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- Proceedings of the 12th International Conference on Telecommunications and Informatics (TELE-INFO '13)
- Proceedings of the 12th International Conference on Signal Processing (SIP '13)
- Proceedings of the 12th International Conference on Microelectronics, Nanoelectronics, Optoelectronics (MINO '13)

Baltimore, MD, USA, September 17-19, 2013

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Preface

This year the 12th International Conference on Telecommunications and Informatics (TELE-INFO '13), the 12th International Conference on Signal Processing (SIP '13) and the 12th International Conference on Microelectronics, Nanoelectronics, Optoelectronics (MINO '13) were held in Baltimore, MD, USA, September 17-19, 2013. The conferences provided a platform to discuss telecommunications, informatics, nonlinear signals and systems, signal reconstruction, computed imaging, nanoelectronics, quantum electronics, optoelectronics 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

Plenary Lecture 1: Telecommunications in Cooperative Intelligent Transport Systems <i>Tomas Zelinka</i>	14
Plenary Lecture 2: Image Processing Algorithm for Shape Recognition by Invariant Features <i>Milan Tuba</i>	15
Data Security in ITS Telecommunications Solutions <i>Tomas Zelinka, Michal Jerabek, Zdenek Lokaj</i>	17
Detection of Historical Period in Symbolic Music Data: Revisited Version <i>Michele Della Ventura</i>	24
Adaptive Mobile Gateway Management in Integrated VANET – 3G Wireless Networks <i>V. Revathi, K. Hari Sudha</i>	31
Diameter Cycle of Arbitrary General Graphs <i>Hadeel Ali Al Fares, Mehmet Hakan Karaata</i>	45
Comparative Analysis of Multi-Layer Perceptron and Radial Basis Function for Contents Based Image Retrieval <i>Monis Ahmed Thakur, Syed Sajjad Hussain, Kamran Raza, Manzoor Hashmani</i>	51
Adapting the Ant Colony Optimization Algorithm to the Printed Circuit Board Drilling Problem <i>Taisir Eldos, Aws Kanan, Abdullah Aljumah</i>	58
Evaluating an On-Line Learning Activity <i>Lung-Hsing Kuo, Raie-Kuan Chang, Shang-Ming Su, Wei Tung</i>	64
Addressing Big Data Problems Using Semantics and Natural Language Understanding <i>Emdad Khan</i>	70
Estimation of Algebraic Cryptanalysis Attack Complexity of PRINCE Cipher and PRINCEcore <i>Lucia Lacko-Bartosova</i>	77
Feature-Based Approach to Bridge the Information Technology and Business Gap <i>Fayez Alazemi, Mohammed Alawairdhi</i>	87
Performance Evaluation of Scheduling Algorithms in QoS Classes for Voice Traffic <i>Kamran Raza</i>	93
Cyber Attacks and Cyber Warfares <i>Petr Hruza, Alexander Chlan, Radovan Sousek</i>	100

Risk Management Process in the Field of Cybernetic Security – Mistakes and Solution Approach	108
<i>Jaromir Pitas, Radovan Sousek</i>	
Exhibiting Learning Situation of Students during Stepwise Refinement of Source Codes	113
<i>Wataru Nishimoto, Fumiko Harada, Hiromitsu Shimakawa</i>	
Judgment of Learner Ability from Exercise Sentence Sorting and Corresponding Coding	120
<i>Yoko Itado, Yusuke Kajiwarra, Fumiko Harada, Hiromitsu Shimakawa</i>	
Judging Working Rhythm from Body Movement to Prevent Human Errors	127
<i>Yohei Tontani, Yusuke Kajiwarra, Fumiko Harada, Hiromitsu Shimakawa</i>	
Detecting Decreased Attention as Symptom of Human Errors by EEG	133
<i>Shuji Inada, Yusuke Kajiwarra, Fumiko Harada, Hiromitsu Shimakawa</i>	
Firefly Algorithm for Constrained Optimization Problems	139
<i>Romana Capor-Hrosik, Adis Alihodzic, Milan Tuba, Mirjana Vukovic, Milenko Pikula</i>	
Simulated Annealing with Cyclic Correlation for Symbol Rate Detection	145
<i>Richard Carr, James E. Whitney II</i>	
Linearity and Efficiency Improvement Using Harmonic Suppression Power Combiner in GaN S-band Power Amplifier Design	152
<i>Caroline Waiyaki, Michel A. Reece, Edward Viverios</i>	
ITS Applied to Monitor Collection and Disposal of Seaport Solid Waste	160
<i>Sergio Luiz Pereira, Carla M. Maccagnan Fontana, Caio F. Fontana, Cledson Akio Sakurai</i>	
RFID for Real Time Passenger Monitoring	170
<i>Mauricio Lima Fereira, Claudio Luiz Marte, Jorge E. Leal De Medeiros, Cledson Akio Sakurai, Caio Fernando Fontana</i>	
An Implementation of Web-Based Decision Support System and Satisfaction Survey for Teachers' In-Service Education	176
<i>Hung-Jen Yang, Jui-Chen Yu, Lung-Hsing Kuo, Hsueh-Chih Lin</i>	
Power Line Communication Applied on Intelligent Transportation Systems	182
<i>Cledson Akio Sakurai, Claudio Luiz Marte, Leopoldo Rideki Yoshioka, Caio Fernando Fontana</i>	
Intelligent Transportation Systems with Autonomous Guidance – An Application to the Improvement of Efficiency for Median Capacity Urban Transportation Systems	191
<i>Leopoldo R. Yoshioka, Claudio L. Marte, Caio F. Fontana, Jose R. Cardoso</i>	
Technological Framework for Offshore Terminals	199
<i>Caio Fernando Fontana, Fabio Papa, Cledson Akio Sakurai</i>	

Optical Character Recognition Technology Applied for Truck and Goods Inspection	207
<i>Cledson Akio Sakurai, Claudio Luiz Marte, Leopoldo Rideki Yoshioka, Caio Fernando Fontana</i>	
Telematic Device Development Based on Framework for Embedded Systems	215
<i>Leopoldo R. Yoshioka, Claudio L. Marte, Caio F. Fontana, Marcio C. Oliveira, Edgar T. Yano</i>	
Integration of Wireless Sensor Network to Intelligent Transportation System for Environmental Monitoring	224
<i>Alessandro Santos, Claudio Marte, Leopoldo Yoshioka, Jorge Cintra, Caio Fontana</i>	
Performance Indicators as a Measure of Quality in Highways	232
<i>Claudio L. Marte, Leopoldo R. Yoshioka, Caio F. Fontana</i>	
Intelligent Transportation System for Bus Rapid Transit Corridors (ITS4BRT)	242
<i>Claudio L. Marte, Leopoldo R. Yoshioka, Jorge E. Leal Medeiros, Cledson A. Sakurai, Caio F. Fontana</i>	
Creating a Campus Netflow Model	250
<i>Hung-Jen Yang, Miao-Kuei Ho, Lung-Hsing Kuo, Hsieh-Hua Yang</i>	
Development of a Hybrid-Framework for Complex System Analysis	256
<i>Nii Laye, Onyeka Nwaogu, Leeroy Bronner</i>	
Recommendation for Garments Sales Promotion with Comparison of Multiple Features over Garment Types	270
<i>Takuya Yoshida, Fumiko Harada, Hiromitsu Shimakawa</i>	
Low Power Analog Correlator for Spread Spectrum Time Domain Reflectometry	277
<i>Chirag Sharma</i>	
Controller of Autonomous Airship's Propellers	281
<i>Martin Pospisilik, Pavel Marcanik, Pavel Varacha, Milan Adamek, Petr Neumann</i>	
Set of Equations for Software Low Pass Filter Analysis or Synthesis	287
<i>Varacha Pavel, Pospisilik Martin, Adamek Milan</i>	
Impact of the Threshold Voltage and Transconductance Parameters of NMOS Transistors in NMOS Inverter Performance for Static Conditions of Operation	292
<i>Milaim Zabeli, Nebi Caka, Myzafere Limani, Qamil Kabashi</i>	
Wavefront Topology System and Finite Element Method for Numerical Analysis of Scalar Wave Equation	298
<i>Clayton G. Thomas, Gregory M. Wilkins, Kofi Nyarko, Yacob Astatke</i>	
Haptic Nanomanipulation within Semi-Immersive Environment	304
<i>Kofi Nyarko, Craig Scott, Jumoke Ladeji-Osias</i>	

FPGA Based FIR Filter Using Parallel Pipelined Structure	311
<i>Rajesh Mehra, S. B. L. Sachan</i>	
Similarity and Musical Structures Retrieval in Contemporary Music	316
<i>Michele Della Ventura</i>	
Inter Comparison of Classification Techniques for Vowel Speech Imagery Using EEG Sensors	320
<i>Anaum Riaz, Sana Akhtar, Shanza Iftikhar, Amir Ali Khan, Ahmad Salman</i>	
Real-Time Multi-View Generation System Using Depth Image Information	326
<i>Yang-Keun Ahn, Kwang-Mo Jung</i>	
Implementation of a Word Suggestion Keypad System Utilizing a 3D Space Hand Gesture Recognition	333
<i>Yang-Keun Ahn, Kwang-Mo Jung</i>	
Signal Processing for Music Analysis	340
<i>Poonam Priyadarshini</i>	
iCast: Image Compression Approach Using Segmentation and Total Variation Regularization	345
<i>Ahmad Shahin, Fadi Chakik, Walid Moudani</i>	
Motion Estimation and Inter Prediction Mode Selection in HEVC	351
<i>Ahmad Asghar, Muhammad Atiq, Rai Ammad Khan, Nadeem A. Khan</i>	
An Artificial Neural Network Model for Handwritten Digits Recognition	358
<i>Snezana Zekovich, Milan Tuba</i>	
Bat Algorithm (BA) for Image Thresholding	364
<i>Adis Alihodzic, Milan Tuba</i>	
Image Processing Framework for Shape Recognition by Invariant Features	370
<i>Milan Tuba</i>	
Image Edge Detection with the Scale-Rate as a Measurement of Local Image Complexity	375
<i>Kai Lu, N. E. Mastorakis, X. D. Zhuang</i>	
The Virtual Magnetic Moment for Image Matching with Rotating Transformation	381
<i>Xiaodong Zhuang, N. E. Mastorakis</i>	
Embedded Fingerprint Recognition System	394
<i>M. Kamaraju, P. Anil Kumar, B. Ananda Krishna, B. Rajasekhar</i>	
A Low Cost Demonstration Platform for Reducing Energy Consumption by Regulating Building Controls through VLC	402
<i>Kofi Nyarko, Christian Emiyah</i>	

Successive Co-Channel Interference Cancellation with Blind Channel Estimation	408
<i>Farzad Moazzami, Yacob Astatke, Richard A. Dean</i>	
Performance Evaluation of GMSK Modulation in Multipath Channels	412
<i>Farzad Moazzami, Sibghat Ullah, Yacob Astatke</i>	
Authors Index	415

Plenary Lecture 1

Telecommunications in Cooperative Intelligent Transport Systems



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Faculty of Transportation Sciences
Czech Republic
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Abstract: Intelligent Transport Systems (ITS) solutions offer wide range of telecommunications-based applications concentrated namely on the traffic management, traffic safety improvement or e.g. on environmental impact minimization. Stand-alone vehicle support can improve driver's ability to correctly act in critical situations or improve efficiency of transport process. However, benefits of such support can be magnified if the individual vehicles can suitably exchange data with the other vehicles on the road as well as with the infrastructure systems. Recently emphasis in this area turned ITS to the Cooperative ITS where each equipped vehicle has got ability to communicate with the other equipped vehicles (V2V) as well as with the infrastructure systems (V2I). Cooperative ITS implementations require guaranteed quality mobile data services, low data latency and widely spread roads and highways network coverage. Publically available wireless mobile data services can offer quite reasonable area coverage. However, provided packet service latency use to be above Cooperative ITS requirements and mostly no guaranteed service quality and security is available.

New generation of OFDM based services specifically DSRC 5.9 (Data Short Range communication) designed for the V2V and V2I communication or publically available LTE services open conditions for provisioning of appropriate telecommunications services. Their first implementations prove appearance of the new potential in this area. Our view of this potential will be presented.

Transferred data volumes both in V2V and V2I regimes extremely quickly grow. Step by step vehicles integration in the global networks, however, represents fertile conditions for individual vehicles networks attacks. Hostile attack of vehicle on board data communication network based typically on the CAN (Controlled Area Network) can easily cause fatal consequences. Therefore telecommunications security is more and more understood as the crucial part of the Cooperative ITS telecommunications solutions. Some of our approaches improving available telecommunications security tools will be presented, as well.

Brief Biography of the Speaker: Professor of Informatics at the Czech Technical University (CTU) in Prague, PhD in Experimental Physics at the Czechoslovak Academy of Sciences, Master degree in Cybernetics and Computer Sciences at the CTU in Prague, 2005 - CTU in Prague, Faculty of Transport Sciences (FTS)

Basic and advanced lectures in area of telecommunications sciences, specific telecommunication solutions for the Intelligent Transport Systems (ITS) and cooperative ITS, telecommunications services management etc.,

R&D - specific telecommunications solutions dedicated for the ITS, Electronic Toll Collection (ETC) acting as well as the national representative in ISO/CEN, vehicle On Board Units architecture, security in telecommunications etc.

1993 - 2005 Communications business

New products R&D, business development for products like VSAT data services (EuroTel) or IP/SS7 based international voice networks interconnect within CEEMEA region (Global One (JV of Sprint Int., FT, DT), acting as the external mentor at the of the CTU in Prague, FTS and member of governmental telecommunications liberalization committee

1976 - 1993 Czechoslovak Academy of Sciences, Geophysical Institute

Experimental laboratory and observatory methods in geophysics, studies of the variations and drift of the Earth magnetic field, data communication solutions within international geomagnetic observatory system (INTERMAG), computer modeling of magnetic material structures with on-line laboratory identification, laboratory study of the magnetic properties of rocks,

1972 - 1976 Industrial R&D Automatic control systems for the technological processes - CNC (Computer Numerical Control), Data communications and computer based control in the heavy duty technological processes,

Published above 125 scientific papers, monographs, books and University textbooks in physics, informatics, ITS, transport telematics and telecommunications.

Plenary Lecture 2

Image Processing Algorithm for Shape Recognition by Invariant Features



Professor Milan Tuba
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Abstract: Digital image processing is one of the most used procedures in the wide area of human activities like medicine, manufacturing, science etc. Image processing covers a range of techniques, from elementary pixel based and local signal processing for some desirable image transformations to more complex algorithms for segmentation, recognition and information deduction. This plenary lecture describes an algorithm for shape recognition based on invariant features. After initial processing, that may include noise reduction, processing that emphasizes certain features, initial thresholding and segmentation, the image is ready for shape recognition. However, since the detected shapes can be in various positions and distances which makes template based recognition difficult, invariant features of the shapes are preferred for recognition. Additional problem is that usually such features are not enough for reliable discrimination and additional elements are added to the algorithm to enhance classification. Some elements of the pre-processing as well as classification may be hard optimization problems so optimization metaheuristics, specifically from the swarm intelligence family, are used at these stages.

Brief Biography of the Speaker: Milan Tuba is Professor of Computer Science and Provost for mathematical, natural and technical sciences at Megatrend University of Belgrade. He received B. S. in Mathematics, M. S. in Mathematics, M. S. in Computer Science, M. Ph. in Computer Science, Ph. D. in Computer Science from University of Belgrade and New York University. From 1983 to 1994 he was in the U.S.A. first as a graduate student and teaching and research assistant at Vanderbilt University in Nashville and Courant Institute of Mathematical Sciences, New York University and later as Assistant Professor of Electrical Engineering at Cooper Union Graduate School of Engineering, New York. During that time he was the founder and director of Microprocessor Lab and VLSI Lab, leader of scientific projects and supervisor of many theses. From 1994 he was Assistant Professor of Computer Science and Director of Computer Center at University of Belgrade, from 2001 Associate Professor, Faculty of Mathematics, and from 2004 also a Professor of Computer Science and Dean of the College of Computer Science, Megatrend University Belgrade. He was teaching more than 20 graduate and undergraduate courses, from VLSI Design and Computer Architecture to Computer Networks, Operating Systems, Image Processing, Calculus and Queuing Theory. His research interest includes mathematical, queuing theory and heuristic optimizations applied to computer networks, image processing and combinatorial problems. He is the author or coauthor of more than 150 scientific papers and coeditor or member of the editorial board or scientific committee of number of scientific journals and conferences. Member of the ACM since 1983, IEEE 1984, New York Academy of Sciences 1987, AMS 1995, WSEAS, SIAM, IFNA.

Authors Index

Adamek, M.	281, 287	Jung, K.-M.	326, 333	Reece, M. A.	152
Ahn, Y.-K.	326, 333	Kabashi, Q.	292	Revathi, V.	31
Akhtar, S.	320	Kajiwaru, Y.	120, 127, 133	Riaz, A.	320
Al Fares, H. A.	45	Kamaraju, M.	394	Sachan, S. B. L.	311
Alawairdhi, M.	87	Kanan, A.	58	Sakurai, C. A.	160, 170, 182
Alazemi, F.	87	Karaata, M. H.	45	Sakurai, C. A.	199, 207, 242
Alihodzic, A.	139, 364	Khan, A. A.	320	Salman, A.	320
Aljumah, A.	58	Khan, E.	70	Santos, A.	224
Asghar, A.	351	Khan, N. A.	351	Scott, C.	304
Astatke, Y.	298, 408, 412	Khan, R. A.	351	Shahin, A.	345
Atiq, M.	351	Krishna, B. A.	394	Sharma, C.	277
Bronner, L.	256	Kumar, P. A.	394	Shimakawa, H.	113, 120, 127
Caka, N.	292	Kuo, L.-H.	64, 176, 250	Shimakawa, H.	133, 270
Capor-Hrosik, R.	139	Lacko-Bartosova, L.	77	Sousek, R.	100, 108
Cardoso, J. R.	191	Ladeji-Osias, J.	304	Su, S.-M.	64
Carr, R.	145	Laye, N.	256	Sudha, K. H.	31
Chakik, F.	345	Limani, M.	292	Thakur, M. A.	51
Chang, R.-K.	64	Lin, H.-C.	176	Thomas, C. G.	298
Chlan, A.	100	Lokaj, Z.	17	Tontani, Y.	127
Cintra, J.	224	Lu, K.	375	Tuba, M.	139, 358, 364
De Medeiros, J. E. L.	170, 242	Marcanik, P.	281	Tuba, M.	370
Dean, R. A.	408	Marte, C. L.	170, 182, 191	Tung, W.	64
Della Ventura, M.	24, 316	Marte, C. L.	207, 215, 224	Ullah, S.	412
Eldos, T.	58	Marte, C. L.	232, 242	Varacha, P.	281, 287
Emiyah, C.	402	Mastorakis, N. E.	375, 381	Viverios, E.	152
Fereira, M. L.	170	Mehra, R.	311	Vukovic, M.	139
Fontana, C. F.	160, 170, 182	Moazzami, F.	408, 412	Waiyaki, C.	152
Fontana, C. F.	191, 199, 207	Moudani, W.	345	Whitney II, J. E.	145
Fontana, C. F.	215, 224, 232	Neumann, P.	281	Wilkins, G. M.	298
Fontana, C. F.	242	Nishimoto, W.	113	Yang, H.-H.	250
Fontana, C. M. M.	160	Nwaogu, O.	256	Yang, H.-J.	176, 250
Harada, F.	113, 120, 127	Nyarko, K.	298, 304, 402	Yano, E. T.	215
Harada, F.	133, 270	Oliveira, M. C.	215	Yoshida, T.	270
Hashmani, M.	51	Papa, F.	199	Yoshioka, L. R.	182, 191, 207
Ho, M.-K.	250	Pereira, S. L.	160	Yoshioka, L. R.	215, 224, 232
Hruza, P.	100	Pikula, M.	139	Yoshioka, L. R.	242
Hussain, S. S.	51	Pitas, J.	108	Yu, J.-C.	176
Iftikhar, S.	320	Pospisilik, M.	281, 287	Zabeli, M.	292
Inada, S.	133	Priyadarshini, P.	340	Zekovich, S.	358
Itado, Y.	120	Rajasekhar, B.	394	Zelinka, T.	17
Jerabek, M.	17	Raza, K.	51, 93	Zhuang, X. D.	375, 381