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IFIP was founded in 1960 under the auspices of UNESCO, following the First World Computer Congress held in Paris the previous year. An umbrella organization for societies working in information processing, IFIP's aim is two-fold: to support information processing within its member countries and to encourage technology transfer to developing nations. As its mission statement clearly states,

IFIP's mission is to be the leading, truly international, apolitical organization which encourages and assists in the development, exploitation and application of information technology for the benefit of all people.

IFIP is a non-profitmaking organization, run almost solely by 2500 volunteers. It operates through a number of technical committees, which organize events and publications. IFIP's events range from an international congress to local seminars, but the most important are:

- The IFIP World Computer Congress, held every second year;
- Open conferences;
- Working conferences.

The flagship event is the IFIP World Computer Congress, at which both invited and contributed papers are presented. Contributed papers are rigorously refereed and the rejection rate is high.

As with the Congress, participation in the open conferences is open to all and papers may be invited or submitted. Again, submitted papers are stringently refereed.

The working conferences are structured differently. They are usually run by a working group and attendance is small and by invitation only. Their purpose is to create an atmosphere conducive to innovation and development. Refereeing is less rigorous and papers are subjected to extensive group discussion.

Publications arising from IFIP events vary. The papers presented at the IFIP World Computer Congress and at open conferences are published as conference proceedings, while the results of the working conferences are often published as collections of selected and edited papers.

Any national society whose primary activity is in information may apply to become a full member of IFIP, although full membership is restricted to one society per country. Full members are entitled to vote at the annual General Assembly. National societies preferring a less committed involvement may apply for associate or corresponding membership. Associate members enjoy the same benefits as full members, but without voting rights. Corresponding members are not represented in IFIP bodies. Affiliated membership is open to non-national societies, and individual and honorary membership schemes are also offered.

Luis M. Camarinha-Matos
Ehsan Shahamatnia Gonçalo Nunes (Eds.)

Technological Innovation for Value Creation

Third IFIP WG 5.5/SOCOLNET Doctoral Conference on
Computing, Electrical and Industrial Systems, DoCEIS 2012
Costa de Caparica, Portugal, February 27-29, 2012
Proceedings

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ISSN 1868-4238 e-ISSN 1868-422X
ISBN 978-3-642-28254-6 e-ISBN 978-3-642-28255-3
DOI 10.1007/978-3-642-28255-3
Springer Heidelberg Dordrecht London New York

Library of Congress Control Number: 2012930667

CR Subject Classification (1998): C.2, H.1, C.4, I.2.9, C.3, J.2

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Typesetting: Camera-ready by author, data conversion by Scientific Publishing Services, Chennai, India

Printed on acid-free paper

Springer is part of Springer Science+Business Media (www.springer.com)

Preface

Technological Innovation for Value Creation

This proceedings book centered on research results produced in doctoral programs brings the importance of society-valued technologies under the spotlight. Such technologies can leverage economic transformation, create value in society and ultimately improve individuals' lives. As doctoral programs in science and engineering are important sources of innovative ideas and techniques that might lead to new products, technological innovation, and even new organizational and governance models with strong economic and social impact, it is important that the analysis of the value creation potential of these results receives special attention.

Typically, PhD students are not experienced researchers, but rather in the process of learning how to do research. Nevertheless, observation of worldwide publications shows that a high number of technologically innovative ideas are produced in the early careers of researchers. From the combination of the eagerness to try new approaches and directions of young doctoral students with the experience and broad knowledge of their supervisors, an important pool of innovation potential emerges. The DoCEIS series of Doctoral Conferences on Computing, Electrical and Industrial Systems aim at creating a space for sharing and discussing ideas and results from doctoral research in these inter-related areas of engineering. Innovative ideas and hypotheses can be better enhanced when presented and discussed in an encouraging and open environment. DoCEIS aims to provide such an environment, releasing PhD students from the pressure of presenting their propositions in more formal contexts.

The third edition of DoCEIS, which was sponsored by SOCOLNET, IFIP and IEEE Industrial Electronics Society, attracted a considerable number of paper submissions from a large number of PhD students (and their supervisors) from 20 countries. This book comprises the works selected by the International Program Committee for inclusion in the main program and covers a wide spectrum of topics, ranging from collaborative enterprise networks to microelectronics. Thus, novel results and ongoing research are presented, illustrated, and discussed in areas such as:

- Collaborative Systems
- Service Orientation
- Knowledge and Content Management
- Human Interaction
- Petri Nets
- Smart and Robotic Systems
- Sensorial Perception and Signal Processing
- Energy systems and Smart Grid
- Electronics and Telecommunications

As a gluing element, all authors were asked to explicitly indicate the (potential) contribution of their work to value creation.

Additionally, an associated workshop contributed a number of papers addressing various aspects of data analysis and modelling retina in health and disease.

We expect that this book will provide readers with an inspiring set of promising ideas, presented in a multi-disciplinary context, and that by their diversity these results can trigger and motivate richer research and development directions.

We would like to thank all the authors for their contributions. We also appreciate the dedication of the DoCEIS Program Committee members who both helped with the selection of articles and contributed with valuable comments to improve their quality.

February 2012

Luis M. Camarinha-Matos
Ehsan Shahamatnia
Gonçalo Nunes

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Table of Contents

Part I: Introduction

Raising Awareness for Value Creation Potential in Engineering Research	3
<i>Luis M. Camarinha-Matos, João Goes, Luís Gomes, and João Martins</i>	

Part II: Collaborative Systems

Emotions in Collaborative Networks: A Monitoring System	9
<i>Filipa Ferrada and Luis M. Camarinha-Matos</i>	
Electronic Negotiation Support Environment in Collaborative Networks	21
<i>Ana Inês Oliveira and Luis M. Camarinha-Matos</i>	
Control Interfaces for a Collaborative System Using LabView Package.....	33
<i>Alina Ninett Panfir, Alexandra Covaci, Cristian-Cezar Postelnicu, and Gheorghe Mogan</i>	

Part III: Service Orientation

Extending Lifecycle of Legacy Systems – An Approach for SME to Enhance Their Supported Business Processes through a Service-Integration-System	43
<i>Florian Gruner and Stephan Kassel</i>	
On-Line Change Detection for Resource Allocation in Service-Oriented Systems	51
<i>Jakub M. Tomczak</i>	
Ensemble Classifier for Solving Credit Scoring Problems	59
<i>Maciej Zięba and Jerzy Świątek</i>	

Part IV: Knowledge and Content Management

Framework for Knowledge Management Based in the Two-Stream Hypothesis	69
<i>Fernando Ferreira and Ricardo Jardim-Goncalves</i>	

Information Surfaces in Systems Biology and Applications to
Engineering Sustainable Agriculture 77
Hesam Dashti, Alireza Siahpirani, James Driver, and Amir H. Assadi

Decentralized Approximation Algorithm for Data Placement Problem
in Content Delivery Networks 85
Maciej Drwal and Jerzy Józefczyk

Part V: Human Interaction

Improving Operator Performance through the Use of a Multivariable
Human-Machine Control Strategy 95
Rui Antunes, Fernando V. Coito, and Hermínio Duarte-Ramos

A Virtual Reality Simulator for Basketball Free-Throw Skills
Development 105
*Alexandra Covaci, Cristian-Cezar Postelnicu,
Alina Ninett Panfir, and Doru Talaba*

Determining Car Driver Interaction Intent through Analysis of Behavior
Patterns 113
Madalina-Ioana Toma and Dragos Datcu

Part VI: Petri Nets

A State-Space Based Model-Checking Framework for Embedded
System Controllers Specified Using IOPT Petri Nets 123
Fernando Pereira, Filipe Moutinho, and Luís Gomes

Process Control System Considering the Machines Functional
Flexibilities 133
*Oswaldo L. Asato, Guilherme M. Dobrianskyj, Fabrício Junqueira,
Diolino J. Santos Filho, and Paulo E. Miyagi*

Asynchronous-Channels and Time-Domains Extending Petri Nets for
GALS Systems 143
Filipe Moutinho and Luís Gomes

Finding Learning Paths Using Petri Nets Modeling Applicable to
E-Learning Platforms 151
Rogério Campos-Rebelo, Anikó Costa, and Luís Gomes

Part VII: Smart Systems

Self-organized Holonic Manufacturing Systems Combining Adaptation
and Performance Optimization 163
*José Barbosa, Paulo Leitão, Emmanuel Adam, and
Damien Trentesaux*

Adapter for Self-Learning Production Systems	171
<i>Gonçalo Cândido, Giovanni Di Orio, José Barata, and Sebastian Scholze</i>	

Evaluation of a P300-Based Interface for Smart Home Control	179
<i>Cristian-Cezar Postelnicu, Alexandra Covaci, Alina Ninett Panfir, and Doru Talaba</i>	

Part VIII: Robotic Systems

Kinematics Programming for Cooperating Robotic Systems	189
<i>Cristiane P. Tonetto, Carlos R. Rocha, Henrique Simas, and Altamir Dias</i>	

Measuring Variables Effect to Statistically Model the Multi-Robot Patrolling Problem by Means of ANOVA	199
<i>David Portugal and Rui P. Rocha</i>	

High Maneuverability Lenticular Airship	207
<i>Eduardo Pinto and José Barata</i>	

Part IX: Perceptual Systems

Perception of Motion and Architectural Form: Computational Relationships between Optical Flow and Perspective	219
<i>Arash Sangari, Hasti Mirkia, and Amir H. Assadi</i>	

Online Topological Mapping of a Sparse Camera Network	229
<i>Paulo Freitas, Paulo Menezes, and Jorge Dias</i>	

Probabilistic Classification of Grasping Behaviours Using Visuo-Haptic Perception	241
<i>S. Jafar Hosseini, Diego R. Faria, Jorge Lobo, and Jorge Dias</i>	

Part X: Signal Processing

A New Approach to Rational Discrete-Time Approximations to Continuous-Time Fractional-Order Systems	251
<i>Carlos Matos and Manuel Duarte Ortigueira</i>	

Adaptive Filter and Resonant Controller Applied to Hybrid Series Active Power Filter	259
<i>R.B. Gonzatti, S.C. Ferreira, Carlos H. da Silva, L.E. Borges da Silva, G. Lambert-Torres, and Se Un Ahn</i>	

Short Time Fourier Transform and Automatic Visual Scoring for the
 Detection of Sleep Spindles 267
*João Caldas da Costa, Manuel Duarte Ortigueira, and
 Arnaldo Batista*

Part XI: Energy

Multiple Stress Life Analysis on Underground Power Cables from
 Distribution Networks 275
Larisa Mariut and Elena Helerea

Power Transformers Differential Protection Using the p-q Power
 Theory 283
Luís M.R. Oliveira and António J. Marques Cardoso

Experimental Results of Parallel Active Filter Implementation in
 Nonideal Power Grid 291
Oleksandr Husev, Andrei Blinov, and Dmitri Vinnikov

Design of Current Power Sources for a FFC NMR Apparatus:
 A Comparison 299
*António Roque, Sónia F. Pinto, João Santana, Duarte Sousa,
 Elmano Margato, and José Maia*

Part XII: Renewable Energy

Grid Integration of Offshore Wind Farms Using Modular Marx
 Multilevel Converters 311
*Luís Encarnação, José Fernando Silva, Sónia F. Pinto, and
 Luis M. Redondo*

Hybrid Evolutionary Neuro-fuzzy Computational Tool to Forecast
 Wind Power and Electricity Prices 321
*G.J. Osório, H.M.I. Pousinho, J.C.O. Matias, C. Monteiro, and
 J.P.S. Catalão*

Simulation and Experimental Results for a Photovoltaic System Formed
 by Monocrystalline Solar Modules 329
*S. Saraiva, R. Melício, J.C.O. Matias, C.M.P. Cabrita, and
 J.P.S. Catalão*

Experimental Analysis of a Standalone Renewable Energy Based
 Hybrid System 337
*Nuno Freire, Eunice Ribeiro, António J. Marques Cardoso, and
 Chiara Boccaletti*

Part XIII: Energy Smart Grid

Development of Energy Monitoring System for SmartGrid Consumer Application	347
<i>Peteris Apse-Apsitis, Ansis Avotins, Leonids Ribickis, and Janis Zakis</i>	
A Standard-Based Software Infrastructure to Support Power System Protection in Distributed Energy Systems	355
<i>José Lima, Vasco Gomes, João Martins, and Celson Lima</i>	
The Efficient and Stable Charging of Electric Vehicle Batteries: Simplified Instantaneous Regulation	363
<i>Rui Medeiros, Stanimir Valtchev, and Svilen Valtchev</i>	
Solar Trigeneration System Model for Off-Grid Residential Applications	375
<i>Pedro Magalhães, João Martins, António Joyce, Luís Coelho, Nelson Tavares, and Ricardo Pereira</i>	

Part XIV: Power Electronics

Interactive Power Electronics Tool for Undergraduate Laboratories and Research Purposes	387
<i>Naji Ama, Lourenco Matakas Junior, and Fuad Kassab Junior</i>	
Modelling of n -Stage Blumlein Stacked Lines for Bipolar Pulse Generation	395
<i>J.P.M. Mendes, Luis M. Redondo, H. Canacsinh, Manuela Vieira, and José O. Rossi</i>	
Solid-State Bipolar Marx Converter with Output Transformer and Energy Recovery	403
<i>H. Canacsinh, José Fernando Silva, Sónia F. Pinto, Luis M. Redondo, and João Santana</i>	
Solid-State Bipolar Marx Generator with Voltage Droop Compensation	411
<i>H. Canacsinh, José Fernando Silva, Sónia F. Pinto, and Luis M. Redondo</i>	

Part XV: Electronics

Design of Robust CMOS Amplifiers Combining Advanced Low-Voltage and Feedback Techniques	421
<i>Somayeh Abdollahvand, António Gomes, David Rodrigues, Fábio Januário, and João Goes</i>	

A High-Level Model for Capacitive Coupled RC Oscillators 429
João Casaleiro and Luís B. Oliveira

Compact and Power Efficient MOS-NDR Muller C-Elements 437
Juan Núñez, María J. Avedillo, and José M. Quintana

On Implementation Possibilities of High-Voltage IGBTs in Resonant
 Converters 443
Andrei Blinov and Dmitri Vinnikov

Part XVI: Optimization in Electronics

Optimization-Based Design of Nano-CMOS LC-VCOs 453
*Pedro Pereira, Helena Fino, Fernando V. Coito, and
 M. Ventim-Neves*

Robust Optimization-Based High Frequency Gm-C Filter Design 465
Pedro M. Vicente Leitão and Helena Fino

PSO-Based Design of RF Integrated Inductor 475
Pedro Pereira, Fernando V. Coito, and Helena Fino

Part XVII: Telecommunications and Electronics

Efficient Hybrid Continuous-Time/Discrete-Time $\Sigma\Delta$ Modulators for
 Broadband Wireless Telecom Systems 485
J. Gerardo García-Sánchez and José M. de la Rosa

Interference Distribution of a CDMA Cognitive Radio *Ad Hoc*
 Network 493
Miguel Luís, Rodolfo Oliveira, Rui Dinis, and Luis Bernardo

Photonics Active Filters Based on SiC Multilayer Structures: A Two
 Stage Active Circuit 503
*Manuel A. Vieira, Alessandro Fantoni, Paula Louro,
 Adolfo S. Garção, and Manuela Vieira*

SiC Multilayer Photonic Structures with Self Optical Bias
 Amplification 511
*Manuela Vieira, Manuel A. Vieira, Paula Louro,
 Alessandro Fantoni, Manuel Barata, and Vitor Silva*

Part XVIII: Electronic Materials

New Electronic Memory Device Concepts Based on Metal
 Oxide-Polymer Nanostructures Planer Diodes 521
*Asal Kiazadeh, Paulo R.F. Rocha, Qian Chen, and
 Henrique L. Gomes*

Electroforming Process in Metal-Oxide-Polymer Resistive Switching Memories	527
<i>Qian Chen, Henrique L. Gomes, Asal Kiazadeh, Paulo R.F. Rocha, Dago M. De Leeuw, and Stefan C.J. Meskers</i>	
Dynamic Behavior of Resistive Random Access Memories (RRAMS) Based on Plastic Semiconductor	535
<i>Paulo R.F. Rocha, Asal Kiazadeh, Qian Chen, and Henrique L. Gomes</i>	
Part XIX: Workshop on Data Analysis and Modeling Retina in Health and Disease	
Fovea and Optic Disc Detection in Retinal Images with Visible Lesions	543
<i>José Pinão and Carlos Manta Oliveira</i>	
Pupillometry: Development of Equipment for Studies of Autonomic Nervous System	553
<i>Gonçalo Leal, Carlos Neves, and Pedro M. Vieira</i>	
Automatic Arteriovenous Ratio Computation: Emulating the Experts...	563
<i>S.G. Vázquez, N. Barreira, M.G. Penedo, M. Rodriguez-Blanco, F. Gómez-Ulla, A. González, and G. Coll de Tuero</i>	
Mathematical Analysis and Computational Integration of Massive Heterogeneous Data from the Human Retina	571
<i>Arash Sangari, Adel Ardalan, Larry Lambe, Hamid Eghbalnia, and Amir H. Assadi</i>	
Automated Evaluation of Retinopathies Using Image Cytometry	579
<i>K. Staniszewski, R. Sepehr, S. Maleki, C.M. Sorenson, N. Sheibani, and M. Ranji</i>	
Variability and Repeatability Tests of ARMD Assessment Using the AD3RI Tool	583
<i>André D. Mora, José M. Fonseca, and Pedro M. Vieira</i>	
Author Index	591