

2011 Proceedings of the 34th International Convention MIPRO

**Opatija, Croatia
23-27 May 2011**

Pages 1-863



**IEEE Catalog Number: CFP1139K-PRT
ISBN: 978-1-4577-0996-8**

MIPRO 2011

34th International Convention on Information and Communication Technology, Electronics and Microelectronics

Microelectronics, Electronics and Electronic Technology

Rare Earth-Activated Glass Ceramics: A Cutting-Edge Photonic System	1
G. Alombert Goget, C. Arfuso Duverger, C. Armellini, S. Berneschi, P. Biljanović, B. Boulard, A. Carpentiero, A. Chiappini, A. Chiasera, P. Feron, M. Ferrari, M. Ivanda, M. Mazzola, L. Minati, E. Moser, G. Nunzi Conti, S. Pelli, D. Ristić, G.C. Righini, G. Speranza, S. Varas	
Silicon Microstructures: Fabrication and Application	7
S. Amon, D. Vrtačnik, D. Resnik, M. Možek, U. Aljančič, B. Pečar	
Highly Exfoliated Graphite Fluoride as a Precursor for Graphene Fluoride Dispersions and Films	17
V.E. Fedorov, E.D. Grayfer, V.G. Makotchenko, A.S. Nazarov, H.-J. Shin, J.-Y. Choi	
Synthesis of Molecular Dodecanuclear Carbon-Centered Rhenium Cluster Re₁₂CS₁₇ and its Conducting Properties	19
V.E. Fedorov, S.P. Gabuda, S.G. Kozlova, I.M. Gayfulin, Y.V. Mironov, M.R. Rizhikov, N.F. Uvarov	
Formation of Iron Oxides by Surface Oxidation of Iron Plate	21
M. Marciuš, M. Ristić, M. Ivanda, S. Musić	
Low Temperature Deposition of SiN_x Thin Films by the LPCVD Method	23
Z. Tijanić, D. Ristić, M. Ivanda, I. Bogdanović-Raković, M. Marciuš, M. Ristić, O. Gamulin, S. Musić, K. Furić, A. Chiasera, M. Ferrari, G.C. Righini	
Thermal Decomposition of Silicon-Rich Oxides Deposited by the LPCVD Method	25
D. Ristić, M. Ivanda, K. Furić, A. Chiasera, E. Moser, M. Ferrari	
Nanoscale Multilayers as Optical Elements for X-Ray Photolithography	27
N. Radić, K. Salamon, P. Dubček, O. Milat, M. Jerčinović, G. Dražić, S. Bernstorff	
Micro and Nano Structure of Electrochemically Etched Silicon Epitaxial Wafers	31
O. Gamulin, M. Balarin, M. Ivanda, M. Kosović, V. Đerek, L. Mikac, K. Serec, K. Furić, D. Krilov	
Structural and Electronic Properties of Heavily Phosphorous Doped Polycrystalline Silicon Thin Films	33
S. Žonja, M. Ivanda, M. Očko, T. Suligoj, M. Koričić, P. Biljanović	

Impact of the Collector Region Fabrication on Electrical Characteristics of HCBT Structures in 180 nm BiCMOS Technology	39
M. Koričić, T. Suligoj, H. Mochizuki, S. Morita, K. Shinomura, H. Imai	
Optimization of the Perimeter Doping of Ultrashallow p⁺-n⁻-n⁺ Photodiodes	44
T. Knežević, T. Suligoj, A. Šakić, L.K. Nanver	
Physics-Based Modeling of Hole Mobility in Ultrathin-Body Silicon-on-Insulator MOSFETs	49
M. Poljak, V. Jovanović, T. Suligoj	
Filter-Less Vertical Integrated RGB Color Sensor for Light Monitoring	55
A. Polzer, W. Gaberl, H. Zimmermann	
An Optical Signal Processing Device for White-Light Interferometry, Based on CPLD	60
Ž. Matjašec, D. Đonlagić	
Quaternary BiCMOS Logic Circuits with High-Impedance Output State	65
Z. Bundalo, D. Bundalo, F. Softić, M. Kostadinović	
Determination of γ and f_{co} for g_m/I_D Based CMOS Circuit Design	71
J. Ou	
A 10-b Fully Differential CMOS SAR ADC for Wireless Sensor Networks	76
B. Mrković, M. Ašenbrener	
Switched Capacitor Based Ring Modulator Using Differential Voltage Current Conveyor	82
G.V. George, J. Unnikrishnan, M.R. Baiju	
Optimized 2nd- and 4th- Order HP Filter	87
N. Stojković, G. Tovilović, S. Vlahinić	
Power Consumption, Noise and Bode Diagram Measurement of Active Filters	92
D. Jurišić, N. Mijat, M. Ranilović	
Oscillation Based Analog Testing - A Case Study	96
M. Milić, M. Andrejević Stošović, V. Litovski	
A 2.5 GHz CMOS Standard-Cell Decimation Filter for Mobile Communication	102
M. Ley, O. Melnychenko	
Movement Detection Based on Filter with Symmetric Impulse Response	108
M. Jordanić, G. Molnar, R. Magjarević	
Quadrature Coupler and Power Divider Circuit-EM co-simulation	113
T. Marković, R. Blečić, A. Barić	
Application of Open-Source MEEP Software to Terahertz Waveguide Problems	118
J.A. Higgins, F. Kernan, B. Pejčinović	
Embedded System Design with Maintenance Consideration	124
X. Meng, B. Thörnberg, N. Lawal	

Supercapacitors in Power Converter DC Link T. Čihak, Ž. Jakopović	130
Matlab/GUI Interface for Simulation of Power Electronic Converters R. Višnić, V. Šunde, I. Mrčela	136
Temperature Control of Methanol Fuel Microreactor for Hydrogen Production D. Peruško, M. Možek, B. Pečar, U. Aljančič, D. Resnik, D. Vrtačnik, S. Amon	141
Automated Closed Loop Controller of Inspired Oxygen System for Improved Mechanical Ventilation in Newborns A. Badnjević, E. Beganović, V. Gvozdenović, G. Šehić	145
MasliNET: A Wireless Sensor Network Based Environmental Monitoring System V. Jeličić, T. Ražov, D. Oletić, M. Kuri, V. Bilas	150
Analysis of Thermoelastic Damping Effects on Flexural Mode Simple Beam Resonators R. Resmi, M.R. Baiju	156
 Grid and Visualization Systems	
A New Parallel Algorithm for Simulation of Spin-Glass in External fields A.S. Gevorkyan, H. Abajyan, H.S. Sukiasyan	162
High-Availability Using Open Source Software L. Perkov, N.Pavković, J. Petrović	167
Inside of Composite Web Service Development J. Matković, K. Fertalj	171
Understanding in Distributed Social-Administrative Network Systems T. Vámos, M. Héder	180
Parallel Computing in Application to Global Optimization Problem Solving A.A. Eroftiev, N.E. Timofeeva, A.N. Savin	185
Use Case Induced Relaxed Transactional Memory Consistency Models T. Schmitt, N. Kämmer, P.Schmidt, P. Schulthess	191
Transaction based device driver development A. Weggerle, C. Himpel, T. Schmitt, P. Schulthess	195
Rainbow OS: A Distributed STM for In-Memory Data Clusters T. Schmitt, N. Kämmer, P. Schmidt, A. Weggerle, P. Gerhold, P. Schulthess	200
Evaluating Open-Source Cloud Computing Solutions I. Voras, B. Mihaljević, M. Orlić, M. Pletikosa, M. Žagar, T. Pavić, K. Zimmer, I. Čavrak, V. Paunović, I. Bosnić, S. Tomić	209
Visualization of the Mining Models on a Data Mining and Integration Platform I. Janciak, M. Lenart, P. Brezany, L. Novakova, O. Habala	215

Requirements of an e-science Infrastructure Interoperability Reference Model M. Riedel , A. Streit, D. Kranzlmüller, D. Mallmann, T. Lippert	221
Video Surveillance Systems with Optical Correlator E. Ovseník, J. Turán, A. Kažimírová Kolesárová	227
SNMP Based Grid Infrastructure Monitoring System M. Savić S. Gajin, M. Božić	231
Multidisciplinary Collaboration and ICT Services for People with Complex Communication Needs Z. Stančić, J. Frey Škrinjar, M. Ljubešić, Ž. Car	236
A Novel Tool/Method for Visualization of Orientations of Side Chains Relative to the Protein's Main Chain V. Bojović, I. Sović , A. Bačić, B. Lučić, K. Skala	242
Visualization of Multidimensional Data on distributed mobile devices using interactive video streaming techniques M. Pańka, M. Chlebiej, K. Benedyczak, P. Bała	246
Heat Source Parameter Estimation from Scanned 3D Thermal Models I. Sović, T. Lipić, L. Gjenero, I. Grubišić, K. Skala	252
Applications of Wireless Sensors in Medicine H. Furtado, R. Trobec	257
A Telemedicine Application: ECG Data from Wireless Body Sensors on a Smartphone A. Rashkovska, I. Tomašić, R. Trobec	262
Using Eigenanalysis to Classify Proteins and Protein Motifs Ž. Jeričević	266
Active 3D Scanning Based 3D Thermography System and Medical Applications I. Grubišić, L. Gjenero, T. Lipić, I. Sović, T. Skala	269
Implementation Framework for Artificial Neural Networks on FPGA P. Škoda, T. Lipić, Á. Srp, B. Medvedev Rogina, K. Skala, F. Vajda	274
Vital Fitness and Health Telemonitoring of Elderly People N. Kiss, G. Patai, P. Hanák, T. Lipic, P. Skoda, L. Gjenero, A. Dubravic, I. Michieli	279
RFID and Sensors Enabled In-Home Elderly Care A. Mateska, M. Pavloski, L. Gavrilovska	285
Biomedical Image Processing with GPGPU Using CUDA A. Reményi, I. Bándi, G. Valcz, P. Bogdanov, M. Kozlovsky	291
Telehealth: A Myth or Reality? R. Trobec, U. Stanić	295
Distributed System for Remote Wave Data Collection and Visualization as a Part of Operational Oceanography in Croatia G. Strinić, S. Čupić, N. Domijan, N. Leder , H. Mihanović	301

Tide Gauge Network of the Hydrographic Institute of the Republic of Croatia S. Čupić, G. Strinić, H. Mihanović, N. Domijan,	305
Limit Kriging in Finite Element Environmental Modeling I. Kožar, D. Lozzi-Kožar, Ž. Jeričević	308
An analysis of the Adriatic Storm Surge of 1 December 2008 I. Međugorac, M. Pasarić, M. Orlić	312
Operational and Research Applications in the Meteorological and Hydrological Service of Croatia B. Ivančan-Picek, K. Horvath, S. Ivatek-Šahdan, M. Tudor, A. Bajić, I. Stiperski, A. Stanešić	315
Pseudospectral Picture of the Seismic Algorithm for Surface Multiple Attenuation Z. Drmač, L. Grubišić, Ž. Jeričević	320
Weather Prediction Over Caucasus Region Using WRF-ARW Model T. Davitashvili, R. Kvatadze, N. Kutaladze	326
Relief Mapping for Urban and Natural Enviroments Rendering D. Janković, Ž. Mihajlović	331
Virtual Geographical Space Visualization based on a High-Performance Graphics Cluster C.M. Mocan, T. Stefanut, D. Gorgan	336
 Telecommunications and Information	
An Insight into Knowledge Transfer in Research and Development Centers within ICT Industry S. Krajinović	342
Customer Experience Management M. Poldrugač, M. Komadina	346
Business Planning by Implementation of the Broadband Internet Access to the Rural Areas of the RH I. Marijašević, D. Žagar	351
Using UML 2 Activity Diagram for Visual Business Management Modeling D. Markulin, K. Musa, M. Kunštić	356
Application Cluster Environment for Business Processes M. Čavka, M. Mikić, D. Šarić	362
Market Analysis in Fixed Telephony and Analysis Results by Porter's Model M. Martinac, S. Žužul	368
Ericsson IS System Landscape for Supporting Sales and Procurement Process R. Penco, B. Plejić, R. Škorić	374

Basic Principles of Machine-to-Machine Communication and its Impact on Telecommunications Industry	380
V. Galetić, I. Bojić, M. Kušek, G. Ježić, S. Dešić, D. Huljenić	
Nokia Siemens Networks Machine2Machine Solution	386
A. Metnitzer	
Network Infrastructure Discovery - Streamlining Complex Developments with Parametric Approach in MTOSI Compliant Fashion	389
D. Medved, H. Tutman, Z. Unković, A.-W. Jagau	
Introducing Advanced Service Catalog Capabilities in Croatian Telekom NGOSS Infrastructure	395
D. Medved, H. Tutman, D. Periškić, A.-W. Jagau	
Challenges and Achievements During Integration of IMS Platform into OSS/NMS Environment	401
S. Nestić, N. Pekić, M. Tutman	
Increasing Availability of Broadband Access Over Copper Network Infrastructure	407
V. Švedek, G. Jurin, M. Weber	
voopIX: Building Free VoIP Infrastructure for Academic, Science and Educational Institutions in Croatia Entirely Based on Open Source Software	413
B. Radojević, Đ. Milić	
Analysis of Issues with Load Balancing Algorithms in Hosted (Cloud) Environments	416
B. Radojević, M. Žagar	
The Future of Railway Communications	421
J. Garstenuer, S. Počuča	
Development of Optical Backbone Railway Infrastructure	424
D. Bilajbegović, M. Grubelić	
Integrated View on Telecommunication Network Status	429
O. Jukić, M. Kunštić	
Near-Optimal Flow in Wireless Sensor Networks	434
S. Homayounnejad, A. Bagheri, M. Dehghan	
AAA: Asynchronous Adaptive Algorithm to Solve Max-Flow Problem in Wireless Sensor Networks	440
S. Homayounnejad, A. Bagheri, A. Ghebleh	
Physical-Layer Attacks in All-Optical WDM Networks	446
M. Furdek, N. Skorin-Kapov	
A Branch and Bound Algorithm for the Sequential Ordering Problem	452
M. Karan, N. Skorin-Kapov	
Use of Web Application Frameworks in the Development of Small Applications	458
I. Petrijevcānin Vuksanović, B. Sudarević	

Unified Health Application G. Kopčak, I. Čubić, M. Ravić	463
Simulation Application for Sleep-Awake Probabilistic Forwarding Protocol for Smart Dust Environments K. Hajdarević, E. Kurtanović	468
Integrating Wireless Systems Into Process Industry M. Kostadinović, Z. Bundalo, D. Bundalo, F. Softić	472
Service Delivery Platforms (SDP) for Telco applications S. Počuča	478
The Evolution to Subscriber Centricity M. Bornschlegl	483
Network Performance Measurement: Accuracy in Highspeed Provider Networks T. Jones	489
Interconnected Telecommunication Networks: Analysis of Some Performances A. Kostić-Ljubisavljević, S. Mladenović, V. Radonjić, V. Aćimović-Raspopović	494
Performance Comparison of Different TCP Versions Designed for Networks with High Speeds and Over Long Distances A. Ceco, N. Nosović	500
Cinder - a Log Processing System M. Mikić, M. Čavka, B. Pran	505
New Technologies for Improvement of Characteristics in DSL Access Networks P. Cota, T. Pavičić	511
A Comparison of Traditional Forecasting Methods for Short-Term and Long-Term Prediction of Faults in the Broadband Networks Ž. Deljac, M. Kunštić, B. Spahija	517
An Efficient Algorithm to Maximize the Network Lifetime for Target Coverage A. Fotouhi, M. Razzazi	523
Analyses and Optimisation of ADSL Lines Using Ericsson CPM System A. Kerner, M. Cotiga, P. Cota	528
A Context Aware, Mobile System Providing Memory Support for Ageing People M. Migliardi, M. Gaudina	535
Redundancy and Coverage Detection in Wireless Sensor Networks in the Presence of Obstacles A. Fotouhi, M. Razzazi	541
Selection Procedure for Modulation Using Simulation in Matlab D. Mitić, A. Lebl	547

Compare the Results Obtained by Numerical Computation and Application of Approximate Formulas for the Symmetric Capacity of Rayleigh Fading Channel for BPSK and QPSK Modulation	553
D. Mitić, A. Lebl	
A Smart Approach for Removing Audio Distortion of Post-Processing Systems	559
M. Gajić, J. Kovačević, M. Temerinac	
Reception of Digital Broadcast Services Using Mobile Devices	563
J. Maračić, B. Zovko-Cihlar	
From Archetypes Based Domain Model via Requirements to Software: Exemplified by LIMS Software Factory	570
G. Piho, J. Tepandi, M. Roost, M. Parman, V. Puusep	
Test Driven Domain Modeling	576
G. Piho, M. Parman, V. Puusep, J. Tepandi, M. Roost	
Software Component Quality-Finite Mixture Component Model Using Weibull and Other Mathematical Distributions	582
L. Hribar	
Implementation of Software Competence Development Process	587
D. Duka, L. Hribar	
Reporting and Removing Faults in Telecommunication Software	593
L. Hribar, D. Duka	
eCall: Automatic Notification of a Road Traffic Accident	600
R. Filjar, K. Vidović, P. Britvić, M. Rimac	
Real-time Urban Transportation Service Tracking and Monitoring	606
K. Hausknecht, D. Šimunić, S. Afridi	
Optimization of Coverage and Capacity of Self-Organizing Network in LTE	612
I. Luketić, D. Šimunić, T. Blajić	
Optimization of Smart Grids with Wireless Communications Systems	618
K. Hausknecht, D. Šimunić, I. Pavić	
Heterogeneous Wireless/Power Line Communication Networks for Energy Metering and Control	624
M. Chiani, A. Giorgetti, S. Minardi, E. Paolini, M. Taormina	
Pervasive Wireless CDN for Greening Video Streaming to Mobile Devices	629
D. Boscovic, F. Vakil, S. Dautović, M. Tošić	
A GIS Application for Water Management in Remote Communities	637
A.I. Kokkinaki, A. Antoniou, S. Louca	
Green Footprint of Cognitive Management Technologies for Future Networks	645
P. Demestichas, K. Tsagkaris, G. Athanasiou, Y. Kritikou	
Holistic Energy Management Solutions for Communication Service Providers	650
O.V. Kiszczuk, G. von Dziembowski	

Analysis of Power Consumption in OFDM Systems I. Orović, N. Žarić, S. Stanković, I. Radusinović, Z. Veljović	653
EMF Hot-Spot Creation Avoidance in Office and Home-Office Environments K. Hajdarević, C. Pattinson	658
 Computers in Tehnical Systems 	
Reduced Order Modeling for Unmanned Aerial Vehicle J. Gadewadikar, O. Kuljaca, K. Horvat	664
Network Structure for Low Level Control Systems Designed to Prevent Cyber Attacks O. Kuljaca, J. Gadewadikar, K. Horvat	668
Automated Photovoltaic Panel Positioning Device for Solar Radiation Monitoring T. Tomiša, Z. Šimić, D. Dedeić	673
Improving Behavior of Automotive Systems with Collected Runtime Data Visualization S. Kezić, M. Žagar, D. Ilić	679
Guidance of a Small-Scale Overactuated Marine Platform - Experimental Results N. Mišković, Z. Triska, Đ. Nađ, Z. Vukić	684
Cross-Context Web Browser Communication with Unified Communication Models and Context Types I. Žužak, M. Ivanković, I. Budiselić	690
Interconnectable Gadgets and Web Services Usage in Supervisory Control of Unmanned Underwater Vehicles T. Lugarić, A. Vasiljević, S. Srbljić	696
Consumer-Oriented Programming Application for Statistical Processing Z. Pavlić, T. Lugarić, S. Srbljić	702
An Improved CamShift Algorithm Using Stereo Vision for Object Tracking J. Kovačević, S. Jurić-Kavelj, I. Petrović	707
Embedded Computer Control System for Service Mobile Robots M. Gojić, M. Brezak, I. Petrović	711
A Visibility Graph Based Method for Path Planning in Dynamic Environments H. Kaluđer, M. Brezak, I. Petrović	717
Computer Cluster Scheduling Algorithm Based on Time Bounded Dynamic Programming I. Grudenić, N. Bogunović	722
Comparison of Acoustic Imaging Methods and their Variations with Sequential Implementations I. Aleksi, Ž. Hocenski, D. Kraus	727
Meteorological and Weather Forecast Data-Based Prediction of Electrical Power Delivery of a Photovoltaic Panel in a Stochastic Framework M. Vašak, M. Gulin, J. Čeović, D. Nikolić, T. Pavlović, N. Perić	733

Model Predictive Control of Heating and Cooling in a Family House M. Vašak, A. Starčić, A. Martinčević	739
Identification of a Discrete-Time Piecewise Affine Model of a Pitch-Controlled Wind Turbine M. Vašak, N. Hure, N. Perić	744
Fault Detection Methods: A Literature Survey D. Miljković	750
Fault Detection for Aircraft Piston Engine by Exhaust Noise Analysis D. Miljković	756
Automated Modeling of Custom Processors for DCT Algorithm D. Ivošević, V. Struk	762
Integration of Measurement Results Using the Industrial Computer Networks V. Tasić, D.R. Milivojević, M. Pavlov, V. Despotović, D. Brodić	768
Possibilities of Algebraic Modelling and Solving of Power System Optimization Problems N. Demirović, S. Tešnjak	771
Harmonic Content Elimination J. Pašić	777
Fast Detection of Energy Flow Direction J. Pašić	781
Calculation of Distance to Fault and Transition Resistance on the Fault Place on Electric Power System Lines J. Pašić	785
Design and Implementation of Hardware-Software Module for Testing Real-Time Systems I.V. Druzhinin, A.A. Mynzhasova, E.A. Sinelnikov	788
Automated Testing of Distributed Real-Time Systems Regarding Configuration Information S. Jovalekić, B. Rist	792
Plug-In Board for National Instruments ELVIS II Platform that Allows to Design Brushless Direct Current Motor Control Systems E.V. Komarov, A.N. Savin	797
Maximum Torque High Efficiency Microprocessor Based Control of Induction Motors A.V. Krumov	800
Optical Flow Field Segmentation in an Omnidirectional Camera Image Based on Known Camera Motion H. Šamija, I. Marković, I. Petrović	805
Efficiency of Lossless Data Compression M. Konecki, R. Kudelić, A. Lovrenčić	810

An Automated Web-Based System for Air Quality Monitoring S. Davila, I. Bešlić, J. Pečar-Ilić, K. Šega	816
Making Programming Accessible to the Blinds M. Konecki, A. Lovrenčić, R. Kudelić	820
Framework for Embedded System Development T. Novosel, L. Jelenković	825
Modeling Facility Protection for Numerical Vulnerability Assessment D. Čakija, Ž. Ban	829
TP Transformation Based Control of Rotary Pendulum S. Ileš, J. Matuško, F. Kolonić	833
The Experience of Implementing a Hybrid Broadcast Broadband Television on Network Enabled TV Set Ž. Lukač, M. Radonjić, B. Veris, T. Maruna, N. Kuzmanović	840
Characteristics of Modern Industrial Control Systems S. Ibrahimkadić, S. Kreso	845
 Intelligent Systems	
A Knowledge Visualization Model for Evaluating Internet News Agencies on Conflicting News I.T. Medeni, S. Peker, M.E. Uyar	850
The Intellectual System for Face Recognition: Algorithms and Results S. Tulyakov, R. Sadykhov	854
Analysis of Radiograph and Detection of Cardiomegaly M. Ilovar, L. Šajn	859
Managing Moving Objects in the Context of Spatio-Temporal Data Streams E. Mešković, Z. Galić, M. Baranović	864
Computer Vision System for the Chess Game Reconstruction M. Piškorec, N. Antulov-Fantulin, J. Čurić, O. Dragoljević, V. Ivanac, L. Karlović	870
Using GPS Positioning to Recover a Comprehensive Road Appearance Mosaic I. Sikirić, A. Majić, S. Šegvić	877
Preprocessing of Binary Document Images by Morphological Operators D. Brodić, D.R. Milivojević, V. Tasić	883
Automated Form Processing System Based on Sobel Operator M. Karić, G. Martinović, Ž. Hocenski	888
Preliminary Experiments in Multi-View Video Stitching S. Šegvić, M. Ševrović, G. Kos, V. Stanisavljević, I. Dadić	892
Fuzzy Clustering in Geospatial Analysis A. Karabegović, Z. Avdagić, M. Ponjavić	897

Detecting and Recognizing Centerlines as Parabolic Sections of the Steerable Filter Response	903
P. Palašek, P. Bosilj, S. Šegvić	
Object Class Recognition Using Range of Multiple Computer Vision Algorithms	909
V. Shehu, A. Dika	
Development of Croatian Unit Selection and Statistical Parametric Speech Synthesis	913
M. Pobar, I. Ipšić	
Memetic Grammatical Inference Approach for DSL Embedding	919
D. Hrnčić, M. Mernik	
Parametric Design of Rocket Engine Turbopumps with Genetic Algorithms	925
R. Burian, A. Hetem, J. Miraglia, C. Augusto Caetano	
Numerical Simulation of Liquid Propellant Rocket Engines	930
A. Hetem, J. Miraglia, R. Burian, C. Augusto Caetano	
Software Tool for Automated Analysis of Conceptual Data Model	935
Z. Kazi, B. Radulović	
Information Modeling of Business Processes in X-Ray Fluorescent Analysis	941
O.P. Vorobyeva, E.A. Cherkashin, S.A. Ipatov, V.V. Paramonov	
Automated Identification Mechanism for Clients in Robust Information Systems	945
S. Cerepnalkovska Dukovska	
Model Reference Fuzzy-Neuro Text Matching System	948
J. Osmić, E. Skejić, Z. Sehić	
Specifying Parallel Composition of Matchers for Ontology Matching by Using Genetic Algorithm	953
M. Gulić, B. Vrdoljak	
Artificial Intelligence in Aesthetic and Ergonomic Product Design Process	959
J. Kaljun, B. Dolšak	
Theorem Proving Software, Based on Method of Positively-Constructed Formulae	965
A.A. Larionov, E.A. Cherkashin, A.V. Davydov	
Python Implementation of Source Code Generator Based on Dynamic Frames	969
D. Radošević, I. Magdalenić	
Busy Flag Just Got Better: Application of Lighting Effects in Mediating Social Interruptions	975
M. Bjelica, B. Mrazovac, I. Papp, N. Teslić	
Knowledge Management in Tourism: The Importance of Tacit Knowledge and the Problem of its Elicitation and Sharing	981
J. Musulin, J. Gamulin, I.H. Crnojevac	
AI Planning for Organizing Personal Schedules	988
P. Milosev, N. Ackovska	

Supporting Automated Grading of Formative Multiple Choice Exams by Introducing Student Identifier Matrices	993
M. Čupić, K. Brkić, T. Hrkać, Z. Kalafatić	
 Computers in Education	
Collaborative Knowledge Bulding: Ethnographic Insights from Geni.com	999
P. Wilson	
History Lessons- Can We Make Them Interesting?	1008
J. Sunde, N. Urlič, L. Urlič, M. Borić	
University Education in Robotics and Advanced Automation: A Certified Lectures Perspective and Strategy for Development of Didactical and Technical Course Model	1016
D. Lukač, W. Schollenberger	
Non-Formal Learning and Competitiveness	1022
H. Bezić, D. Kažović	
Information Technology in Primary and Secondary School	1027
J. Đurić, V. Jelkić	
Use of IT Technologies in Informal Teaching	1033
N. Mašić, E. Mašić	
Methodology Used for Qualification Standard and Curriculum; "Technician for Computing" Development Based on the Learning Outcomes Concept and Labor Market Analysis	1039
M. Balković, M. Korać	
Main Prerequisites for Introduction of ICT in Visual Arts Education in Croatian Primary Schools	1045
Z. Prohaska	
SP - A Computer Program for Fundamental Analysis of Stocks	1051
Z. Prohaska, I. Uroda, S. Suljić	
Serious Computer Games as Instructional Technology	1056
M. Zapušek, Š. Cerar, J. Rugelj	
The Analysis of Enrollment in Polytechnic of Zagreb in Academic Year 2010/2011	1059
M. Orlič, M. Marinović	
Achievements Evaluation of Disciples in the System of Electronic Learning	1064
D. Glušac, I. Trasić, D. Karuović, A. Radić	
Computers in Phonological Awareness Instruction in the Pre-School Classroom: A Case for Turkish	1071
G. Kartal	
Assimilation of Wireless Sensor Networks and Remote Microcomputer Laboratories	1075
D. Fudurić, D. Cmok, P. Knežević, S. Mrvoš	

The Integration of Students' Artifacts Created with Web 2.0 Tools into Moodle, Blog, Wiki, e-Portfolio, and Ning	1084
G. Bubaš, A. Ćorić, T. Orehovački	
Students and Privacy in the Networked Environment	1090
M. Banek Zorica, I. Ogrizek Biskupić, T. Ivanjko, S. Špiranec	
Improving Introductory Programming with Scratch?	1095
B. Kaučič, T. Asič	
Computer-Supported Laboratory as an Effective Educational Tool	1101
A. Špernjak	
Utilization of Thermal Systems at Power Electrical Engineering	1105
H. Kuchynkova, V. Hajek	
Gifted Students - a Burden or Challenge for a Teacher	1110
F. Vrbančič, J. Haložan	
Educational Process Optimization in the Programme for Computing Technician	1114
F. Vrbančič	
Understanding Signal Theory Through Play	1117
E. Sokić, M. Ahić-Djokić, A. Salihbegović	
Learning CAD by LMS and Cloud Computing Implementation	1123
S. Lukarić, A. Korin-Lustig	
Developing Dynamic Web Applications - "Exam Scheduler"	1127
S. Maržić, I. Jugo, M. Radovan	
(Social) Networking is Coming- Are We Ready?	1133
H. Jaakkola, P. Linna, J. Henno, J. Mäkelä	
Software Engineering Companies' Multicultural Education	1140
P. Linna, E. Karttunen, H. Jaakkola	
Intra-Organizational Education in Cultural Differences in Software Services	1146
E. Karttunen, H. Jaakkola, P. Linna	
Learning at Distance in Global Software Development	1152
V. Wesslin, P. Linna, H. Jaakkola	
A Game Programming Course	1156
J. Henno, H. Jaakkola, P. Linna	
Software Simulation as Educational Tool	1160
J. Lasić-Lazić, K. Pavlina, A. Pongrac	
Modelibra Education	1163
Dz. Ridjanovic	
Building an Integrated Platform for Teaching and learning of Digital Logic	1168
M. Čupić	

The Role of University in Regional Development- Case Study M. Lamza–Maronić, Z. Barišić, J. Glavaš	1174
Students Perspective of the Embedded Engineering Learning Platform - a Case Study in Digital Design I. Kaštelan, M. Katona, D. Majstorović, E. Neborovski	1178
The Measurement of Foreign Indebtedness in the Selected Transition Countries (Multivariate and Multicriterial Analysis) Using SPSS and Decision Lab Softwares M. Pečarić, S. Pivac, M. Jurun	1183
Enhancing Laboratory Teaching in Higher Education Environment Using Web-Based Formative Colloquiums J. Gamulin, O. Gamulin	1189
Formation of Teaching content in e-Learning R. Marinković, S. Tomaš	1195
Use of ICT by Students at the Faculty of Humanities and Social Sciences in Zagreb, Croatia R. Vrana	1201
eLearning: A Social Software in Higher Education Learning I. Hitrec, I. Pogarčić, S. Šuman	1207
Personal Knowledge Management: the Implication of Web 2.0 Services on Learning Process Ž. Požgaj, V. Bosilj Vukšić	1213
Validation and Verification without Normalization D. Ratkliff, M. Pavlić, V. Jovanović	1218
Using Quantitative Methods for a Student Study Activity Analysis in a Virtual Learning Environment Concerning Different Students' Backgrounds T. Lauc, P. Bago, S. Kišiček	1222
The Role of e-Learning in LIS Education: Students' Evaluations M. Tot, D. Živković	1226
Data Modeling Patterns –Taxonomy V. Jovanović, M. Pavlić	1230
Analysis of Programming Code Similarity by Using Intermediate Language V. Mateljan, V. Juričić, K. Peter	1235
The Importance of Different Types of Review of Physics Materials in Electronic Exercise Book R. Repnik, V. Grubelnik, M. Krašna	1241
The Perception of Digital Security Among Digital Natives M. Krašna, T. Bratina	1245
ICT Supported Education - One of Steps to Achieving European Knowledge Economy D. Paľová	1251

Creation of Projects as a Modern Education Tool L. Révészová	1257
The Role of Computer Knowledge in Creation of Socially Acceptable Behaviour in Education Lj. Zekanović-Korona, V. Bakija, G. Vidić	1262
Open Source Software in Education N. Lazić, M. Banek Zorica, J. Klindžić	1267
Webinars in Higher Education S. Mohorovičić	1271
Awakening Curiosity - Hardware Education for Computer Science Students S. Ristov, M. Stolikj, N. Ackovska	1275
Education System as an Adaptive System of Control with Reference Model I. Mioković, A. Akšamović, M. Hebibović	1281
Contemporary Methodological Approach to Teaching of Mathematics R. Vukobratović, Đ. Takači	1287
Establishing Order of Chemical Reaction Using Mathematical Modelling I. Milanović, V. Raičević	1291
Identity in the Cyberspace with Special Emphasis on University Education T. Marušić, D. Radosav, V. Radosav	1296
e-Learning Environment Compared to Traditional Classroom S. Babić	1299
Learning Objects for C++ R. Pinter, D. Radosav, S. Maravić Čisar	1305
Design and Code Generation of Dynamic Web Applications V. Okanović, T. Mateljan	1310
Designing a New Web Application Framework V. Okanović, T. Mateljan	1315
Intuitive Sound Perception in Media Technician and Web Designer Courses K. Bedi, N. Žajdela Hrustek, A. Ćorić	1319
Teaching vs. 3D Gaming in Secondary School K. Bedi, N. Žajdela Hrustek, A. Ćorić	1325
Introductory Programming Languages in Higher Education D. Krpan, I. Bilobrk	1331
e-Book for IT Experts Learning English D. Pešut, D. Živković	1337
Using Moodle to Automatically Grade Laboratory Exercises T. Alajbeg, D. Ćika, T. Ražov	1343

Using Excel Spreadsheet for Inventory Analysis D. Pupavac, M. Baburić	1348
Applications and Use of Computers to Manage Resources in Schools and Relevant Institutions N. Zeqiri, B. Zeqiri, L. Mehmedi	1351
Organisation and Functioning of the Training Centre Serving Lifelong Seafarers' Education M. Nadrljanski, R. Božić, LJ. Dula	1354
Analysis of the Ranking and Rating Assessments with Functions, Tools and Object Oriented VBA for Excel S. Vukmirović, M. Čičin-Šain, M. Koturović	1359
 Digital Economy – 8th Alpe Adria Danube Universities Initiative (ALADIN)	
Democracy in the Electronic Government Era - Challenges and Opportunities for Development in Montenegro V. Lazović, T. Đuričković	1365
eGovernment in the Context of Developing Countries T. Đuričković, D. Kovačević	1370
Web Based Economy - New Approach to Customer D. Kovačević, T. Đuričković	1376
Changes in the Understanding and Management of Value Chain in the Information Era V. Lazović, D. Kovačević	1382
Decreasing Information Technology Expenses by Using Emulators on Windows and Linux Platforms A. Skendžić, B. Kovačić, I. Jugo	1387
Information Security as Utilization Tool of Enterprise Information Capital S. Aksentijević, E. Tijan, A. Agatić	1391
The Importance of ICT Research and Development for Innovative eBusiness Application and Information Society M. Vidas-Bubanja, B. Knežević	1396
The Application of Simulation in Logistics P. Galović, D. Čišić, D. Ogrizović	1402
An Approach to Supplier Selection in the Dynamic Environment M.K. Dardashti, M.R. Razzazi, M.T. Taghavifard	1408
Taxonomy of Digital Economy Business Models M. Jurišić, D. Kermek	1414
The Influence of Users' Attitudes Regarding Trust, Privacy and Control on the Adoption of Mobile Advertising N. Bosilj, G. Bubaš, M. Jadrić	1420

Information Technology Governance - COBIT Model	1426
D. Radovanović, D. Lučić, T. Radojević, M. Šarac	
Necessity of IT Service Management and IT Governance	1430
D. Radovanović, M. Šarac, S. Adamović, D. Lučić	
The Role of University in Efficient Transfer of Scientific Knowledge	1434
H. Bezić, P. Karanikić, E. Tijan	
Economics of the Cloud Computing	1438
B. Biočić, D. Tomić, D. Ogrizović	
A Novel Scheduling Approach of E-learning Content on Cloud Computing Infrastructure	1443
D. Tomić, O. Muftić, B. Biočić	
Information Systems Security	
Proposing a New Type of CAPTCHA: Character Collage	1447
G. Martinović, A. Attard, Z. Krpić	
Modeling the Energy Consumption of Distributed IDS: A Step Towards Green Security	1452
M. Migliardi, A. Merlo	
Basic On-Line Handwritten Signature Features for Personal Biometric Authentication	1458
M. Bača, P. Koruga, T. Fotak	
LTE Transport Security	1464
D. Herceg	
Emerging Security Threats for Mobile Platforms	1468
G. Delač, M. Silić, J. Krolo	
Quantum Random Number Generators and their Use in Cryptography	1474
M. Stipčević	
VPN Network Protection by IDS System Implementation	1480
I. Fosić, D. Žagar	
Social Engineering Toolkit - A Systematic Approach to Social Engineering	1485
N. Pavković, L. Perkov	
Impact of Inserting a Stochastic Noise on the Visual Information in a Bitmap	1490
M. Köhler, I. Lukić, N. Slavek	
On Evolutionary Computation Methods in Cryptography	1496
S. Picek, M. Golub	
Recent Advances in GSM Insecurities	1502
L. Perkov, A. Klisura, N. Pavković	
Database Roles Analysis Using Data Mining	1507
M. Pletikosa, Ž. Šupica	

Possible Decrease of Spam in the Email Communication K. Šolić, D. Šebo, F. Jović, V. Ilakovac	1512
Information Security Governance and How to Accomplish It M. Sajko, N. Hadjina, I. Sedinić	1516
Complex Systems and Risk Management S. Groš	1522
Methodology for Complexity Reduction of IT System (Adjustment of the Sessions' Methodology) K. Šolić, D. Šebo, F. Jović	1528
Methods and Tools for the Development of Information Security Policy – A Comparative Literature Review A. Klaić, N. Hadjina	1532
 Business Intelligence Systems	
Privacy Preserving OLAP: Models, Issues, Algorithms A. Cuzzocrea	1538
Constructing the Integral OLAP-model Based on Formal Concept Analysis T.G. Penkova, A.V. Korobko	1544
Information System Based on Balanced Scorecard for Student Teamwork Software Project Management Lj. Kazi, B. Radulović	1549
The Algorithm of View Selection for Materializing in Specialized Data Warehouses K.V. Badmaeva	1555
Mobile BI: The Past, The Present and The Future A. Stipić, T. Bronzin	1560
Relation Extraction from Text Documents A. Cvitaš	1565
Methods and Tools of On-Line Analytical Data Processing for Siberian Region Government L.F. Nozhenkova, A.V. Korobko, T.G. Penkova	1571
Applying Six Sigma Methodology and Use of Data for Decision Making in the Fixed Line Planning Process G. Krčelić, S. Štifanić, M. Meden	1576
Components of Social Networking as Part of Corporate Information System D. Roso, M. Puvača, I. Zdrilić	1582
Efficient Project Management by Quality Improvement of Project Processes T. Perković, D. Šturlić, M. Meden	1587

Government, Local Government, Public Services

- RSS as Medium for Information and Communication Technology** 1593
A. Šimec, M. Čarapina, S. Duk
- Managing Goal Focused e-Collaboration in Regional Government** 1597
M. Mauher
- Re-Inventing Local Government Capacity in Nigeria: The e-Governance Imperative** 1603
M. Adeyeye, T. Aladesanmi
- End User Oriented e-Government Model** 1609
M. Marić
- Now Casting Of Traffic State by GPS Data. The Metropolitan Area of Rome.** 1615
A. Bazzani, B. Giorgini, L. Giovanni, R. Gallotti, S. Rambaldi

MIPRO Junior - Student Papers

- Implementation of Q - Learning Algorithm for Solving Maze Problem** 1619
D. Osmanković, S. Konjicija
- Predicting Football Scores Using Machine Learning Techniques** 1623
J. Hucaljuk, A. Rakipović
- Simulation of a Texas Hold'Em Poker Player** 1628
P. Bosilj, P. Palašek, B. Popović, D. Štefić
- Classification of Art Painting by Genre** 1634
M. Čuljak, B. Mikuš, K. Jež, S. Hadjić
- Automatic Movie Ratings Prediction Using Machine Learning** 1640
M. Marović, M. Mihoković, M. Mikša, S. Pribil, A. Tus
- Fault Tolerant System in a Process Measurement System Based on the PCA Method** 1646
A. Rosković, R. Grbić, D. Slišković
- Text Independent Speaker Recognition Using LBG Vector Quantization** 1652
D. Komlen, T. Lombarović, M. Ogrizek-Tomaš, D. Petek, A. Petković
- Hidden Markov Model Based Dance Recognition** 1658
D. Hrenek, N. Mikša, R. Perica, P. Prentašić, B. Trubić
- Text Normalization for Croatian Speech Synthesis** 1664
S. Beliga, S. Martinčić-Ipšić
- Wavelet Match Filtering and Neural Network Based QRS Detection** 1670
D. Hendija
- A Digit and Spelling Speech Recognition System for the Croatian Language** 1673
M. Gulić, D. Lučanin, A. Šimić, Š. Dembitz

A Visual Programming Language for Drawing and Executing Flowcharts D. Lučanin, I. Fabek, D. Jakobović	1679
Remote Laboratory for Microcontroller Systems Design P. Zenzerović, V. Sučić	1685
Desing and Implementation of Hardware-Software Module for Testing Real-Time Systems I.V. Druzhinin, A.A. Mynzhasova, E.A. Sinelnikov	1689
Development Environment for Android Application Development: an Experience Report R. Grgurina, G. Brestovac, T. Galinac Grbac	1693
Accuracy Assessment of 3D Reconstruction of Phantoms Based on MRI Images M. Marčan, D. Pavliha, I. Fučkan, H. Matovinović	1699
Energy Efficient Sensing in Wireless Sensor Networks in Body Area Networks Ž. Bešić, D. Zrno, D. Šimunić	1703
Remote Control of Robot Arm with Five DOF V. Vajnberger, T. Terzimehić, S. Silajdžić, N. Osmić	1707
Building Mobile Robot and Creating Applications for 2D Map Building and Trajectory Control S. Krivić, A. Mrzić, N. Osmić	1712
Indoor Temperature Regulation on Small Scale Model Using Matlab-Based Regulators G. Džampo, H. Muminović, N. Osmić	1718
Construction and Control Implementation of Material Cutting Machine M. Hujdur, A. Kaknjo	1723
FPGA Implementation of BPSK Modem for Telemetry Systems Operating in Noisy Environments P. Krivić, G. Štimac	1727