Computational Engineering in Systems Applications

Volume II


Iasi, Romania, July 1-3, 2011

ISSN: 2223-9812
ISBN: 978-1-61804-014-5
COMPUTATIONAL ENGINEERING in SYSTEMS APPLICATIONS (Volume II)


Iasi, Romania
July 1-3, 2011

ISBN: 978-1-61804-014-5
ISSN: 2223-9812
COMPUTATIONAL ENGINEERING in SYSTEMS APPLICATIONS (Volume II)


Iasi, Romania
July 1-3, 2011

Published by IAASAT Press
www.iaasat.org

Copyright © 2011, by IAASAT Press

All the copyright of the present book belongs to the IAASAT 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 IAASAT 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.iaasat.org

ISBN: 978-1-61804-014-5
ISSN: 2223-9812

International Authority for the Advancement of Science and Applications of Technology

The Alexandru Ioan Cuza University of Iasi
Editors:
Prof. Nicu Gavriluta, The Alexandru Ioan Cuza University of Iasi, Romania
Prof. Razvan Raducanu, The Alexandru Ioan Cuza University of Iasi, Romania
Prof. Mihaiela Iliescu, Politehnica University of Bucharest, Romania
Prof. Hariton Costin, ‘Gr. T. Popa’ University of Medicine and Pharmacy, Romania
Prof. Nikos Mastorakis, Technical University of Sofia, Bulgaria
Prof. Vladimir Olej, University of Pardubice, Czech Republic
Prof. Jiri Strouhal, University of Economics Prague, Czech Republic
Prof. Alina Barbulescu, Ovidius University of Constanta, Romania
Prof. Mihaela Costin, Romanian Academy, Romania

International Program Committee Members:
Lotfi Zadeh, USA
Tadeusz Kaczorek, POLAND
Metin Demiralp, TURKEY
Zoran Bojkovic, SERBIA
Aida Bulucea, ROMANIA
Valeri Mladenov, BULGARIA
E zendu Ariva, UK
Dimitris Bertsekas, USA
Cain Evans, UK
V. A. Pereira Marinho Marques, PORTUGAL
Olga Martin, ROMANIA
# Table of Contents

Plenary Lecture 1: Further Trends in Fourth Generation Mobile Systems: Convergence, Quality of Service, Security and Applications  
Zoran Bojkovic  

Plenary Lecture 2: Computer Support for CLIL - Content and Language Integrated Learning  
Suzana Carmen Cismas  

A Shock Filter of a Vibratory Signal for Damage Detection  
Bechir Badri, Marc Thomas, Sadok Sassi  

Overview on Adams Implementation  
Razvan Popescu, Ivona Potzaichin, Graziela Vajiala  

Doping Testing Programs  
Graziela Vajiala, G. Andreiasu, C. Berbecaru, Ivona Potzaichin, Claudia Berbecaru  

Modelling the Configuration and Dynamics of Urban Space  
Gerda Hartl, Georg Franck  

Modeling of Economic and Environmental Impacts of Energy Generation using of Waste Paper  
Robert Bata  

Operating Company's Performance Through Managers/ Eyes in the Czech Republic  
Bohuslava Knapova  

National and Local Regulations Regarding Wind Parks  
Florin Fainisi  

Modelling the Environmental Impacts of a Biomass Based Electric Power Generation  
Robert Bata, Pavla Pulkrabkova  

Accounting Policies and Options Regarding the Amortization Period – A Comparative Study in the IFRS Practice and Romanian Accounting  
Marinela-Daniela Manea  

Application for Regenerative Dentistry: The Collagen Matrices with Lidocaine  
Laura Cristina Rusu, Cosmin Sinescu, Meda Lavinia Negrutiu, Lavinia Cosmina Ardelean, Alexandru Ogodescu, Mihai Frabicky, Emanuela Petrescu, Roxana Otilia Rominu, Florin Topala, Mihai Rominu, Madalina Georgiana Albu, Mihaela Violeta Ghica, Adrian Gh. Podoleanu  

Natural Products Optimized Separation Parameters  
Eugenia Eftimie Totu, Elena Ruse, Ioana Diaconu
Renewable Energy Sources as Important Factor of the Long-Term Sustainable Development Concept in the Republic of Serbia
Srdjan Zikic

Renewable Energy Risk Management
Petre Lucian Seiciu

An Intelligent Approach for Constructing Domain Ontology Using Art2 Neural Network and C-Value Method
Maryam Hourali, Gholam Ali Montazer

Experimental Models of Electro-Conductivity and Productivity Agricultural Maps for the Cambic Chernozem Soil
M. Matache, I. Voicu, V. Vladut, I. Pirna, S. Bungescu, C. Chirila

Vegetal Biomass, A Renewable Source for Obtaining of Clean Energy
M. Matache, V. Vladut, A. Danciu, I. Voicu, I. Pirna, E. Postelnicu, C. Chirila

Self-Learning Fuzzy SVC Controller for Oscillations Damping
N. Magaji, M. W. Mustafa

Evaluating GAIA Methodology in Agent-Oriented Software Engineering
Amin Farahbakhsh Tooli, Javad Asadi

Hierarchical Knowledge in Image Processing: Data-flow Chart and Cognitive Advances
Mihaela Costin

A Grid Service for Multi-Spectral Vegetation Indices Estimation
Cristina Serban Gherghina, Carmen Maftei, Cosmin Filip

Using NI LabVIEW to Automate Analyses of Water Flow to a Subsurface Drain in a Layered Soil
Constantin Buta, Carmen Maftei, Cornel Ciurea, Cosmin Bucur, Lucian Balasa

GPD Models for Extreme Rainfall in Dobrudja
Judicael Deguenon, Alina Barbulescu, Makhtar Sarr

The Current Financial Crisis: Visible and Invisible Connections with Food Crisis
Mioara Chirita, Simona Valeria Toma, Daniela Ancuta Sarpe

Educational Framework Model for Image Processing and Image Databases
Mocofan Muguras, Sorin Petan, Radu Vasiu

Simulation Effects on E-Business Transformations
Shapoor Zarei, Nikos E. Mastorakis, Amin Daneshmand Malayeri

Functional Simulation of Harmonic Drive with S.M.A. Wave Generator
Viorel-Ionut Bizau, Ion Vela, Ovidiu Milos, Alina Visan, Ion-Cornel Mituletu
Design and Measurement of 2.5GHz Driver Amplifier for IEEE 802.16e Mobile WiMAX using a Small-Signal Method
S. Kassim, F. Malek

166

Modified Adaptive Load Shedding
H. A. Rakhshani, A. R. Heidari, M. M. Kaykha

171

Thin-Walled Steel Sheets with Indentations in Composite Steel-Concrete Structure under Different Types of Loading
Josef Holomek, Radek Karasek, Miroslav Bajer, Jan Barnat

177

Ageing Behavior of Friction Stir Welding AA7075-T6 Aluminum Alloy
T. Azimzadegan, Gh. Khalaj, M. M. Kaykha, A. R. Heidari

183

Linearization of Three-Stage Doherty Amplifier
Natasa Males Ilic, Aleksandar Atanaskovic, Bratislav Milovanovic

188

RRTs Review and Options
Ahmad Abbadi, Radomil Matousek, Petr Minar, Petr Soustek

194

Authors Index

200
Plenary Lecture 1

Further Trends in Fourth Generation Mobile Systems: Convergence, Quality of Service, Security and Applications

Professor Zoran Bojkovic
Full Prof. of Electrical Engineering
University of Belgrade, Serbia
E-mail: z.bojkovic@yahoo.com

Abstract: In fourth generation 4G system concept, the user has freedom and flexibility to select any desired service with reasonable quality of service QoS and affordable price, any time, anywhere. There are many attractive features for 4G which ensure a very high data rate, global roaming, incorporating the mobile world into the Internet Protocol IP-based core network, establishing an efficient billing system and perfect handoff mechanisms. Improvements over the third generation 3G include enhanced multimedia, smooth streaming video, universal access and portability across all types of devices. Migrating current systems to 4G presents enormous challenges. Current systems must be implemented with a view to facilitate a seamless integration into 4G infrastructure. Today 4G is a convergence platform providing clear advantages in terms of coverage bandwidth and power consumption. It offers a variety of new heterogeneous services. All these characteristics are supported by multimode/reconfigurable devices and implementation of interworking ones. 4G mobile communication networks are expected to provide all IP-based services for heterogeneous wireless access technologies, assisted by mobile IP to provide seamless Internet access for mobile users. Methodologies for QoS and security support in 4G networks integrate signaling with authentication, authorization and accounting AAA services to guarantee the user applications, QoS requirements and achieve efficient AAA. An integrated service and resource management approach is based on the cooperative association among QoS brokers AAA, and charging systems. Seamless vertical handover VHO is an important function of beyond 3G systems. Concept transfer can help support seamless VHO, while maintaining the required security level. This presentation is organized as follows. After the introduction showing mobile system generation together with short history of mobile technologies, including various existing and emerging wireless technologies, the next section deals with converging of high speed Internet and mobility as a major drivers of future wireless. Design objectives are also presented. The second part describes network selection with most appropriate selection criteria (service type, available resources, user content). Then, quality of service providing guarantees in 4G networks is emphasized. This is one of the most difficult problems that are to be solved, when it comes to IP mobility. Mobile IPv6 have been proposed to reduce the handover latency and the number of lost packets. Several approaches are opened for consideration like: security, convergence of mobile communications and broadcasting, as well as convergence benefits. Reconfigurable technology together with applications including multiple operators and billing system conclude further trends in the area of 4G mobile systems.

Brief Biography of the Speaker: Prof. Dr. Zoran Bojkovic (http://www.zoranbojkovic.com) is a full professor of Electrical Engineering at the University of Belgrade, Serbia and a permanent visiting professor at the University of Texas at Arlington, TX, USA, EE Department, Multimedia System Lab. He was a visiting professor in more than 20 Universities worldwide and has taught a number of courses in Electrical Technology, Telecommunication Systems and Networks, Speech, Image and Video Processing, Multimedia Wire/Wireless Communication Systems, Computer Networks. Prof. Bojkovic is the co-author of 6 international books/monographs (Publishers: Prentice-Hall, Wiley, CRC Press, WSEAS). Also, some of these books have been published and translated in Canada, China, Singapore and India. He is co-editor in 62 International Books and Conference Proceedings. He has published more than 420 papers in peer-reviewed journals, conference proceedings and publications. He has conducted keynote/plenary lectures, workshops/tutorials as well as seminars, and participated in more than 70 scientific and industrial projects all over the world. He has been a consultant to industry research institutes and academia. His activities included serving as Editor-in-Chief in 2 International Journals and as Associate Editor in 3 International Journals. Prof. Zoran Bojkovic is an active researcher in wireless multimedia communications. He is a Senior Member of IEEE and WSEAS, member of EURASIP, full member of Engineering Academy of Serbia as well as a member of Serbian Scientific Society.
Plenary Lecture 2

Computer Support for CLIL - Content and Language Integrated Learning

Suzana Carmen Cismas PhD,
Department of Modern Languages and Communication,
The Polytechnic University of Bucharest, Romania

Abstract: Computers are a basic tool required in Content&Language Integrated Learning (CLIL), which involves teaching a curricular subject through the medium of computers and a language other than the native tongue normally used. CLIL is taking place and has been found to be effective in all sectors of education at all ages, to adult and higher education. Its success has been growing over the past ten years and continues to do so. Professors working with CLIL are specialists in their own discipline rather than traditional language teachers. They are usually fluent speakers of the target language, bilingual or native speakers, working in partnership with other departments to offer the program in various subjects. Benefits of CLIL include, but are not limited to: building intercultural knowledge and understanding, developing intercultural communication skills along-side with multilingual interests&attitudes, improving language competence&oral communication skill, providing opportunities to study content through different perspectives, and diversifying methods and forms of classroom practice. It does not require extra teaching hours and comple-ments other subjects rather than competing with them. Hence it is a modern and effective approach, which increases learners' motivation and confidence in both language&subject taught.

Brief Biography of the Speaker: Suzana Carmen Cismas is Doctor of Philology and Doctor of Education Sciences and has been performing didactic activities for 24 years on research topics dealing with cultural studies, communication in foreign languages and English testing for engineering. She held the quality of Invited professor at Coventry University UK and at Universite Libre de Bruxelles. She is the author of nine books and 87 articles published in Romania and abroad. Proficient in English, Spanish, Italian, and French, she has benefited from numerous scholarships in London University libraries, free schools & didactic material centers in Denmark, at the Sorbonne, Francois Mitterand National Library, Centre Pompidou and Centre Henri Pierron, Universite Libre de Bruxelles, and the Royal Library Stockholm. She was granted cultural heritage post-doctoral research by the Italian Government in 1999. The study visit to Tokyo and Hiroshima for documentation purposes shed new light on eastern culture&civilization: patterns and bias in cultural studies, heritage preservation, promotion of the national culture worldwide, the status of the contemporary metropolis, translation issues and equivalation of cultural codes among European, American and Japanese communication styles. She has also been involved in numerous debates and workshops on issues regarding orientalism and occidentalism, and in many courses organized by the British Council and by the American Cultural Center. She has participated in grants and research projects with the Polytechnic University of Bucharest, the Romanian Ministry of Education and Research, the SOROS Foundation for an Open Society, Centre Education 2000+, and ANSIT (National Agency for Supporting Students’ Initiatives), and is member of numerous professional and research associations in the field.
Authors Index

<table>
<thead>
<tr>
<th>Authors</th>
<th>Page Numbers</th>
<th>Authors</th>
<th>Page Numbers</th>
<th>Authors</th>
<th>Page Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abbadi, A.</td>
<td>194</td>
<td>Ghica, M. V.</td>
<td>60</td>
<td>Pirina, I.</td>
<td>89, 96</td>
</tr>
<tr>
<td>Albaiu, M. G.</td>
<td>60</td>
<td>Hartl, G.</td>
<td>26</td>
<td>Podoleanu, A. G.</td>
<td>60</td>
</tr>
<tr>
<td>Andreiasu, G.</td>
<td>22</td>
<td>Heidari, A. R.</td>
<td>171, 183</td>
<td>Popescu, R.</td>
<td>18</td>
</tr>
<tr>
<td>Ardelean, L. C.</td>
<td>60</td>
<td>Holomek, J.</td>
<td>177</td>
<td>Postelnicu, E.</td>
<td>96</td>
</tr>
<tr>
<td>Asadi, J.</td>
<td>107</td>
<td>Hourali, M.</td>
<td>79</td>
<td>Potzaichin, I.</td>
<td>18, 22</td>
</tr>
<tr>
<td>Atanaskovic, A.</td>
<td>188</td>
<td>Ilic, N. M.</td>
<td>188</td>
<td>Pulkrabkova, P.</td>
<td>47</td>
</tr>
<tr>
<td>Azimzadehan, T.</td>
<td>183</td>
<td>Karasek, R.</td>
<td>177</td>
<td>Rakhshani, H. A.</td>
<td>171</td>
</tr>
<tr>
<td>Badri, B.</td>
<td>13</td>
<td>Kassim, S.</td>
<td>166</td>
<td>Rominu, M.</td>
<td>60</td>
</tr>
<tr>
<td>Bajer, M.</td>
<td>177</td>
<td>Kaykha, M. M.</td>
<td>171, 183</td>
<td>Rominu, R. O.</td>
<td>60</td>
</tr>
<tr>
<td>Balasa, L.</td>
<td>125</td>
<td>Khalaj, G.</td>
<td>183</td>
<td>Ruse, E.</td>
<td>65</td>
</tr>
<tr>
<td>Barbulescu, A.</td>
<td>131</td>
<td>Knapova, B.</td>
<td>37</td>
<td>Rusu, L. C.</td>
<td>60</td>
</tr>
<tr>
<td>Barnat, J.</td>
<td>177</td>
<td>Maftei, C.</td>
<td>120, 125</td>
<td>Sarpe, D. A.</td>
<td>137</td>
</tr>
<tr>
<td>Bata, R.</td>
<td>31, 47</td>
<td>Magaj, N.</td>
<td>101</td>
<td>Sarr, M.</td>
<td>131</td>
</tr>
<tr>
<td>Berbecaru, C.</td>
<td>22</td>
<td>Maleyeri, A. D.</td>
<td>147</td>
<td>Sassi, S.</td>
<td>13</td>
</tr>
<tr>
<td>Berbecaru, Cl.</td>
<td>22</td>
<td>Malek, F.</td>
<td>166</td>
<td>Seiciu, P. L.</td>
<td>74</td>
</tr>
<tr>
<td>Bizau, V.-I.</td>
<td>161</td>
<td>Manea, M.-D.</td>
<td>54</td>
<td>Sinescu, C.</td>
<td>60</td>
</tr>
<tr>
<td>Bucur, C.</td>
<td>125</td>
<td>Mastorakis, N. E.</td>
<td>147</td>
<td>Soustek, P.</td>
<td>194</td>
</tr>
<tr>
<td>Bungescu, S.</td>
<td>89</td>
<td>Matace, M.</td>
<td>89, 96</td>
<td>Thomas, M.</td>
<td>13</td>
</tr>
<tr>
<td>Buta, C.</td>
<td>125</td>
<td>Matousek, R.</td>
<td>194</td>
<td>Toma, S. V.</td>
<td>137</td>
</tr>
<tr>
<td>Chirila, C.</td>
<td>89, 96</td>
<td>Milos, O.</td>
<td>161</td>
<td>Tooli, A. F.</td>
<td>107</td>
</tr>
<tr>
<td>Chirita, M.</td>
<td>137</td>
<td>Milovanovic, B.</td>
<td>188</td>
<td>Topala, F.</td>
<td>60</td>
</tr>
<tr>
<td>Ciurea, C.</td>
<td>125</td>
<td>Minar, P.</td>
<td>194</td>
<td>Totu, E. E.</td>
<td>65</td>
</tr>
<tr>
<td>Costin, M.</td>
<td>114</td>
<td>Mituletu, I.-C.</td>
<td>161</td>
<td>Vajiala, G.</td>
<td>18, 22</td>
</tr>
<tr>
<td>Danciu, A.</td>
<td>96</td>
<td>Montazer, G. A.</td>
<td>79</td>
<td>Vasiu, R.</td>
<td>143</td>
</tr>
<tr>
<td>Deguenon, J.</td>
<td>131</td>
<td>Muguras, M.</td>
<td>143</td>
<td>Vela, I.</td>
<td>161</td>
</tr>
<tr>
<td>Diaconu, I.</td>
<td>65</td>
<td>Mustafa, M. W.</td>
<td>101</td>
<td>Visan, A.</td>
<td>161</td>
</tr>
<tr>
<td>Fabricky, M.</td>
<td>60</td>
<td>Negrutiu, M. L.</td>
<td>60</td>
<td>Vladut, V.</td>
<td>89, 96</td>
</tr>
<tr>
<td>Fainisi, F.</td>
<td>42</td>
<td>Ogodescu, A.</td>
<td>60</td>
<td>Voicea, I.</td>
<td>89, 96</td>
</tr>
<tr>
<td>Filip, C.</td>
<td>120</td>
<td>Petan, S.</td>
<td>143</td>
<td>Zarei, S.</td>
<td>147</td>
</tr>
<tr>
<td>Franck, G.</td>
<td>26</td>
<td>Petrescu, E.</td>
<td>60</td>
<td>Zikic, S.</td>
<td>69</td>
</tr>
<tr>
<td>Gherghina, C. S.</td>
<td>120</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>