>M. Bednarik, D. Manas, M. Manas, M. Stanek, A. Mizera, M. Ovsik, P. Kratky</i>	
<u>Effect of Ionizing Beta Radiation on the Strength of Bonded Joints for Increase the Temperature</u>	131
<i>M. Bednarik, D. Manas, M. Manas, M. Stanek, A. Mizera, M. Ovsik, P. Kratky</i>	
<u>Nanoharness of Polymers (Polyamide 11)</u>	135
<i>P. Kratky, D. Manas, M. Manas, M. Stanek, M. Ovsik, K. Kyas, M. Reznicek</i>	

<u>Nanohardness of Polymers (Polymethyl Methacrylate)</u>	140
<i>P. Kratky, D. Manas, M. Manas, M. Stanek, M. Ovsik, K. Kyas, J. Navratil</i>	
<u>Nano-Indentation Hardness of PA12 after Cross-linking Due to Beta Radiation</u>	145
<i>Martin Ovsik, David Manas, Miroslav Manas, Michal Stanek, Martin Bednarik, Petr Kratky, Ales Mizera</i>	
<u>Micro-Indentation Hardness of Glass Fiber-Filled PBT Influenced by Beta Low Radiation Doses</u>	150
<i>Martin Ovsik, David Manas, Miroslav Manas, Michal Stanek, Martin Bednarik, Petr Kratky, Ales Mizera</i>	
<u>Effect of Preparation of Recycled Material to Mechanical Properties of PC</u>	154
<i>Vojtech Senkerik, Michal Stanek, Miroslav Manas, David Manas, Adam Skrobak, Jan Navratil, Kamil Kyas</i>	
<u>Device for Measuring Creep at Higher Temperatures</u>	159
<i>Martin Reznicek, Vojtech Senkerik, Adam Skrobak, Kamil Kyas, Vladimir Pata, David Manas, Michal Stanek</i>	
<u>Analysis for Automated Unattended Installation</u>	163
<i>Lukas Kralik</i>	
<u>Modeling of CNC Machining Process - Artificial Neural Networks Approach</u>	168
<i>David Samek, Ondrej Bilek</i>	
<u>Novel Approach to the Video Surveillance System Image Operational Properties Evaluation</u>	174
<i>Jiri Sevcik, Petr Svoboda, Alena Paduchova</i>	
<u>Reliability of Access Systems</u>	179
<i>Milan Adámek, Petr Kováč, Miroslav Matýsek, Petr Neumann, Pavel Pokorný</i>	
<u>The Use of the Virtual Battlespace 2 in Commercial Security Industry</u>	183
<i>Petr Svoboda, Alena Padúchová, Jiří Ševčík</i>	
<u>The Overall Value of Web-Based Hybrid Models for Strategic Marketing Decision-Making: Managers' Responses to the WebIntegrated and WebMarP Systems</u>	187
<i>Shuliang Li, Jim Zheng Li, S. L. Li, D. Liu, J. Xu</i>	
<u>Model Predictive Control Using Different State Observers</u>	191
<i>Petr Chaupa, Jakub Novák, Peter Januška</i>	
<u>Shape Optimization of Rubber Boot</u>	197
<i>David Samek, Jakub Javorik</i>	
<u>Integrated Development Environment for the Ambient Calculus</u>	201
<i>Toru Kato</i>	

<u>Modelling based on Synchronized Object-Oriented Petri Net</u>	209
<i>George Culea</i>	
<u>Increasing the Efficiency of the Water Supply Systems</u>	215
<i>Cristian Ionica, Florin Donisa, Monica Leba</i>	
<u>Parameters Monitoring for Hazardous Areas using HP VEE Graphical Software</u>	221
<i>Carol Zoller, Remus Dobra Traian Burdea</i>	
<u>Data Transmission by Trellis Coded Modulation using Convolution Codes</u>	227
<i>Martin Papez, Matej Cico</i>	
<u>Development Trends of Activity-Based Costing and Activity-Based Management Software Systems</u>	233
<i>Pasi Ojala</i>	
<u>Proposal of the Improvement of Actual ITIL Version based on Comparative IT Service Management Methodologies and Standards – Previous Research and Research Methodology</u>	240
<i>Anel Tanovic, Fahrudin Orucevic</i>	
<u>Proposal of the Improvement of Actual ITIL Version based on Comparative IT Service Management Methodologies and Standards – The Implementation of IT Service Management Frameworks and Standards</u>	250
<i>Anel Tanovic, Fahrudin Orucevic</i>	
<u>Proposal of the Improvement of Actual ITIL Version based on Comparative IT Service Management Methodologies and Standards – The Comparative Analysis and Proposal of New Models</u>	262
<i>Anel Tanovic, Fahrudin Orucevic</i>	
<u>Proposal of the Improvement of Actual ITIL Version based on Comparative IT Service Management Methodologies and Standards – Final Measurements and the Selection of the Improved Model</u>	271
<i>Anel Tanovic, Fahrudin Orucevic</i>	
<u>Proposal of the Improvement of Actual ITIL Version based on Comparative IT Service Management Methodologies and Standards – The Improved Model of ITIL 2011 Framework</u>	280
<i>Anel Tanovic, Fahrudin Orucevic</i>	
<u>Analysis of Rain Attenuation Model for Ku Band in Cameron Highland, Malaysia</u>	287
<i>Mohd Nazrul Hanif Nordin, Lee Chiing Yih, Arman Mahmoudbeik, J. S. Mandeep</i>	
<u>RBC: Reliable Butterfly Network Construction Algorithm for Network Coding in Wireless Mesh Network</u>	291
<i>Chafika Tata, Michel Kadoch</i>	
<u>Performance of Fountain Codes over Wireless Mobile Relay Network</u>	297
<i>Ahasanun Nessa, Michel Kadoch, Bo Rong</i>	

<u>The Effects of Prompts on Paper-based and Mobile Display-based Learning of Historical Knowledge (Cultural Study) in Junior High School Students</u>	303
<i>Haruhisa Yamaguchi, Yumi Yamaguchi</i>	
<u>Internet Banking: Segmenting Elderly by Latent Class Cluster</u>	309
<i>Begoña Peral-Peral, Jorge Arenas-Gaitán, Maria Angeles Ramón-Jeronimo</i>	
<u>Adoption of Mobile Internet Services in Chile: An Exploratory Study</u>	315
<i>Jorge Arenas-Gaitán, Patricio E. Ramirez-Correa, F. Javier Rondan-Cataluña, Jorge Alfaro-Perez</i>	
<u>Formal Security Modeling in Autonomic Cloud Computing Environment</u>	320
<i>Archil Prangishvili, Otar Shonia, Irakly Rodonaia, Vakhtang Rodonaia</i>	
<u>Determining the Turnover for Profitability Threshold of Insurance Companies</u>	326
<i>Florin-Catalin Olteanu, Gavrilă Calefariu, Adriana Fota, Nicolae Barsan-Pipu</i>	
<u>The European Legal Framework of Corporate Social Responsibility. A New Directive of the European Parliament and of the Council on Reporting the Corporate Social Responsibility</u>	331
<i>Laura Pojincu Mureșan, Cristian-Romeo Pojincu</i>	
<u>Experiences of Building Cost Models for Software Systems: An Industrial Case Study</u>	339
<i>Kim Vaataja, Jukka Piironen, Pasi Ojala, Janne Jarvinen</i>	
<u>A Raster Image Processing Application</u>	346
<i>Pavel Pokorný, Rastislav Petráš</i>	
<u>A Comparison Application for the Lossless Compression Algorithm</u>	350
<i>Pavel Pokorný, Tomáš Vogeltanz</i>	
<u>The Ordering System via Internet and GSM</u>	354
<i>Miroslav Matýsek, Tomáš Matulík, Dalibor Slovák</i>	
<u>Multi-Hop Relays for LTE Public Safety Network</u>	358
<i>Abderrahmane BenMimoune, Michel Kadoch</i>	
<u>Mobility Management for Novel LTE-A Relay System</u>	362
<i>Abderrahmane BenMimoune, Michel Kadoch</i>	
<u>The Evaluation of Resilience of Critical Infrastructure</u>	368
<i>Magdalena Jugova</i>	
<u>Authors Index</u>	372

Plenary Lecture 1

Impact of Tropospheric Scintillation towards Earth To Space Communication Links



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Abstract: Tropospheric scintillation is a phenomenon that will cause signal degradation when a satellite signal propagates through the atmosphere. Tropospheric scintillation causes the signal to fluctuate in a short amount of time, and the phenomenon tends to have a greater affect on the quality of the signal when the satellite is broadcasting using a frequency higher than 10 GHz. In the design of microwave traffic links, such as those for direct-to-home very small aperture terminals (DTH/VSAT) systems, detailed propagation information must be considered that provides insights into performance, availability, and quality of service and customer perceptions. For systems operating at high frequency (Ku-band and above) and low elevation angle, signal degradation cause by scintillation can be more dominance compared to rain attenuation. In these cases, scintillation effects become a relevant noise source, which has to be considered and predicted for the optimum utilization of the channel capacity Therefore it is vital for satellite designers to study the effect of scintillation towards satellite communication links.

Brief Biography of the Speaker: Mandeep Jit Singh received his B.Eng. (with honors) and Ph.D. degrees in electrical and electronic engineering from the University of Notrhumbria, UK, and Universiti Sains Malaysia, in 1998 and 2006, respectively. From 2006 up to June 2009, he was attached at Universiti Sains Malaysia as a Lecturer. Currently, he is attached to the Universiti Kebangsaan Malaysia as a Senior Lecturer. His areas of specialization are radiowave propagation in satellite communication system, radar, antenna design, RF, and microwave. His current research collaboration is with the Association of Radio Industries and Business (ARIB) Japan to analyze the rain fade at Ku-band in tropical climate using satellite involving countries such as Thailand, Philippines, Indonesia, and Fiji. Singh has published 120 papers in journals, most in his special field radiowave propagation. He has reviewed more than 100 articles from IEEE Journals to PIERS Journals. He has an h-index of 9 and over 100 citations.

Plenary Lecture 2

Design and Implementation of a New Performed IT Service Management Framework



Assistant Professor Anel Tanovic
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Abstract: The research which is described in this talk is the part of research field which is called IT Service Management. There are a very large number of methodologies for managing IT services and the most important are: ITIL, CobIT and PRINCE2 and also a very large number of standards for managing IT services and the most important are: eTOM, ISO/IEC 20000 and ISO/IEC 27000. The aim of the research from my University is to improve the best known methodology for managing IT services which is called Information Technology Infrastructure Library (ITIL) by using comparison with other mentioned methodologies and standards for managing IT services. IPTV and VoIP services are taken as the reference model for the implementation of the research. These services are taken because they have the problem of managing over the growing number of systems that include these services. The research was completed on the reference model of IPTV/VoIP service of one Telecom operator which is the proof that these services are real services. The research methodology involves several consecutive steps of measurements of the new obtained models of ITIL methodology and the comparative analysis between ITIL methodology and other specified methodologies and standards for the management of IT services.

The result of the research is an improved model of ITIL methodology that consists of eleven new added processes from other methodologies and standards for the management of IT services. The result of research includes professional and scientific contribution. The professional contribution is the creation of a new model that can be immediately implemented in the business environment of any organization and in this way it is given an incentive for many companies to introduce an improved model of ITIL to accelerate their business processes and to achieve better business results. The scientific contribution is the creation of a new performed model for IT service management which is derived from six different methodologies and standards for the management of IT services which becomes the first such research that has ever been done. This research will be also presented to the Cabinet Office which is the international organization that cares about upgrading of ITIL for the final adoption of the model which is the product of this research.

Brief Biography of the Speaker: Anel Tanovic has finished the Faculty of Electrical Engineering at the University of Sarajevo in 2006. He got the Master degree in 2009, and the PhD degree in 2011. He is working in BH Telecom, the leading Telecom operator in Bosnia and Herzegovina, since 2008. He is working there as the leading expert for access networks and terminal devices. He is now the leading person in BH Telecom for the improvement of the business processes connected to the IT Service Management methodologies and standards. From 2008, he is working also on the Faculty of Electrical Engineering in Sarajevo, as the associate professor and university researcher. His teaching subjects are: Business Information systems and Management of IT services. His main research fields are: information systems, management of information systems, IP networks, multimedia, telecommunication systems, databases and data mining. Now he is the leading person for four university projects: Design and implementation of a new model of ITIL framework based on comparison with other IT Service Management frameworks and standards, Design and implementation of a new model of ISO/IEC 20000 standard based on comparison with other IT Service Management frameworks and standards, Design and implementation of a new model of Service Desk based on ITIL and eTOM principles and Development of University laboratory for ITSM projects. He has published 25 papers on international conferences and international journals. He is also working on some international projects for the itSMF and TM Forum with other European contributors. His most famous speeches are on international conferences in: Lisbon (Portugal), Perth (Australia), Budapest (Hungary), Athens (Greece), Paris (France), Sliema (Malta), Vienna (Austria), Sarajevo (Bosnia and Herzegovina) and Belgrade (Serbia).

Plenary Lecture 3

Research on Regression Models of Force in Drilling Mineral Composite Material 2% Glass Fiber Reinforced



Professor Mihaiela Ilescu

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Abstract: The need of high performance materials with low weight and high strength has lead to the development of mineral composite materials. Due to the fact that mineral composite materials are anisotropic when machining them, failure appears on, both, upper and lower surfaces of the matrix. This paper presents the experiments, results and their evaluation when drilling a mineral composite material 2% glass fiber reinforced. Finally, the mathematical relationship of drilling force and process parameters values was determined, based on regression analysis.

Brief Biography of the Speaker: In 1989 graduated, “POLITEHNICA” Institute of Bucharest, ROMANIA. Since 1991 has been teaching in “POLITEHNICA” University of Bucharest, ROMANIA – Manufacturing Department, in 2004, became Associate Professor. The Doctoral Thesis, in 2000 was about “Quality and Machinability of Thermal Sprayed Layers”.

Teaches courses, advises students research and works into the fields of: Applied Statistics in Engineering; Manufacturing Technologies; Injection Moulding; Customized Products Manufacturing and Quality Assurance. Scientific researcher and project manager, in about 30 Research Projects and Grants. Also, expert evaluator for EU programs on human resources development.

First-author or, co-author, of about 130 studies and papers - published in International/National Conferences, Sessions, Workshops, Platform Meetings and of 14 books - on Applied Statistics, Manufacturing Technology, Geometrical Precision Inspection.

Papers presented in WSEAS Conferences, in 2008, 2009 and, also published in WSEAS and NAUN Journals. Was invited Plenary Speaker in WSEAS Conferences, like Venice – November, 2008 ; Cambridge – February, 2009; Baltimore – November 2009; Lisbon – November 2010, Catania – November, 2011 and Malta – September, 2012.

Performed organizing activities, as Chairman and General Chairman for WSEAS Conferences in Bucharest, in 2008 and 2010.

Plenary Lecture 4

Architecture and Protocol Design for LTE Based Public Safety Service



Professor Michel Kadoch
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Abstract: Public safety communication technologies can save lives and property during emergencies caused by man-made or natural disasters. Our project aims at providing public safety with high-quality dedicated network service through LTE networks. In particular, we develop new entities and protocols to enhance LTE with a special set of features. From the perspective of system architecture, our project addresses broadcast/multicast, cooperative communications, soft frequency reuse and mobile data offloading to improve the capacity of a designated area. From the perspective of network protocol, our project addresses intelligent network, call admission control, load balancing and signalling efficiency to assure the priority of designated traffic.

Brief Biography of the Speaker: Michel Kadoch (S'67, M'77, SM'04) ing, M.B.A. Ph.D. is a full professor at Ecole de technologie supérieure ETS (Canada) and the director of the Master Program in engineering. He is active in research mostly in performance analysis, network management and control in wired as well as wireless networks. He is the director of the research laboratory LAGRIT at ETS. He is also an adjunct professor at Concordia University (Canada). He is presently working on Cognitive Radio, Network coding, Cross layer, and on Reliable multicast in wireless Ad hoc and Mesh networks and LTE. Professor Kadoch has published many articles and is the author of a book « Protocoles et reseaux locaux » (Edition PUQ, 2012). He is serving as a reviewer for IEEE journals and conferences and for grants for NSERC as well as track TPC for ICCAS, WiMob. He has been involved for many years at ITU-T as a special rapporteur and with the industry namely Teleglobe Canada, CAE, and Communication Canada. He has been a consultant with Harris, Bell South, BC Tel, Concert and British Telecom UK, as well as the CTO (Commonwealth Telecommunication Organization).