

2013 IEEE 8th International Symposium on Applied Computational Intelligence and Informatics

(SACI 2013)

**Timisoara, Romania
23-25 May 2013**



**IEEE Catalog Number: CFP1345C-POD
ISBN: 978-1-4673-6399-0**

Table of Contents

Committees	9
Approximation Properties and Continuous Differentiability of a Class of SISO Fuzzy Systems.....	11
<i>Barnabás Bede*</i> , <i>Matthew P. Peterson**</i>	
*DigiPen Institute of Technology, Redmond, USA; Óbuda Univeristy, **DigiPen Institute of Technology, Redmond, USA	
Analysis of the Suitability of Using Blind Crossover Operators in Genetic Algorithms for Solving Routing Problems.....	17
<i>Eneko Osaba, Roberto Carballedo, Fernando Díaz, Asier Perillos</i>	
Deusto Institute of Technology, University of Deusto, Bilbao, Spain	
A Lighting Control System to Optimize Brightness Distribution on Working Places.....	23
<i>Mitsunori Miki, Hisanori Ikegami, Akihiko Emi, Takuro Yoshii, Yohei Azuma, Kenta Yoshida</i>	
Doshisha University, Kyoto, Japan	
nRobotic Mobile Robot Navigation Using Traffic Signs in Unknown Indoor Environments.....	29
<i>Constantin Purcaru, Radu-Emil Precup, Daniel Iercan, Lucian-Ovidiu Fedorovici, Bogdan Dohangie, Florin Dragan</i>	
„Politehnica” University of Timisoara, Timisoara, Romania	
Maximum Flow Minimum Cost Algorithm for Reconstruction of Images Represented on the Triangular Grid	35
<i>Elisa Valentina Moisi*, Benedek Nagy**, Vladimir Ioan Cretu***</i>	
* University of Oradea, Romania, ** University of Debrecen, Hungary, *** „Politehnica” University of Timisoara, Romania	
Using Data Mining for Mobile Communication Clustering and Characterization	41
<i>A. Bascacov*, C. Cernazanu**, M. Marcu**</i>	
* Lasting Software, Timisoara, Romania, ** Politehnica University of Timisoara, Romania	
New Wave for Learning with Mentor Teachers	47
<i>Istvan Simonics</i>	
Óbuda University, Budapest, Hungary	
The Role of Electronic and Virtual Learning Support Systems in the Learning Process	51
<i>György Molnár</i>	
Budapest University of Technology and Economics, Hungary	
A Dialog-based Game Component for a Competencies Based E-Learning Framework	55
<i>Ciprian-Bogdan Chirila</i>	
University Politehnica of Timisoara, Romania	
Adaptive Online Learning Environment and Web Usage Mining	61
<i>Péter Tóth</i>	
Óbuda University, Hungary	
Moodle in Higher Education and at Óbuda University	67
<i>Franciska Hegyesi</i>	
Óbuda University, Budapest, Hungary	
New Approximations for DQPSK Transmission Bit Error Rate.....	73
<i>Árpád Baricz, Szilárd András, János Fodor</i>	
Sampling Bessel Functions and Bessel Sampling	79
<i>Dragana Jankov Masirevic*, Tibor K. Pogány**, ***, Árpád Baricz §, ***, Aurél Galántai***</i>	
* University of Osijek, Croatia, ** University of Rijeka, Croatia, *** Óbuda University, Budapest, Hungary, § Babes-Bolyai University, Cluj-Napoca, Romania	
Mathematical Expressiveness for Computational Network Interaction	85
<i>Stefano-Niko Orzen</i>	
Politehnica University of Timisoara	
A Contribution to Modeling Sensor Communication Networks by Using Finite-Source Queueing Systems	89
<i>Tamás Bérczes, Béla Almási, János Sztrik, Attila Kuki</i>	
University of Debrecen, Hungary	

A New Method for Minimization of Real Lipschitz Functions	95
<i>J. Abaffy, A. Galántai</i>	
Óbuda University, Budapest, Hungary	
Design and Verification of the Industrial Robot Effector with Use of Rapid Prototyping Method	99
<i>J. Novak-Marcincin, M. Janak, J. Barna, L. Novakova-Marcincinova</i>	
Technical University of Kosice, Presov, Slovakia	
Design and Experiments for Model-Free PI Control of DC Drives.....	103
<i>Mircea-Bogdan Radac*, Razvan-Alexandru Achimescu**, Radu-Emil Precup*, Stefan Preitl*, Claudia-Adina Dragos*, Alexandra-Iulia Stinean*</i>	
* „Politehnica” University of Timisoara, Timisoara, Romania, ** IT University of Copenhagen, Copenhagen, Denmark	
Theory and Practice in Multi-Discipline Representations for Engineering Education	109
<i>József Gáti and Gyula Kártyás</i>	
Óbuda University, Budapest, Hungary	
2-DOF Control Solutions for an Electric Drive System under Continuously Variable Conditions	115
<i>Alexandra-Iulia Stinean*, Stefan Preitl*, Radu-Emil Precup*, Claudia-Adina Dragos*, Emil M. Petriu**, Mircea-Bogdan Radac*</i>	
* „Politehnica” University of Timisoara, Timisoara, Romania, ** University of Ottawa, Ottawa, Canada	
Urban Traffic Congestion Prediction Based on Routes Information	121
<i>Dan Pescaru</i>	
„Politehnica” University of Timisoara, Romania	
Performance Enhancement of Galvanometer Scanners Using Extended Control Structures	127
<i>Corina Anca Mnerie*, **, Stefan Preitl*, Virgil-Florin Duma**</i>	
* „Politehnica” University of Timisoara, Romania, ** „Aurel Vlaicu” University of Arad, Romania	
Emulation of a Highway Bottleneck Using Leader-Follower Formation Control	131
<i>A. Chevalier, C. Copot, S. M. Cristescu, C. M. Ionescu, R. De Keyser</i>	
Ghent University, Belgium	
Estimation of Illuminance Sensor Positions and Improvement of Energy Efficiency in the Distributed Control Lighting System	137
<i>Mitsunori Miki, Kenta Yoshida, Yuya Hirano, Hisanori Ikegami</i>	
Doshisha University, Kyoto, Japan	
Distributed Flow Controller for Mobile Ad-Hoc Networks	143
<i>Gheorghe Mülec, Radu VasIU, Flaviu Frigura-Iliasa</i>	
Politehnica University of Timisoara, Romania	
V/f Control Strategy with Constant Power Factor for SPMSM Drives, with Experiments.....	147
<i>Cristina-Elena Coman, Sorin-Cristian Agarlita, Gheorghe-Daniel Andreescu</i>	
„Politehnica” University of Timisoara, Timisoara, Romania	
Model Validation, Simulation and Control for Ammonia Synthesis Column	153
<i>A. Cioloca, R. Both, R. Festila</i>	
Technical University of Cluj Napoca, Romania	
Face Expression Recognition: a Brief Overview of the Last Decade.....	157
<i>Catalin-Daniel Căleanu</i>	
„Politehnica” University from Timisoara, Timisoara, România	
Performance Evaluation of a Face Detection Algorithm Running on General Purpose Operating Systems	163
<i>Emil-Ioan Voisan, Oscar Marginean, Radu-Emil Precup, Florin Dragan, Constantin Purcaru</i>	
„Politehnica” University of Timisoara, Timisoara, Romania	
Face Identification Using Kinect Technology.....	169
<i>Ana-Andreea Nagât, Catalin-Daniel Căleanu</i>	
„Politehnica” University of Timisoara, Timisoara, România	
Image Classification Using Local Binary Pattern Operators for Static Images.....	173
<i>Oana Astrid Vatamanu, Mircea Jivulescu</i>	
University of Medicine and Pharmacy „Victor Babes”, Timisoara, Romania	

A New NIR Camera for Gesture Control of Electronic Devices.....	179
<i>Dan Ionescu*, Viorel Suse*, Cristian Gadea*, Bogdan Solomon*, Bogdan Ionescu**, Shahidul Islam**</i>	
*School of Electrical Engineering and Computer Science University of Ottawa, Ottawa, Canada, **Mgestyk Technologies, Inc. Ottawa, Canada	
A Sublinear Differential Inclusion on Strip-Like Domains	185
<i>Csaba Farkas*, Robert Fullér**, Alexandru Kristály***</i>	
*Babes-Bolyai University, Cluj-Napoca, Romania, **Óbuda University, Budapest, Hungary, ***Babes-Bolyai University, Cluj-Napoca, Romania, and Óbuda University, Budapest, Hungary	
A Stability Approach for Reaction-Diffusion Problems.....	191
<i>Fekete, I., Faragó, I.</i>	
Eötvös Loránd University, Hungary, & MTA-ELTE Numerical Analysis and Large Networks Research Group	
HITS-based Network Algorithm for Evaluating the Professional Skills of Wine Tasters	197
<i>András London, Tibor Csendes</i>	
Hopf Bifurcations in a Mathematical Model of HIV-1 Infection with Delay	201
<i>Olivia Bundau, Adina Juratoni, Adalbert Kovacs</i>	
Politehnica University of Timisoara	
Diagnosis Parameters Used in Treatment Prediction of the Lumbar Spine.....	205
<i>Andrei Diana*, Nemes Dan*, Mirela Toth-Tascau**, Dan Ioan Stoia**</i>	
* University of Medicine and Pharmacy Victor Babes, Timisoara, România, ** Politehnica University of Timisoara, Timisoara, România	
Parameters Influence in Electric Arc Modeling	209
<i>L. Ghiormez, O. Prostean</i>	
Politehnica University of Timisoara, Romania	
Business Process Modeling for Administrative Activities - Analyzing Dynamic Behavior	215
<i>J. Tick*, A. Tick**</i>	
*Óbuda University, Budapest, Hungary, **Budapest Business School, Budapest, Hungary	
Integrated OCOPOMO Toolset for Open Collaboration in Policy Modelling	221
<i>P. Bednar*, P. Smatana**</i>	
* Technical University of Kosice, Kosice, Slovakia, ** Intersoft, a.s., Kosice, Slovakia	
Open Source Plethysmographic Application for Monitoring of Cardiovascular Parameters	227
<i>Norbert Csík</i>	
Kecskemét College, Kecskemét, Hungary	
Voltage Control in a Microgrid Using Demand Response.....	233
<i>Cosmin Koch-Ciobotaru, Radu Boraci, Octavian Prostean, Iosif Szeidert</i>	
„Politehnica” University, Timisoara, Romania	
An Approach on Mathematical Modeling of Photovoltaic Solar Panels.....	239
<i>M. Babescu*, C. Sorandaru*, S. Musuroi*, M. Svoboda*, N. V. Olarescu**</i>	
* Politehnica University of Timisoara, Romania, ** Diehl AKO Stiftung K. G., Wangen, Germany	
Situation-based Feature Definition on Product Behavior Level.....	245
<i>László Horváth and Imre J. Rudas</i>	
Óbuda University, Budapest, Hungary	
A New Trend in Automotive Software: AUTOSAR Concept	251
<i>Catalin-Virgil Briciu*, Ioan Filip*, Franz Heiningner**</i>	
* „Politehnica” University of Timisoara, Romania, ** Continental Automotive Germany, Regensburg, Germany	
Designing Complex Petri Nets using Submodels with Application in Flexible Manufacturing Systems	257
<i>Mihai Popescu, Dan Ungureanu-Anghel, Ioan Filip</i>	
„Politehnica” University of Timisoara, Romania	
LabVIEW Remote Panels and Web Services in Solar Energy Experiment - A Comparative Evaluation	263
<i>P. Bauer*, R. Ionei**</i>	
* Delft University of Technology, The Netherlands, **University „Politehnica” from Timisoara, Romania	

A Model to Estimate the throughput Value for a Transport Network	269
<i>I. M. Haragos, S. Holban, C. Cernazanu-Glavan</i>	
Politehnica University of Timisoara, Romania	
Energy Efficiency in Real-Time Systems: A Brief Overview	275
<i>Cristina S. Stangaciu, Mihai V. Micea, Vladimir I. Cretu</i>	
„Politehnica” University of Timisoara, Romania	
Common-Rail Pressure Estimation using a Neuro-Fuzzy architecture with Local Hammerstein Models	281
<i>Gelu Laurentiu Ioanas *, Toma Leonida Dragomir **</i>	
* Continental Automotive Timisoara, Romania, ** „Politehnica” University of Timisoara, Romania	
Visibility-based Planners for Kinematically Constrained Vehicles	287
<i>Mihai Pomarlan</i>	
Universitatea Politehnica Timisoara	
Computational Analysis of Thematic Blog Data for Sociological Inference Mining	293
<i>V. K. Singh*, P. Waila**, R. Sadat*, R. Piryani*, A. Uddin*</i>	
* South Asian University, New Delhi, India, ** Banaras Hindu University, Varanasi, India	
Cluster Analysis by Exploiting Conditional Independences	299
<i>Tamás Szántai*, Edith Kovács**</i>	
*Budapest University of Technology and Economics, Hungary, **Budapest College of Management, Budapest, Hungary	
Tumor Growth Model Identification and Analysis in Case of C38 Colon Adenocarcinoma and B16 Melanoma.....	303
<i>Johanna Sápi*, Dániel András Drexler**, István Harmati**, Annamária Szeles**, Bernadett Kiss**, Zoltán Sápi***, Levente Kovács*</i>	
*Óbuda University, Budapest, Hungary, **Budapest University of Technology and Economics, Hungary, ***Semmelweis University, Budapest, Hungary	
Cloud-based Clustering of Text Documents Using the GHSOM Algorithm on the GridGain Platform	309
<i>M. Sarnovsky, Z. Ulbrík</i>	
Technical University in Kosice, Slovak Republic	
To Achieve Circuit Robustness by Co-operation of FPAA and Embedded Microcontroller	315
<i>György Györök, Tamás Orosz, Margit Makó, Tamás Treiber</i>	
Óbuda University, Székesfehérvár	
Finding Dispatcher Gadgets for Jump-oriented Programming Code Reuse Attacks.....	321
<i>L. Erdodi</i>	
Óbuda University, Hungary	
Improving Management of Utilities Payment with Web-based Solution.....	327
<i>Serban Popa, Gabriela Ioana Prostean</i>	
„Politehnica” University, Timisoara, România	
Use of Generalized One-sided FCA Approach for Joining of Simple Object-attribute Models.....	331
<i>P. Butka*, J. Pócsova*, J. Pócső</i>	
* Technical University of Kosice, Slovakia, S Palacký University Olomouc, Olomouc, Czech Republic, and Mathematical Institute, Slovak Academy of Sciences, Kosice, Slovakia	
Hybrid Approach for Visualization of Documents Clusters Using GHSOM and Sammon Projection	337
<i>P. Butka, J. Pócsová</i>	
Technical University of Kosice, Kosice, Slovakia	
Evolutionary Optimisation of Classifiers and Classifier Ensembles for Cost-Sensitive Pattern Recognition	343
<i>Gerald Schaefer</i>	
Loughborough University, Loughborough, U.K.	
An Approach to Design of Sliding Mode-based Generalized Predictive Control	347
<i>Darko Mitic*, Miodrag Spasic*, Morten Hovd**, Dragan Antic*</i>	
*University of Nis, Serbia, ** Norwegian University of Science and Technology, Trondheim, Norway	
An Intelligent System Designed for Controlling the Manufacturing Process in a Flexible Manufacturing System	353
<i>A. D. Morosan and F. Sisak</i>	
University „Transilvania”, Brasov, Romania	

Modeling and Simulation of the Automatic Control System of the Residual Water Blunting Process from a Metallurgical Factory.....	359
<i>V. Muresan, M. Abrudean, T. Colosi</i>	
Technical University of Cluj-Napoca, Romania	
Synthesis of an Articulated Ten Bar Mechanism for Building a Walking Robot.....	365
<i>Florina Moldovan, Valer Dolga, Cristian Pop</i>	
University Politehnica of Timisoara, Romania	
Spline Filtering in Accordance to ISO/TS 16610: ANSI C-Code for Engineers	371
<i>Péter Bakucz</i>	
Óbuda University, Budapest, Hungary	
Feasibility of a Solar Swimming Pool in the Western Part of Romania	375
<i>Ioan Luminosu, Aldo De Sabata</i>	
„Politehnica” University of Timisoara, Romania	
High Efficiency Power Converters for Renewable Sources of Energy.....	381
<i>E. Guran</i>	
„Politehnica” University of Timisoara, Romania	
PV Control System Based On Short-Circuit Current	387
<i>O. Gana, C. Vasar, M. Babescu, A. Vartosu</i>	
„Politehnica” University of Timisoara, Romania	
Artificial Intelligence-based TNEP. Part 1: Mathematical Models	391
<i>Dan Cristian, Constantin Barbulescu, Stefan Kilyeni, Oana Pop, Florin Solomonesc</i>	
„Politehnica” University of Timisoara, Romania	
Artificial Intelligence-based TNEP. Part 2: Case Studies	395
<i>Florin Solomonesc, Constantin Barbulescu, Stefan Kilyeni, Oana Pop, Dan Cristian</i>	
„Politehnica” University of Timisoara, Romania	
Process Modeling and Assisted Diagnosis in Spinal Recovery.....	399
<i>Diana Andrei*, Dan V. Poenaru*, Dan Nemes*, Mihaela Vida**, Lacramioara Stoicu-Tivadar**, Norbert Gal**</i>	
* University of Medicine and Pharmacy Victor Babes, Timisoara, România, ** Politehnica University of Timisoara, Timisoara, România	
New Experimental Method for Measuring Power Characteristics of Photovoltaic Cells at Given Light Irradiation.....	405
<i>A. Varga, E. Rácz, P. Kádár</i>	
Óbuda University, Budapest, Hungary	
Fine Tuning with Sigmoid Functions in Robust Fixed Point Transformation.....	411
<i>Krisztián Kósi*, János F. Bitó**, József K. Tar**</i>	
*Óbuda University, Budapest, Hungary, **Óbuda University, Budapest, Hungary	
Intelligent Vehicle Systems in the Light of the Technical Regulations	417
<i>Monika Pogatsnik</i>	
Óbudai Egyetem, Székesfehérvár, Hungary	
An Improved Ensemble Approach for Imbalanced Classification Problems	423
<i>Bartosz Krawczyk*, Gerald Schaefer**</i>	
*Wrocław University of Technology, Wrocław, Poland, **Loughborough University, Loughborough, U.K.	
A Cost-Sensitive Ensemble Classifier for Breast Cancer Classification	427
<i>Bartosz Krawczyk*, Gerald Schaefer**, Michal Wozniak***</i>	
*Wrocław University of Technology, Wrocław, Poland, **Loughborough University, Loughborough, U.K., ***Wrocław University of Technology, Wrocław, Poland	
Wideband Adaptive LMS Beamforming Using QMF Subband Decomposition for Sonar	431
<i>H. Charafeddine, V. Groza</i>	
University of Ottawa, Ottawa, Canada	
Development and Modeling of Different Scenarios for a Smart Distribution Grid	437
<i>L. Mihet-Popa*, **, X. Han*, H. Bindner*, J. Pihl-Andersen^x, J. Mehmedalic^{xx}</i>	
* Technical University of Denmark, Roskilde, Denmark, ** Politehnica University, Timisoara, Romania, ^x SEAS-NVE, Svininge, Denmark, ^{xx} Dansk Energi, Copenhagen, Denmark	

Correlation Investigations between HbA1c and Blood Glucose Indicators on Type 1 Diabetic Hungarian Children	443
<i>T. Ferenci*</i> , <i>A. Körner **</i> , <i>L. Kovács*</i>	
* Óbuda University, Budapest, Hungary, ** Semmelweis University, Budapest, Hungary	
Extracting High-Level User Context from Low-Level Mobile Sensors Data	449
<i>Marius Marcu*</i> , <i>Nadia Ghiata**</i> , <i>Vladimir Cretu*</i>	
**Politehnica" University of Timisoara, Timisoara, Romania, **Intuitive Software, Timisoara, Romania	
Beyond Digital Forensics. A Cloud Computing Perspective over Incident Response and Reporting	455
<i>Alecsandru Patrascu and Victor-Valeriu Patriciu</i>	
Military Technical Academy, Bucharest, Romania	
Context Dependent Maintenance Effort Estimation: Case Study in a Small Software Company	461
<i>Z. Stojanov, D. Dobrilovic, J. Stojanov, V. Jevtic</i>	
University of Novi Sad, Technical faculty „Mihajlo Pupin“, Zrenjanin, Serbia	
Novel Network Selection Algorithm Based on Fuzzy Inference	467
<i>Doru Todinca*</i> , <i>Cosmin Cernazanu-Glavan**</i>	
*University Politehnica of Timisoara, **University Politehnica of Timisoara	
Cloud-based Application Development Platform for Secure, Intelligent, Interlinked and Interactive Infrastructure	473
<i>Dorel Nasui*</i> , <i>Valentin Sgarciu**</i> , <i>Alexandra Cernian**</i>	
* American International Radio, Inc., Illinois, USA, ** University Politehnica of Bucharest, Romania	
OMNeT++ Framework for Efficient Simulation of Vertical Handover Decision Algorithms	477
<i>Doru Todinca, Cosmin Cernazanu-Glavan</i>	
University Politehnica of Timisoara	
Leaky Bucket Model for Autonomic Control of Distributed, Collaborative Systems.....	483
<i>Bogdan Solomon*</i> , <i>Dan Ionescu*</i> , <i>Cristian Gadea*</i> , <i>Stejarel Veres*</i> , <i>Marin Litoiu**</i>	
*NCCT Lab, University of Ottawa, Ottawa, Ontario, Canada, **York University, Toronto, Ontario, Canada	