2018 7th Mediterranean Conference on Embedded Computing (MECO 2018)

Budva, Montenegro
10 – 14 June 2018

IEEE

IEEE Catalog Number: CFP1839T-POD
ISBN: 978-1-5386-5684-6

Copyright © 2018 by the Institute of Electrical and Electronics Engineers, Inc.
All Rights Reserved

Copyright and Reprint Permissions: Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

****** This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.***

IEEE Catalog Number:	CFP1839T-POD
ISBN (Print-On-Demand):	978-1-5386-5684-6
ISBN (Online):	978-1-5386-5683-9
ISSN:	2377-5475

Additional Copies of This Publication Are Available From:

Curran Associates, Inc
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: (845) 758-0400
Fax: (845) 758-2633
E-mail: curran@proceedings.com
Web: www.proceedings.com

Contents

Keynote Speakers **1**

Sir Richard Timothy Hunt

A Crooked Path in Science: Stumbling on the Secret of Cell Division 1

Israel Koren

Detecting and Counteracting Benign Faults and Malicious Attacks in Cyber Physical Systems 2

Howard Moskowitz

Mind Genimics for Targeted Marketing 3

Agnis Stibe

Envisioning the Theory of Transforming Wellbeing-Transforming Technology and Sociotech Design 6

Naim Dahnoun

Tackling Multicore DSP Programming 7

Onur Mutlu

Processing Data Where It Makes Sense in Modern Computing Systems: Enabling In-Memory Computation 8

Schahram Dustdar

Cyber-Human Partnerships – Engineering the fabric of IoT, People and Systems 10

Eduard Mehofer

Multi-objective Optimization: Runtime Efficiency vs. Energy Efficiency 11

Zoran Krivokapić

Advances in High-Tech Medical Diagnostics: The Rectal Cancer Case 12

Koen De Bosschere, Rainer Leupers

HiPEAC Compilation Architecture 13

Veljko Milutinović

DataFlow SuperComputing for BigData 14

ECyPS'2018 Embedded and Cyber-Physical Systems **15**

Mustafa Engin

Embedded LQR Controller Design for Self-Balancing Robot 15

Vojtěch Miškovský, Hana Kubátová, Martin Novotný

Speeding up Differential Power Analysis using Integrated Power Traces 19

Tobias Pieper, Roman Obermaisser

Distributed Co-simulation for Software-in-the-loop Testing of Networked Railway Systems 24

Petr Socha, Jan Brejník, Matěj Bartík

Attacking AES Implementations Using Correlation Power Analysis on ZYBO Zynq-7000 SoC Board 29

Giuseppe Ascia, Vincenzo Catania, Salvatore Monteleone, Maurizio Palesi, Davide Patti, John Jose

Improving Energy Consumption of NoC based Architectures through Approximate Communication 33

Vittoriano Muttillo, Giacomo Valente
Injecting Hypervisor-based Software Partitions into Design Space Exploration Activities considering Mixed-Criticality Requirements 37
Salem Lepaja, Arianit Maraj, Iris Efendiu, Shpat Berzati
The Impact of the Security Mechanisms in the Throughput of the WLAN Networks 42
Daniele Ciambrone, Vittoriano Muttillo, Luigi Pomante, Giacomo Valente
HEPSIM: an ESL HW/SW Co-Simulator/Analysis Tool for Heterogeneous Parallel Embedded Systems 47
Simon Meckel, Roman Obermaisser
Component-based Combination of Online-Diagnosis Methods Using Diagnostic Directed Acyclic Graphs 53
H. Mukhtar, W. Mansoor, H. Al-Ahmed, A. Al-Dweik
Reliability and Latency Trade-off in Time Domain Interleaving for OFDM Communication Systems 58
Michael Winokur, Zvi Lando, Alon Modai
Seamless Requirements Flow Down from System to Software Components in a Cyber Physical System 62
Andrej Škraba, Andrej Kološvari, Davorin Kofjač, Bojan Vavtar, Radovan Stojanović, Vladimir Stanovov, Eugene Semenkin
Development of Educational Cyber-Physical Internet of Things Platform - Study of the PID Controller 66
Gordana Laštovička-Medin
Coupling Bits and Atoms: An Attempt to Bridge the Gap Between Cyberspace and the Physical Environment by Making Digital Information Tangible 70

Embedded Computing: Hardware and Applications **76**
Matěj Bartík
Clock Domain Crossing – An Advanced Course for Future Digital Design Engineers 76
Fabian Mauroner, Marcel Baunach
mosartMCU: Multi-Core Operating-System-Aware Real-Time Microcontroller 81
Gabriel Campeanu
A Mapping Study on Microservice Architectures of Internet of Things and Cloud Computing Solutions 85
Sergey V. Skvortsov, Tatiana A. Fetisova, Aleksandr V. Bakulev
Scheduling Multithreaded Processes by Criterion of Minimum of Number Data Exchanges Between Processor Cores 89
Habib Chawki Touati, Fateh Boutekkouk
FACARS: A Novel Fully Adaptive Congestion Aware Routing Scheme for Network on Chip 93
Alexander Mitov, Ilcho Angelov, Jordan Kralev
Embedded Electrohydraulic Controller with Digital Valve Actuation for Steering of Heavy Duty Machines 99
Elena Medvedeva, Konstantin Karlushin, Ekaterina Kurbatova
Motion Detection Algorithm Implemented on the ARM-based Hardware 103
Mirko Sajić, Dušanka Bundalo, Zlatko Bundalo, Radovan Stojanović, Luka Sajić
Design of Digital Modular Bank Safety Deposit Box Using Modern Information and Communication Technologies 107

Eugene P. Trusov, Vladimir G. Litvinov, Alexander V. Ermachikhin, Natalia V. Rybina, Dmitriy S. Kusakin, Nikolay B. Rybin
Measurement Complex of Photoluminescence using LabVIEW 113
Dina G. Mahmoud, Gehad I. Alkady, Hassanein H. Amer, Ramez M. Daoud, Ihab Adly, Youssef Essam, Hassan A. Ismail, Kirollos N. Sorour
Fault Secure FPGA-Based TMR Voter 116
Boris A. Alpatov, Pavel V. Babayan, Maksim D. Ershov
Vehicle Detection and Counting System for Real-Time Traffic Surveillance 120
Alexey N. Ivutin, Anna G. Troshina, Alexander E. Soloviev
Optimization of Task Distribution on Multicore Systems 124
Gehad I. Alkady, Hassanein H. Amer, Ramez M. Daoud, Tarek K. Refaat, Hany M. ElSayed, Ihab Adly
An Adaptive Multi-Factor Fault-Tolerance Selection Scheme for FPGAs in Space Applications 128
Emil Zaev, Darko Babunski, Atanasko Tuneski, Gerhard Rath
Simulation of Stiff Systems on Real-Time Hardware 132
Juan I. Melecio, Anees Mohammed, Siniša Djurović
Towards Embedded Intelligence Enabled Autonomous Condition Monitoring Systems for AC Motor Drives 136
Tomáš Bagala, Adam Fibich, Miroslav Hagara, Peter Kubinec, Oldřich Ondráček, Vladimír Štofanik, Radovan Stojanović
Single Clock Square Root Algorithm Base on Binomial Series and its FPGA Implementation 141

Embedded Computing: Software and Applications **145**
Alexander S. Novikov, Anna G. Troshina
The Decision-making Process in Intelligent Subsystems of Embedded Systems Based on Fuzzy Approximate Reasoning 145
Alexander S. Novikov, Alexey N. Ivutin, Anna G. Troshina, Sergey N. Vasiliev
Detecting the Use of Unsafe Data in Software of Embedded Systems by Means of Static Analysis Methodology 149
Sergey V. Skvortsov, Tatiana A. Fetisova, Marina A. Bukaleva
Improving the Performance of Software Applications for Sort and Search Data by Means of GPUs 153
Valeriia V. Tishkina, Aleksandr N. Pylkin, Aleksandr V. Kroshilin, Svetlana V. Kroshilina
Designing a System for Analyzing the Activities of Enterprises Using Artificial Intelligence Methods 157
Johannes Obermaier, Florian Hauschild, Matthias Hiller, Georg Sigl
An Embedded Key Management System for PUF-based Security Enclosures 161
Natalia A. Kopylova, Aleksandr I. Taganov, Oleg A. Bodrov, Aleksandr N. Kolesenkov
The Analysis of Ecological Risks in Geoinformational Systems in Fuzzy Conditions 167
Milan Prokin, Aleksandar Nešković, Nataša Nešković, Dragana Prokin
Cybersecurity of Fiscal Devices with GPRS Terminals 171
Milan Prokin, Aleksandar Nešković, Nataša Nešković, Dragana Prokin
Cybersecurity of Improved Fiscal Devices 175
Alexey N. Ivutin, Pavel A. Savenkov, Alexandra V. Veselova
Neural Network for Analysis of Additional Authentication Behavioral Biometric Characteristics 179

Liliya Demidova, Nataliya Petrova, Victoria Sablina
Aspects of Solution of the Problem of the Shooting Parameters Optimization Using Modifications of the Evolutionary Algorithm 182
Mirko Sajić, Dušanka Bundalo, Zlatko Bundalo, Luka Sajić, Goran Kuzmić
Programmable Electronic Payment Card Transaction Limit Implemented Using Mobile Electronic Technologies 186
Aleksey Y. Gromov, Tatiana A. Petrovskaia, Anastasia A. Suslina, Natalia I. Khizriyeva, Maxim Stepanov
Human Resources Intelligent Selection Algorithm with Improvement of Data Validity . . . 191
Aleksandr V. Bakulev, Marina A. Bakuleva
The Algorithm of Mining Association Rules based on the Derivative of the Graph Model of the Datasets 195
Irina P. Bolodurina, Denis I. Parfenov
Development and Research of the Autonomous System for Providing Security and Quality of Service for Multi-cloud Platform 199
Liliya Demidova, Maksim Egin
Improving the Accuracy of the SVM Classification using the Parzen Classifier 203
Eugene V. Larkin, Maksim A. Antonov, Anna G. Troshina, Aleksandr N. Privalov
Embedded Parallel Operation Programmer Modeling 207
Bogdan Cristian Florea
Blockchain and Internet of Things Data Provider for Smart Applications 212
Boris V. Kostrov, Robert V. Khrunichev, Denis S. Stepanov, Elena P. Koroleva, Nngok Z. Nguen
Application of Probabilistic Approach while Forming Hash-function by Signature in the Process of Domain-specific Local Database Analysis 216
Vladimir Ruchkin, Vladimir Fulin, Dmitry Pikulin, Boris Kostrov, Aleksandr Taganov, Aleksandr Kolesenkov, Ekaterina Ruchkina
Analysis of Models of Representation For Expert Choice Neuroprocessor Structure 221
Aleksey I. Baranchikov, Anastasiya G. Svirina, Natalya N. Grinchenko, Nikolai A. Sumenkov
A Technique of Increasing the Efficiency of Websites' Ranking based on the Spectral Coefficient of the Texts' Readability 225
Nikita Baranov, Vladimir Bashkin, Mikhail Bashkin
A Lightweight Cryptographic Scheme of Route Hiding for the On-Demand Route Discovery Algorithms 230
Marija Šćekić, Snežana Šćepanović, Milica Gazivoda, Jelena Nikolić
Application of DevOps Approach in Developing Business Intelligence System in Bank . . . 234
Mikhail E. Golovanov, Aleksandr V. Bakulev, Marina A. Bakuleva
Using Apache Spark to Collect Analytic from the Streaming Data Processing Application Logs 238
Dmitry Yudin, Dmitry Slavioglo
Usage of Fully Convolutional Network with Clustering for Traffic Light Detection 242
Dhuratë Hyseni, Betim Çiço, Artan Luma, Besnik Selimi, Edona Shemsedini
Different Methods of Distribution Data in the Cloud - Controlled by IT Security Specialist . 248
Raimund Ubar, Lembit Jürimägi, Maksim Jenihhin, Jaan Raik, Niyi-Leigh Olugbenga, Vladimir Viies
Timing-Critical Path Analysis with Structurally Synthesized BDDs 253
Edona Doko, Lejla Abazi-Bexheti
A Systematic Mapping Study of Educational Technologies based on Educational Data Mining and Learning Analytics 259

Digital Signal Processing with Applications **263**
Miloš Brajović, Ljubiša Stanković, Miloš Daković, Danilo Mandić
Additive Noise Influence on the Bivariate Two-Component Signal Decomposition 263
Viacheslav Oliinyk, Vladimir Lukin, Igor Djurović
Time Delay Estimation for Noise-Like Signals Embedded in Non-Gaussian Noise Using Adaptive Robust DFT 267
Alexander Zemliachenko, Vladimir Lukin, Igor Djurović, Benoit Vozel
On Potential to Improve DCT-Based Denoising with Local Threshold 271
Viktor A. Fatuev, Anton A. Mishin
Control of the Experiment with Optimum Identification of Dynamic Systems in Real Time 275
Anna D. Sergeeva, Victoria A. Sablina
Using Structure from Motion for Monument 3D Reconstruction from Images with Heterogeneous Background 279
Alexander V. Savin, Svetlana I. Elesina, Michael B. Nikiforov
The Graphical Processor Application for Image Correlation Combination 283
Aleksandr N. Kolesenkov, Dmitry V. Fetisov, Denis S. Stepanov
Development and Implementation of the Technology of Automatic Reconciliation of Different Aerospace Images 287
Aleksey I. Efimov, Dmitry A. Kolchaev, Michael B. Nikiforov, Anatoly I. Novikov
Algorithm of Geometrical Transformation and Merging of Radar and Video Images for Technical Vision Systems 292
Anatoly I. Novikov, Dmitry A. Kolchaev, Alexander A. Loginov
Method of Superimposition of Heterogeneous Images Based on Combining Search and Tracking Modes 296
Maja Vešović, Valentina Konatar
The Hermite and Fourier Transforms in Sparse Reconstruction of Sinusoidal Signals 300
Elena Medvedeva, Ekaterina Kurbatova
A Method for Texture Segmentation of the Multidimensional Images 304
Tamara Koljenšić, Časlav Labudović
Comparison of Threshold-based Algorithms for Sparse Signal Recovery 308
Alexandra V. Akinina and Michael B. Nikiforov, Alexandr V. Savin
Multiscale Image Segmentation using Normalized Cuts in Image Recognition on Satellite Images 312
Yuriy V. Konkin, Aleksandr N. Kolesenkov, Victoria A. Sablina, Maria S. Ashapkina
Preliminary data Processing by Means of Onboard Computer Systems of Spacecraft 315
Liliya Demidova, Irina Klyueva
Data Classification Based on the Hybrid Versions of the Particle Swarm Optimization Algorithm 319
Sergey I. Babaev, Valentina Yu. Potapova, Andrey S. Tarasov, Maxim A. Stepanov
Short-term Forecasting Algorithms of Meteorological data Collection and Processing in Systems 323
Isidora Stanković, Cornel Ioana, Miloš Daković, Ion Candel
Sparse Signal Reconstruction in Dual Polynomial Fourier Transform 327
Ivan I. Kanatov, Vyacheslav V. Gul'vansky, Dmitrii I. Kaplun
Method of Decrease of Discrete Fourier Transform Sidelobes without Window Functions . 331
Pavel V. Babayan, Sergey A. Smirnov, Valery V. Strotov, Vadim S. Muraviev, Maksim D. Ershov
Object Tracking Algorithm based on the Multispectral Template Matching 335

Aleksey Y. Gromov, Denis S. Stepanov, Elena P. Koroleva, Alexander S. Bastrychkin
Image Compression in Quasi-two-dimensional Spectrum with Quantizing of High-frequency Component 339
Nevena R. Brnović, Igor Djurović, Veselin N. Ivanović, Marko Simeunović
System for QML Algorithm Realization 343
Aleksei Kharin, Sergey Vityazev, Evgeny Likhobabin, Vladimir Vityazev
LDPC Decoder Implementation on DSP+ARM Platform with OpenCL 347
Sergey S. Zavalishin, Yuri S. Bekhtin
Visually Aesthetic Image Contrast Enhancement 351
Vladimir A. Belokurov
Implementation of Affine Transform for Image Rotation Using a HLS Language 355
Andrey Dubovikov, Larisa Revkova, Ksenia Tsiporkova, Nikita Tsiporkov
Method of Orthogonal Expansions in the Case of Measuring the Multiplication of Two Random Signals 359
Anatoly Mikheev, Tatyana Vityazeva
Noise Errors in the Representation of Measurement Signals with Compound Discrete Samples 362
Denis V. Avramenko, Vladimir G. Andrejev
Spectral Analysis of Light Reflections from Cosmic Objects by the Modified Prony's Method 366
Scott Tancock, Ekin Arabul, Naim Dahnoun, Shahid Mehmood
Can DSP48A1 Adders be used for High-Resolution Delay Generation? 370
Anastasiia Sochenkova, Natalia Podzharaya, Pavel Trofimov, Galina Novikova
Design and Implementation of Information Retrieval Mechanism for the Virtual Museum Creation 376
Sergey V. Chelebaev, Olga V. Melnik, Yulia A. Chelebaeva
Application of Simulation Modeling for the Analysis of Neurons of Converters of Time-and-Frequency Parameters of Signals in a Digital Code 380
Mikhail Kagalenko
Modified Pisarenko Spectrum for Frequency Analysis 384
Aleksandra V. Tutueva, Denis N. Butusov, Artur I. Karimov, Valery S. Andreev
Recurrence Density Analysis of Multi-wing and Multi-scroll Chaotic Systems 388
Alexander S. Bastrychkin, Dmitry A. Borisov, Natalia I. Khizrieva, Boris A. Kostrov, Tatyana A. Petrovskaya, Anastasiya A. Suslina
Interference Immunity of Image Transmission Channel 393
Maja Lakičević Žarić, Andjela Draganić, Irena Orović, Srdjan Stanković
Sparse Signal Reconstruction Using Gradient-Threshold Based Method 396

Circuits and Systems for Embedded Applications **400**
Milan Stork
Simple Chaotic Oscillators with Diode Bridges 400
Eugenie V. Mamontov, Michael Y. Sudakov, Olga V. Melnik, Alexander I. Ulitenko, Alexander A. Dyagilev, Galina I. Melnik
Modeling of Free and Forced Oscillations of the Inertial Nonstationary Harmonic Oscillator 404
Sergey Mosin
Entropy-Based Method of Reducing the Training Set Dimension at Constructing a Neuromorphic Fault Dictionary for Analog and Mixed-Signal ICs 408
Ekin Arabul, John Rarity, Naim Dahnoun
FPGA based Fast Integrated Real-Time Multi Coincidence Counter Using a Time-to-Digital Converter 412

Yury S. Bekhtin, Alexey A. Lupachev, Andrey N. Serov, Andrey V. Kovalenko
Analysis of Interval Criteria for Determining the End of the Transient Process in the Measuring Circuit 416
Igor Lemberski, Artjoms Suponenkovs
Asynchronous Logic Design Targeting LUTs 420

Recent Challenges in Filter Theory Design and Applications **426**
Dražen Jurišić, Edi Emanović, Budimir Lutovac, George S. Moschytz
Noise Analysis of Fractional-Order Two-Integrator CCII Low-Pass Filter using Pspice . . . 426
Boris V. Kostrov, Gennady V. Svetlov, Aleksey I. Baranchikov, Nataliy S. Fokina
Fast Image Convolution Calculation Method with an Ideal Low-Pass Filter 431
Vladislav Lesnikov, Tatiana Naumovich, Alexander Chastikov
Number-Theoretical Analysis of the Structures of Classical IIR Digital Filters 435
Isidora Stanković, Igor Djurović, Miloš Daković
Adaptive Average BM3D Filter for Reconstruction of Images with Combined Noise 439
Vladislav Lesnikov, Tatiana Naumovich, Alexander Chastikov
The Sampling of the z-Plane Due to the Quantization of the Digital Filter 443
Veselin N. Ivanović, Nevena R. Brnović
Appropriate Registers' Lengths in the Fully Pipelined Design of an Optimal Space/Spatial Frequency Filter for Highly Nonstationary Two-Dimensional FM Signals Estimation 447

Communications and Networks **451**
Valery Zolotaryov, Natalya Grinchenko, Alexander Lotsmanov, Gennady Ovechkin
Developing the Principle of Divergent Coding for Gaussian Channels 451
Dmitriy Prozorov, Igor Trubin
Detection of a Signal in the SIMO System with Spatial Correlation of Noise 455
Zhilbert Tafa, Fatlum Ramadani, Blerona Cakolli
The Design of a ZigBee-Based Greenhouse Monitoring System 460
Sergey N. Kirillov, Alexander A. Lisnichuk, Pavel S. Pokrovskij
Multi-Criterion Radio Signal Synthesis and Time Discriminator Development for Prospective Communication Systems 464
Sergey N. Kirillov, Dmitriy I. Lukyanov
Algorithms for Human Emotional Status Estimation Under the Conditions of Acoustic Disturbances in Telecommunication Systems 468

Control and Measurements **472**
Marko Bošković, Milan Rapaić, Tomislav Šekara, Petar Mandić, Mihailo Lazarević, Boško Cvetković, Budimir Lutovac, Miloš Daković
On the Rational Representation of Fractional Order Lead Compensator using Padé Approximation 472
Darko Babunski, Emil Zaev, Atanasko Tuneski, Dejan Božović
Optimization Methods for Water Supply SCADA System 476
Aleksey A. Abramov, Sergey G. Gurzhin, Vladimir I. Julev, Evgeniy M. Proshin, Gardon A. Sadovskij, Andrey V. Shulyakov
Automation of Methods for Determining Dynamic Characteristics of Digital Measuring Facilities 480

Yury S. Bekhtin, Alexey A. Lupachev, Andrey A. Bryantsev, Sergey A. Smirnov
Estimating Parameters of Point Sources in Onboard IR-sensors using Statistically Linearized Model 484
Meghan Evans, Rui Fan, Naim Dahnoun
Iterative Roll Angle Estimation from Dense Disparity 488
Ondrej Cip, Lenka Pravdova, Martin Cizek, Vaclav Hucl, Jan Hrabina, Simon Rerucha, Radek Helan
Control of Repetition Frequency of a Femtosecond Laser by an External Cavity Working as the Length Sensor 492

Recent Advances in Computational and Engineering Methods in Biomedicine and Rehabilitation 496
Vanja Luković, Saša Ćuković, Goran Devedžić
Optical Methods for the Estimation and 2D Classification of Idiopathic Scoliosis 496
Suzana Petrović Savić, Goran Devedžić, Branko Ristić, Aleksandar Matić, Nikola Prodanović, Radovan Stojanović
Clinical Application of a Portable Motion Capture System: A Methodology 500
Vesna Mandić, Ivan Martinović
Biomedical Signals Reconstruction Under the Compressive Sensing Approach 504
Majlinda Fetaji, Bekim Fetaji
Assessing Data Processing using Wilcoxon signed-ranks test for Polyclinic Management System – Case Study 508
Milan Stork, Jaroslav Novak
Wingate Anaerobic Test New Possibility of Evaluation and Mathematical Model 514
Anatolii A. Pulavskyi, Sergey S. Krivenko, Liudmyla S. Kryvenko
Diagnosing the Signs of Pathological States of a Human based on the Analysis of Heart Rate Variability 519
Borislav Ivanov
A model of Extracorporeal Perfusion Pump (Left heart camera operation modeling and simulation) 523
Daniela De Venuto, Giovanni Mezzina
User-centered Ambient Assisted Living: Brain Environment Interface 527
Nataliya Boyko, Nataliya Shakhovska, Tetyana Sviridova
Use of Machine Learning in the Forecast of Clinical Consequences of Cancer Diseases . . . 531
Olga V. Melnik
Monitoring of Functional and Psycho-Emotional Status of the Person during Daily Activities 537
Maria S. Ashapkina, Alexey V. Alpatov, Victoria A. Sablina, Alexander A. Chekushin
Quantitative Parameters Developing for Estimation of Rehabilitation Exercising on The Basis of IMU Sensor Device 541
Andrey Trubitsyn, Evgeniy Grachev, Dmitriy Morozov, Andrey Serebryakov, Evgeniy Kozlov, Viktor Bochkov, Petr Panov, Boris Polonskiy
High-Power Microfocus X-ray Installation 545
Tatyana Vityazeva, Sergey Vityazev, Anatoly Mikheev
Synchronization of Heart Rate and Respiratory Signals for HRV Analysis 549
Emina Kurta, Živorad Kovačević, Lejla Gurbeta, Almir Badnjević
Electromagnetic Compatibility on Medical Devices: Effects in Everyday Healthcare Environment 553

Related Fields **557**
Aleksei D. Maslov, Vladislav G. Mishustin, Alexander V. Piryugin, Nikolay V. Vishnyakov
Physical Model to Calculate Current-Voltage Characteristics of Double-Junction Solar Cells based on a-Si:H and a-SiC:H 557
Neroida Selimi, Marika Apostolova-Trpkovska, Lejla Abazi-Bexheti, Majlinda Fetaji
Utilization of Customer Relationship Management (CRM) Theory, Prototype and Tools for Improved Strategic Marketing in HE 561
Vladimir V. Salnikov
Computer Based Support for Efficient use of Energy in Manufacturing 565
Adis Balota, Sreten Škuletić, Selma Grebović
Mathematical Model for Calculation of Complex (Production/Transmission) Electric Power System Reliability 569
Yevgeniy R. Muratov, Dmitry I. Ustukov, Sergei V. Orlov
Detection of Laser Illumination Points of a Stereo System on a Complex Background 575
Alexey V. Alpatov, Natalia V. Rybina, Dmitry Yu. Trynov, Sergey P. Vikhrov
Scale-Space Theory Application to Investigate Surface Correlation Properties 579
Aleksei D. Maslov, Alexander V. Ermachikhin, Ekaterina V. Bezuglaya, Vladislav G. Mishustin, Yuriy V. Vorobyov, Valery V. Gudzev
Spatial Localization of Dominating Deep Centers in Multicrystalline Silicon Solar Cells . . 582
Andrey R. Semenov, Vladimir G. Litvinov, Tatiana A. Kholomina, Alexander V. Ermachikhin, Natalia V. Rybina, Dmitriy G. Gromov, Sergey P. Oleinik
Investigating and Modeling High Frequency C-V Characteristics of Zinc Oxide-based Heterostructures 586
Matthew Harker, Gerhard Rath
Global Least Squares for Time-Domain System Identification of State-Space Models 590
Ilir Keka, Betim Çiço
Pattern Detection of Load Profiles based on Regression Model with Multiple Variables . . . 596
Gordana Laštovička-Medin
Harvesting & Regenerating Energy from Multiple Low-Cost Energy Generators for Low Energy Consumers and Towards Circular Economy 600
Nuhi Besimi, Betim Çiço, Adrian Besimi
Hybrid Solution for Scalable Research Articles Recommendation 606
Merita Kasa-Halili, Betim Çiço
Towards Custom Tailored SLA in IaaS Environment Through Negotiation Model - An Overview 610
Alma Jakupović, Živorad Kovačević, Lejla Gurbeta, Almir Badnjević
Review of Artificial Neural Network Application in Nanotechnology 614