2009 IEEE Toronto International Conference Science and Technology for Humanity

(TIC-STH 2009)

Toronto, Ontario, Canada
26 - 27 September 2009

IEEE

IEEE Catalog Number: CFP0956G-PRT
ISBN: 978-1-4244-3877-8

Symposium on Biomedical Engineering 1 - Rehabilitation

Chair: Kristiina McConville (Ryerson University, Canada)

Application of infrared thermal imaging in rehabilitation engineering: preliminary results
Negar Memarian (University of Toronto, Canada); Tom Chau (Bloorview Macmillan Children's Centre, Canada); Anastasios Venetsanopoulos (Ryerson University, Canada)
pp. 1-5

Surface Reconstruction from Sliced Point Cloud Data for Designing Facial Prosthetics
Kuldeep Sareen (University of Western Ontario, Canada); George Knopf (Professor, University of Western Ontario, Canada); Robert Canas (National Research Council Canada, Canada)
pp. 6-11

Towards the development of a wearable rehabilitation device for stroke survivors
Michael Henrey (SFU, Canada); Cormac Sheridan (Simon Fraser University, Canada); Zeeshan Omer Khokhar (SFU, Canada); Carlo Menon (SFU, Canada)
pp. 12-17

Maximal Aerobic Power in Endurance Trained and Sedentary Men and Women, 10-74 Years of Age
Terrance Malkinson (Southern Alberta Institute of Technology, Canada)
pp. 18-21

Symposium on Information Assurance, Biometric Security and Business Continuity: Biometrics 1

Session will be concluded by a ten minute briefing by an invited expert, authors' perspective discussion and/or research update

Chair: Khalil El-Khatib (UOIT, Canada)

Toward a Dynamic Framework for Security Evaluation of Voice Verification Systems
Farbod Foomany (University of Huddersfield, Canada); Alex Hirschfield (University of Huddersfield, United Kingdom); Michael Ingleby (University of Huddersfield, United Kingdom)
pp. 22-27

Using ECG as a Measure in Biometric Identification Systems
Mouhcine Guennoun (University of Ottawa, Canada); Babak Nasri (Beyond measures Inc., Canada); Khalil El-Khatib (UOIT, Canada)
pp. 28-33

Security Issues of Biometric Encryption
Alex Stoianov (Office of the Information and Privacy Commissioner of Ontario, Canada); Tom Kevenaar (priv-ID B.V., The Netherlands); Michiel van der Veen (Philips Research, The Netherlands)
pp. 34-39

Continuous Authentication by Electrocardiogram Data
Mouhcine Guennoun (University of Ottawa, Canada); Najoua Abbad (University of Ontario Institute of Technology, Canada); Jonas Talom (University of Ontario Institute of Technology, Canada); Sk. Md. Mizanur Rahman (University of Ontario Institute of Technology, Canada); Khalil El-Khatib (UOIT, Canada)
pp. 40-42

Symposium on Education and Social Implications of Technology: Education 1

Chair: Robert D. Dony (University of Guelph, Canada)

Better Access to Math for Visually Impaired
Wararat Wongkia (Mahidol University, Thailand); Kanlaya Naruedomkul (Mahidol University, Thailand); Nick Cercone (York University, Canada)
pp. 43-48

Steps Toward Accurate Math Word Problem Translation
Wanintorn Supap (Mahidol University, Thailand); Kanlaya Naruedomkul (Mahidol University, Thailand); Nick Cercone (York University, Canada)
pp. 49-53

Foodforce2 - An Interactive and Collaborative Educational Learning Platform
Mohit Taneja (Netaji Subhas Institute of Technology, India); Deepank Gupta (Netaji Subhas Institute of Technology, India); Vijit Singh (Netaji Subhas Institute of Technology, India); Peeyush Kumar (Netaji Subhas Institute Of Technology, India)
pp. 54-59

Symposium on Engineered and Natural Complex Systems-Modeling, Simulation and Analysis 1

Chair: Anna T. Lawniczak (University of Guelph, Canada)

An Intelligent Opportunistic Maintenance (OM) System: A Genetic Algorithm Approach
Murad Samhouri (Hashemite University, Jordan)
pp. 60-65

Modeling and simulation for vehicular traffic in city network controlled by signals
Kazuhito Komada (Shizuoka University, Japan); Takashi Nagatani (Shizuoka University, Japan)

pp. 66-71

The impact of real time information on transport network routing through Intelligent Agent Based Simulation
Matteo Ignaccolo (University of Catania, Italy); Andrea Rapisarda (University of Catania, Italy); Alessandro Pluchino (University of Catania, Italy); Giuseppe Inturri (University of Catania, Italy); Salvatore Tudisco (National Institute of Nuclear Physics (INFN-Catania), Italy); Daniele Buscema (University of Catania, Italy); Corrado Santoro (University of Catania, Italy)
pp. 72-77

On Motifs and Functional Modules of Complex Networks
Jun Wang (University College Cork, Ireland); Gregory Provan (University College Cork, Ireland)
pp. 78-82

Symposium on Human Factors and Ergonomics 1: Text Processing

Chair: Robert Allison (York University, Canada)

Eyes-free Text Entry on a Touchscreen Phone
Hussain Tinwala (York University, Canada); Ian S MacKenzie (York University, Canada)
pp. 83-88

Can Friction Improve Mouse-Based Text Selection?
Dustin Phillips (York University, Canada); Wolfgang Stuerzlinger (York University, Canada)
pp. 89-94

Direct Automatic Generation of Mind Maps from text with M2Gen
Mohammad Abdeen (Ain Sham University, Egypt); Mustapha C.E. Yagoub (University of Ottawa, Canada)
pp. 95-99

Analysis of Text Entry Performance Metrics
Ahmed S Arif (York Univeristy, Canada); Wolfgang Stuerzlinger (York University, Canada)
pp. 100-105

TIC-STH Symposium on Technology, Information and Knowledge Management - Healthcare

Chair: Carolyn McGregor (University of Ontario Institute of Technology, Canada)

Requirement Analysis for a Nursing Decision Support System
Yun-Ke Chang (Nanyang Technological University, Singapore); Christopher Khoo (Nanyang Technological University, Singapore); Armineh Nourbakhsh (Nanyang Technological University, Singapore)
pp. 106-111

Auto-calibration of Support Vector Machines for Detecting Disease Outbreaks
El Sayed Mahmoud (University of Guelph, Canada); David Calvert (University of Guelph, Canada)
pp. 112-117

Document management for elderly people
Norbert Kuhn (FH Trier, Germany); Stefan Richter (FH Trier, Germany); Michael Schmidt (FH Trier, Germany); Andreas Truar (FH Trier, Germany)
pp. 118-123

Measuring Change in Primary Healthcare in Ontario: A Measurement Methodology
Justin St-Maurice (Guelph Family Health Team, Canada); Robert D. Dony (University of Guelph, Canada)
pp. 124-129

10:30 - 11:00

Break 1

11:00 - 12:30

Success Secrets of Managing Enterprise Architecture Projects (continued)

Symposium on Biomedical Engineering 2 - Biomechanics & Biomedical Modeling

Chair: Peter Purslow (University of Guelph, Canada)

Development of a multibody computational model of the lumbar spine
Michael Fairman (Ryerson University, Canada); Ahmad Ghasempoor (Ryerson University, Canada); Mohammad Abdoli-Eramaki (Ryerson University, Canada)
pp. 130-133

The shear modulus of connections between tendon fascicles
Peter Purslow (University of Guelph, Canada)
pp. 134-136

Deformable Modeling of a Human Liver with Contact Surface
Al-Mayah (University Health Network, Canada); Joanne Moseley (Princess Margaret Hospital, Canada); Mike Velec (Princess Margaret Hospital, Canada); Kristy Brock (Princess Margaret Hospital, Canada)
pp. 137-140

Nonlinear Finite Element-Based Modeling of Soft-Tissue Cutting
Bassma Ghali (University of Toronto, Canada); Shahin Sirouspour (McMaster University, Canada)
pp. 141-146

Symposium on Information Assurance, Biometric Security and Business Continuity: Business Continuity and Disaster Recovery

Session will be concluded by a ten minute briefing by an invited expert, authors' perspective discussion and/or research update

Chair: Rifaat Abdalla (Defence R&D, Canada)

Evaluation of a Business Continuity Plan using Process Algebra and Modal Logic
Wolfgang J Boehmer (Technische Universitaet Darmstadt, Germany); Christoph Brandt (Computer Science and Communications Research Unit, Universite du Luxembourg, Luxemburg); Jan F. Groote (Technical University of Eindhoven, The Netherlands)
pp. 147-152

Fuzzy-JESS Expert System for Indexing Business Resiliency
Ali Asgary (York University, Canada); Albert Kong (York University, Canada); Jason Levy (Virginia Commonwealth University, USA)
pp. 153-158

Modeling Loss and No-Loss Fire Incidents Using Artificial Neural Network: Case of Toronto
Ali Asgary (York University, Canada); Ali Sadeghi Naini (University of Western Ontario, Canada); Albert Kong (York University, Canada)
pp. 159-163

Regulatory and Transparency Environments and Security Concerns: A Study Involving Global Financial Services Institutions
Princely Ifinedo (Cape Breton University, Canada)
pp. 164-169

Symposium on Advances in Systems and Sensors: Aerospace and Electronics Systems

Chair: Hassan Kojori (Honeywell Engines, Systems and Services, Toronto, Canada & University of Toronto, Adjunct Associate Professor, Canada)

Application of Vibration Based Technique in Health Monitoring of Multi-stable Lamainated Composites
Hamidreza Ghaffari (Sharif university of technology, Iran); Abolghassem Zabihollah (Sharif University of Technology, Iran); Esmaeel Saeedi (Semnan University, Iran); Roya Ahmadi (University of babol, Iran)
pp. 170-175

Vibration Based Damage Detection in Smart Non-uniform Thickness Laminated Composite Beams
Hamidreza Ghaffari (Sharif university of technology, Iran); Roya Ahmadi (University of babol, Iran); Esmaeel Saeedi (Semnan University, Iran); Abolghassem Zabihollah (Sharif University of Technology, Iran)
pp. 176-181

Advances in Structural Damage Diagnostic Research: Architectural Design, Modeling and Validation
Amar Kumar (University of Ottawa, Canada); Alka Srivastava (Tecsis Corporation, Canada); Amiya Nayak (SITE, University of Ottawa, Canada); Nita Goel (Cistel technology, Canada)
pp. 182-187

Symposium on Education and Social Implications of Technology: Education 2

Chair: Robert D. Dony (University of Guelph, Canada)

Ecological footprints as case studies in programming
Michael Wirth (University of Guelph, Canada)
pp. 188-193

Towards a Role Framework for Mobile Devices in Educational Contexts
Kazi Arif Anwar (University of Toronto, Canada)
pp. 194-199

Impact of Classroom Technologies on Individual Learning Behavior – A Case Study
Nick Naser Manochehri (Qatar University, Qatar); Khurram Sharif (Qatar University, Qatar)
pp. 200-205

Symposium on Engineered and Natural Complex Systems-Modeling, Simulation and Analysis 2

Chair: Bruno Nicola Di Stefano (Nuptek Systems Ltd, Canada)

Complex networks and cost propagation
Luis G. Moyano (Telefonica I+D, Spain); Mary Luz Lopez (Telefonica I+D, Spain); Maria Luisa Maria Luisa Vargas (Telefonica I+D, Spain)
pp. 206-210

Automatic calibration of a lumped Xinanjiang hydrological model by genetic algorithm
Xiaohua Dong (China Three Gorges University, P.R. China); Ji Liu (China Three Gorges University,

P.R. China); Yingji Xuan (China Three Gorges University, P.R. China)
pp. 211-217

A time-dependent ABM model of an eco-product market with social interactions and dynamic game pricing schemes
Edward Thommes (University of Guelph, Canada); Henry Thille (University of Guelph, Canada); Monica Cojocaru (University of Guelph, Canada); Dominic Nelson (University of Guelph, Canada)
pp. 218-221

Positions in the game of Go as Complex Systems
Thomas Wolf (Brock University, Canada)
pp. 222-229

Symposium on Human Factors and Ergonomics 2: Ergonomics and Workplace Design

Chair: Ming Hou (Defence R&D Canada, Canada)

Investigation of Upper limb Muscle Activity during Repetitive Light Tasks using Surface
Hilma Zadry (University of Malaya, Malaysia); Siti Zawiah Md Dawal (University of Malaya, Malaysia); Zahari Taha (University of Malaya, Malaysia)
pp. 230-233

Upper Limb and Lower Back Muscle Activity during Prolonged Sitting
Nurhayati Mohd Nur (Universiti of Malaya, Malaysia); Siti Zawiah Md Dawal (University of Malaya, Malaysia)
pp. 234-238

Job Satisfaction Model for Manufacturing Industry: Focus on Ergonomics and Human Factors in Work Design
Siti Zawiah Md Dawal (University of Malaya, Malaysia); Zahari Taha (University of Malaya, Malaysia)
pp. 239-243

TIC-STH Symposium on Technology, Information and Knowledge Management -Healthcare

Chair: Patrick Hung (University of Ontario Institute of Technology, Canada)

Health information from the Web- assessing its quality: A KET intervention
Lubna Daraz (McMaster University, Canada); Joy MacDermid (McMaster University, Canada); Seanne Wilkins (McMaster University, Canada); Jane Gibson (Institute for Work &Health, Canada); Lynn Shaw (University of Western Ontario, Canada)
pp. 244-251

Distributed IR based technology to monitor hand hygiene of healthcare staff
Alexander Levchenko (Toronto Rehabilitation Institute, Canada); Veronique Boscart (Toronto Rehabilitation Institute, Canada); Jamie Ibbett (Toronto Rehabilitation Institute, Canada); Geoffrey Fernie (Toronto Rehabilitaion Institute, Canada)
pp. 252-255

Modeling Dependent Demand Arrivals within an Open-Access Scheduling System
Husniyah Abdus-Salaam (North Carolina A&T State University, USA); Lauren Davis (North Carolina A&T State University, USA); Daniel Mota (North Carolina A&T State University, USA)
pp. 256-261

Trust and classification: towards community ontology revision and knowledge management
Stanislav Ustymenko (Meritus University, Canada); Daniel Schwartz (Florida State University, USA)
pp. 262-267

12:30 - 13:30

Lunch 1

13:00 - 13:30

Hydrogen Village (s): Creating Hydrogen and Fuel Cell Communities

Rymal Smith, P. Eng. Director, Hydrogen Village Program

The proposed talk will outline the purpose, history, ongoing activities, and lessons learned from the Hydrogen Village Program. Hydrogen Village was initiated in late 2004 with its primary purpose being to accelerate the development of early commercial markets for hydrogen and fuel cell technologies in the Greater Toronto Area. The term “Hydrogen Village” is used in recognition of the fact that many early uses for these technologies will be community based – both stationary and mobile – where people work and live. There are three primary activities of the Hydrogen Village: - Early deployments; we have assisted with the deployment of several dozen hydrogen and fuel cell applications throughout the city including transportation, material handling, backup power, and grid power. - Business development; we have assisted with business planning and development, customer awareness and education, solutions development, and regulatory issues - Outreach and education; we have developed and delivered outreach programs to various levels of government, business, academia, and community groups. The talk will provide an overview of these activities and touch on some of the many lessons that have been learned. It is hoped that by sharing this market development approach and experience with other regions we will develop worldwide markets for these emerging technologies and the new businesses being built around them.

Chair: Xavier N Fernando (Ryerson University, Canada)

13:30 - 15:00

Using the Pilot Library: A Fresh Alternative to MPI for HPC Clusters

Dr. Bill Gardner with John Carter & Natalie Girard,Department of Computing & Information Science University of

Guelph, Ontario

Pilot is a new way to program high-performance clusters based on a high-level model featuring processes executing on cluster nodes, and channels for passing messages among them. Designed to smooth the learning curve for novice scientific programmers, the set of library functions is small—less than one-tenth that of MPI—and easy to learn, since the syntax mirrors C's well-known printf and scanf. The process/channel abstraction inherently reduces the opportunities for communication errors that result in deadlock, and a runtime mechanism detects and diagnoses deadlocks arising from circular waiting. The Pilot library is built as a transparent layer on top of conventional MPI, and shields users from the latter's complexity while adding minimal overhead.

This tutorial assumes basic exposure to C programming. Familiarity with MPI is not required, but will make the comparisons more meaningful.

What You Will Learn

- Purpose of Pilot library and conceptual overview
- Planning, coding, compiling and running a Pilot application
- Hands-on: Hello World and sample programs
- Hands-on: Runtime monitor for usage errors, logging, and deadlock detection
- Patterns in Pilot: master/worker and pipeline
- Hands-on: Pilot's collective operations on groups of channels
- Compare/contrast Pilot and MPI
- Pilot performance
- Status and availability of library

Pilot website: http://carmel.cis.uoguelph.ca/pilot/

Symposium on Biomedical Engineering 3 - Signal Processing I

Chair: Aleksandar Jeremic (McMaster University, Canada)

EEG Signal Classification Based on A Riemannian Distance Measure
Yili Li (McMaster University, Canada); Kon Max Wong (McMaster University, Canada); Hubert deBruin (McMaster University, Canada)
pp. 268-273

Enhancement of the Modified P-Spectrum for use in Real-Time QRS Complex Detection
Michael Liscombe (York University, Canada); Amir Asif (York University, Canada)
pp. 274-278

Adaptive Segmentation and Normalization of Breathing Acoustic Data of Subjects with Obstructive Sleep Apnea
Hisham Alshaer (University of Toronto, Canada); Geoffrey Fernie (Toronto Rehabilitaion Institute, Canada); Ervin Sejdic (University of Toronto, Canada); T Douglas Bradley (University of Toronto; Toronto Rehabilitation Institute, Canada)
pp. 279-284

Isometric Torque Generation in a Parkinsonian Tremulous Elbow and the Effect of Medication
Fariborz Rahimi (University of Waterloo, Canada); David Wang (University of Waterloo, Canada); Quincy Almeida (Wilfrid Laurier University, Canada); Farrokh Janabi-Sharifi (Ryerson University, Canada)
pp. 285-289

Symposium on Information Assurance, Biometric Security and Business Continuity: Information Assurance and Privacy 1

Session will be concluded by a ten minute briefing by an invited expert, authors' perspective discussion and/or research update

Chair: Roy Ng (Ryerson University, Canada)

Ensuring Document Security and Privacy in Transpromo Printing
Art Seto (Ryerson University, Canada); Jason Lisi (Ryerson University GCM, Canada); Mohammed Khaled Ahmed (Ryerson University GCM, Canada)
pp. 290-295

Security modeling of a layered system
Sanaz Hafezian Razavi (Ryerson university, Canada); Olivia Das (Ryerson University, Canada)
pp. 296-301

Addressing Privacy Constraints for Efficient Monitoring of Network Traffic for Illicit Images
Amin Ibrahim (University of Ontario Institute of Technology, Canada); Miguel Vargas Martin (University of Ontario Institute of Technology, Canada)
pp. 302-308

Canadian and UK Perspectives on Electronic Business Data Transfer
Victor Ralevich (Sheridan Institute of Technology and Advanced Learning, Canada); Dragana Martinovic (University of Windsor, Canada)
pp. 309-315

Symposium on Advances in Systems and Sensors: Geomatics 1

Chair: Sunil Bisnath (York University, Canada)

Assessment and Implementation of NOAA NWP-Based Tropospheric Correction Model
Hassan Ibrahim (Ryerson University, Canada); Ahmed El-Rabbany (Ryerson University, Canada)
pp. 316-321

Software Simulation of Multiple Global Navigation Satellite System Measurements
Alexander Dolgansky (York University, Canada); Anthony Szeto (York University, Canada); Sunil Bisnath (York University, Canada)
pp. 322-327

An Efficient INS/GPS Impulse Response Model for Bridging GPS Outages
Mohammed El-Diasty (York University, Canada); Spiros Pagiatakis (York University, Canada)
pp. 328-333

Location Services Management in Intelligent Transportation Systems
Hanan Ahmad Saleet (University of Waterloo, Canada); Otman Basir (University of Waterloo, Canada)
pp. 334-339

Symposium on Education and Social Implications of Technology: Human and Socio-Cultural Service Oriented Computing 1

Chair: David Allison (University of Western Ontario, Canada)

Support Systems for Telehealth Services: Critical operational and ICT complementary assets for large-scale provisioning
Americo Brigido Cunha (Centro Federal de Educacao Tecnologica do Rio de Janeiro, Brazil); Miriam A M Capretz (University of Western Ontario, Canada); Luciano Raptopoulos (Centro Federal de Educacao Tecnologica do Rio de Janeiro, Brazil)
pp. 340-345

Taking the Leap from Technology: The Socio-Technical Aspects of Governance in Service-Oriented Enterprises
Luiz Martins (University of Coimbra, Portugal); Paulo Cunha (University of Coimbra, Portugal)
pp. 346-350

A Virtual Web Environment for Researchers on Brazilian Indigenous Cultural Heritage, Indians and General Public
Maria Beatriz Toledo (University of Campinas, Brazil); Marcos V. V. Souza (University of Campinas, Brazil); Diego Garcia (University of Campinas, Brazil)
pp. 351-356

Symposium on Engineered and Natural Complex Systems-Modeling, Simulation and Analysis 3

Chair: Henryk Fuks (Brock University, Canada)

Combined Experimental and Simulation Study of Blood Clot Formation
Mark Alber (University of Notre Dame, USA); Joshua Lioi (University of Notre Dame, USA); Zhiliang Xu (University of Notre Dame, USA); Jian Mu (University of Notre Dame, USA); Elliot Rosen (Indiana University School of Medicine, USA); Xiaomin Liu (University of Notre Dame, USA); Danny Chen (University of Notre Dame, USA); Malgorzata Kamocka (Indiana University School of Medicine, USA)
pp. 357-362

Stochastic Simulation Methods for Biochemical Models with Multi-State Species
Zhen Liu (Virginia Tech, USA); Yang Cao (Virginia Tech, USA)
pp. 363-368

Propagation Delay and Packet Delivery Ratio Over A Wireless Mesh Network and their Effects on an Urban Search and Rescue Task
Cristina Ribeiro (University of Waterloo, Canada); Alexander Ferworn (Ryerson University, Canada); Jimmy Tran (Ryerson University, Canada)
pp. 369-374

Symposium on Human Factors and Ergonomics 3: Modelling

Chairs: Haibin Zhu (Nipissing University, Canada), Shafee Ahamed (National Research Council Canada, Canada)

Multi agent simulation of pedestrian behavior in closed spatial environment
Alessandro Pluchino (University of Catania, Italy); Andrea Rapisarda (University of Catania, Italy); Matteo Ignaccolo (University of Catania, Italy); Giuseppe Inturri (University of Catania, Italy); Salvatore Tudisco (National Institute of Nuclear Physics (INFN-Catania), Italy); Salvatore Caprì (University of Catania, Italy); Cesare Garofalo (University of Catania, Italy); Francesca Camillen (University of Catania, Italy)
pp. 375-380

Contour-based 3D Point Cloud Simplification for Modeling Freeform Surfaces
Kuldeep Sareen (University of Western Ontario, Canada); George Knopf (Professor, University of Western Ontario, Canada); Robert Canas (National Research Council Canada, Canada)
pp. 381-386

Restrain Mental Workload With Roles In HCI
Haibin Zhu (Nipissing University, Canada); Ming Hou (Defence R&D Canada, Canada)
pp. 387-392

Framework for Modeling and Validating Concept Designs in Virtual Reality Environments
Harish Pungotra (University of Western Ontario, London, ON, Canada, Canada); George Knopf (Professor, University of Western Ontario, Canada); Robert Canas (National Research Council Canada, Canada)
pp. 393-398

TIC-STH Symposium on Technology, Information and Knowledge Management

Chair: Henry Kim (York University, Canada)

The Perceived Effects of Business Process Management
Markus Kohlbacher (Graz University of Technology, Austria)
pp. 399-402

Examining the Impacts of Relevant Contextual Influences on the Extent of Use of E-business Technologies: Perspectives from Atlantic Canada's SMEs
Princely Ifinedo (Cape Breton University, Canada)
pp. 403-408

Applying Back Propagation Neural Network and Sequential Pattern Mining to Construct Corporation Crisis Prediction Model–A Case of Taiwan's Electronic Industry
Shu-chuan Lo (National Taipei University of Technology, Taiwan); Lin (NTUT, Taiwan)
pp. 409-414

Goal Based Project Scope Determination
Swapan Sikdar (Ryerson University, Canada); Olivia Das (Ryerson University, Canada)
pp. 415-420

15:00 - 15:30

Break 2

15:30 - 17:30

IEEE Milestone Panel Session – Cardiac Pacemaker

The Session is dedicated to the IEEE Milestone - First External Cardiac Pacemaker
Chair: Sri Krishnan (Ryerson University, Canada)

Using the Pilot Library: A Fresh Alternative to MPI for HPC Clusters (cont)

Symposium on Information Assurance, Biometric Security and Business Continuity: Information Assurance and Privacy 2

Session will be concluded by a ten minute briefing by an invited expert, authors' perspective discussion and/or research update

Chair: Roy Ng (Ryerson University, Canada)

Multiresolution Region-based Image Fusion Using The Contourlet Transform
Soad Ibrahim (PhD Candidate, University of Guelph, Canada); Michael Wirth (University of Guelph, Canada)
pp. 421-426

Analysis of Tagging Variants of Sequenced Tagged Captcha (STC)
Aditya Raj (Netaji Subhas Institute of Technology, India); Ashish Jain (Netaji Subhas Institute of Technology, India); Abhimanyu Jain (Delhi College of Engineering (DCE), India); Tushar Pahwa (NSIT, India)
pp. 427-432

Security Weaknesses of WEP Protocol For IEEE 802.11b and Enhancing The Security With Dynamic Keys
Rasika Idamekorala (Post Graduate Instittue of Science, University of Peradeniya, Sri Lanka); Manjula Sandirigama (University of Peradeniya, Sri Lanka)
pp. 433-438

Analysis on Mobile WiMAX Security
Perumalraja Rengaraju (Carleton University, Canada); Chung-Horng Lung (Carleton University, Canada); Anand Srinivasan (Carleton University, Canada); Yi Qu (Carleton University, Canada)
pp. 439-444

Symposium on Advances in Systems and Sensors: Geomatics 2

Chairs: Costas Armenakis (York University, Canada), Jonathan Li (University of Waterloo, Canada)

Generation of Three Dimensional Photo-Realistic Models from Lidar and Image Data
Julien Li-Chee-Ming (York University, Canada); Damir Gumerov (York University, Canada); Tudor Ciobanu (York University, Canada); Costas Armenakis (York University, Canada)
pp. 445-450

On the retrieval of vegetation parameters from multi-angular hyperspectral remote sensing data
Baoxin Hu (York University, Canada); Frank Zhang (York University, Canada); Jian-Guo Wang (York University, Canada)
pp. 451-455

Panchromatic IKONOS Image Classification Using Wavelet Based Features
Wai Yeung Yan (Ryerson University, Canada); Ahmed Shaker (Ryerson University, Canada); Weibao Zou (Shenzhen Institute of Advanced Technology, P.R. China)
pp. 456-461

Classification of SHOALS 3000 Bathymetric LIDAR Signals Using Decision Tree and Ensemble Techniques
Ramu Narayanan (York University, Canada); Brian Heungsik Kim (York University, Canada); Gunho

Symposium on Education and Social Implications of Technology: Human and Socio-Cultural Service Oriented Computing 2

Chair: Miriam A M Capretz (University of Western Ontario, Canada)

Symposium on Engineered and Natural Complex Systems-Modeling, Simulation and Analysis 4

Chair: Mieso Denko (University of Guelph, Canada)

Symposium on Human Factors and Ergonomics 4: Command & Control / Search & Rescue

Chair: Bruce Chalmers (DRDC Atlantic, Canada)

18:30 - 21:00

Awards Banquet

Location TBD

Sunday, September 27

08:30 - 09:00

Sustainability: The Ultimate Quest for Science, Technology and Humanity

Marc Rosen, President, Engineering Institute of Canada

Sustainability is one of the greatest challenges facing humanity and society and has been discussed in many forms for over two decades. Of concern across the world and in almost all fields, sustainability incorporates technical, environmental, cultural, economic and social aspects. An understanding of sustainability is crucial to sustainable development. Scientific and technical approaches to sustainability are needed, as are supporting social and policy measures, if humanity is to develop solutions to the many challenges it faces that relate to sustainability, including climate change, inadequate energy resources, health threats, and poverty and economic disparities. In this talk, the speaker describes some of the challenges associated with sustainability as well as some means to achieve it. The roles of science and technology are discussed, as are requirements for sustainability education and improved public awareness. Illustrations are presented in areas like energy and the environment. Through this talk, the speaker hopes to convey why he feels sustainability is the ultimate quest for science, technology and humanity.

Brief Biography of the Speaker: Dr. Marc A. Rosen is a Professor of Mechanical Engineering at the University of Ontario Institute of Technology in Oshawa, Canada, where he served as founding Dean of the Faculty of Engineering and Applied Science from 2002 to 2008. Dr. Rosen became President of the Engineering Institute of Canada in 2008. He was President of the Canadian Society for Mechanical Engineering from 2002 to 2004, and is a registered Professional Engineer in Ontario. With over 60 research grants and contracts and 500 technical publications, Dr. Rosen is an active teacher and researcher in thermodynamics, energy technology (including cogeneration, district energy, thermal storage and renewable energy), and the environmental impact of energy and industrial systems. Much of his research has been carried out for industry. Dr. Rosen has worked for such organizations as Imatra Power Company in Finland, Argonne National Laboratory near Chicago, and the Institute for Hydrogen Systems near Toronto. He was also a professor in the Department of Mechanical, Aerospace and Industrial Engineering at Ryerson University in Toronto, Canada for 16 years. While there, Dr. Rosen served as department Chair and Director of the School of Aerospace Engineering. Dr. Rosen has received numerous awards and honours, including an Award of Excellence in Research and Technology Development from the Ontario Ministry of Environment and Energy, the Engineering Institute of Canada's Smith Medal for achievement in the development of Canada, and the Canadian Society for Mechanical Engineering's Angus Medal for outstanding contributions to the management and practice of mechanical engineering. He is a Fellow of the Engineering Institute of Canada, the Canadian Academy of Engineering, the Canadian Society for Mechanical Engineering, the American Society of Mechanical Engineers and the International Energy Foundation.

09:00 - 10:30

An Introduction to CUDA: Harnessing Graphics Processing Units for High-Throughput General-Purpose Computation

Lukasz Wawrzyniak, University of Guelph, Ontario

CUDA is a computing platform that exposes NVIDIA graphics cards as general-purpose compute devices. The computational capabilities of today's massively parallel graphics processing units (GPUs) can be harnessed to accelerate data-parallel algorithms. CUDA has been used successfully by researchers in a wide variety of disciplines including biochemistry, astrophysics, geology, visualization, and countless others. This tutorial is an introduction to the CUDA programming model. It examines a typical "Hello, World" application and introduces some of the more advanced features using increasingly sophisticated examples. The goal is to give the attendee a broad perspective on computing with CUDA as well as sufficient information to start developing simple CUDA applications. Since this is an introductory tutorial, familiarity with GPU programming is not required. However, the code examples assume exposure to C programming.

Topics Covered

- Brief history of GPGPU (general-purpose computing on graphics processing units)
- Conceptual overview of CUDA and its relation to other GPGPU approaches
- The stream processing model
- Using CUDA shared memory for inter-thread communication
- Optimizing memory access patterns to accelerate applications
- Evaluating performance
- General optimization strategies

Bio: Lukasz Wawrzyniak obtained his BSc in Applied Computer Science from Ryerson University. He obtained his MSc in Computing and Information Science from the University of Guelph, where he is currently a PhD candidate. His research focuses on detecting significant high-density clusters in multidimensional data with applications to disease surveillance. One important avenue of this research concerns accelerating algorithms using graphics processing units and a variety of computing platforms including CUDA, ATI Stream, and OpenGL.

Symposium on Biomedical Engineering 5 - Image Processing

Chair: Robert D. Dony (University of Guelph, Canada)

Image Processing for Colour Blindness Correction
Steven Poret (University of Guelph, Canada); Robert D. Dony (University of Guelph, Canada); Stefano Gregori (University of Guelph, Canada)
pp. 539-544

Wavelet Based MR 2D Slice Retrieval in 3D Volumes
Azhar Quddus (University of Waterloo, Canada); Otman Basir (University of Waterloo, Canada)
pp. 545-550

Covert Monitoring of the Point-of-Gaze
Moshe Eizenman (University of Toronto, Canada); Dmitri Model (University of Toronto, Canada); Elias Guestrin (University of Toronto, Canada)
pp. 551-556

Mass Candidate Detection and Segmentation in Digitized Mammograms
Samar Mohamed (University of Waterloo, Canada); Gert Behiels (Agfa Healthcare, Canada); Piet Dewaele (Agfa Healthcare, Belgium)
pp. 557-562

Special Session on Electronic Design Automation 1

Chair: Dilip Banerji (University of Guelph, Canada)

A Comparison of Hardware Acceleration Methods for VLSI Maze Routing
Mahdi Elghazali (Universtiy of Guelph, Canada); Shawki Areibi (University of Guelph, Canada); Gary Grewal (University of Guelph, Canada); Adam Erb (University of Guelph, Canada); Jon Spenceley (University of Guelph, Canada)
pp. 563-568

System-Level Design Space Exploration for Application-Specific HW/SW Systems
Luigi Pomante (University of L'Aquila, Italy); Laura Imbriglio (University of L'Aquila (Italy), Italy); Fabio Graziosi (University of l'Aquila, Italy)
pp. 569-574

Kernel and Application Partitioning for EDF Schedule Feasibility
Andrew Morton (University of Waterloo, Canada); Wayne Loucks (University of Waterloo, Canada)
pp. 575-580

Symposium on Advances in Systems and Sensors: Sensors and Applications 1

Chair: Bo Tan (Ryerson University, Canada)

Current and Emerging Technologies in Endurance Athletic Training and Race Monitoring
Terrance Malkinson (Southern Alberta Institute of Technology, Canada)
pp. 581-586

Measuring Synthetic Aperture Radar Target Differences with Stochastic Distances
Abraao Nascimento (Federal University of Pernambuco, Brazil); Renato J. Cintra (University of Calgary, Canada); Alejandro C Frery (Universidade Federal de Alagoas, Brazil)
pp. 587-592

Cognitive Radio Wireless Sensor Networks: Emerging Topics and Recent Challenges
Amir Sepasi Zahmati (Ryerson University, Canada); Sattar Hussain (Ryerson University, Canada); Xavier N Fernando (Ryerson University, Canada); Ali Grami (University of Ontario Institute of Technology, Canada)
pp. 593-596

Design and Modeling of a MEMS Accelerometer for a Novel Virtual Button User Interface
David Mergia Effa (University of Waterloo, Canada); P Nieva (University of Waterloo, Canada); Andrew Zwart (University of Waterloo, Canada); Simon Lancaster (University of Waterloo, Canada)
pp. 597-602

Symposium on Education and Social Implications of Technology: Social Implications of Technology 1

Chair: Latika Nirula (University of Toronto, Canada)

The Value of the Unpopular
Jutta Treviranus (University of Toronto, Canada); Stephen A. Hockema (University of Toronto, Canada)
pp. 603-608

Evolutions in Email Style and Usage: A Qualitative Analysis of Email Prescriptivism in Print-Based Media and the Blogosphere
Carolyn Meyer (Ryerson University, Canada)
pp. 609-612

Towards Resolving "THE TWO CULTURES" Divide: Dynamic Mental Mapping as Potential Means for Analyzing Destabilizing Cultural Developments?
Walter Zessner (George Brown College (Retired), Canada)
pp. 613-617

The Rhetoric of the "Information Highway" in the Media 1992-2008: Was the Hype Actually Trumped by the Reality?
Wendy Cukier (Ryerson University, Canada); Peter Ryan (Ryerson University, Canada); Barbara Fornssler (European Graduate School, Canada)
pp. 618-623

Ray Gilbert, President ICTkeynote Inc.

Smart Grid - Convergence for a Future Energy Transmission and Distribution System with Wireless communications, Sensors/Monitors, RFID and I.T.

The electric grid in the United States is about 100 years ago, and compared to other infrastructure, its absorption of technology has been relatively slow. The slowness in adoption of new technology by the utility industry compared to say the mobile telecommunications industry has been based on an important objective of reliability which is an impressive 99.97 percent. However, the price paid as a result of high reliability is a steady increase in price of electrical power, the inflexibility of the grid to adopt to new renewable energy sources, its inability to flatten the demand curve, its inability to rapidly respond to and isolate problems (resulting in massive outages), etc. Advances in Information Technology, Communications - both wired and wireless, sensors, RFIDs and Internet are resulting in converged technologies such as the iPhone which contains, sensors, location-tracking GPS, internet, telephony, and I.T. - in a converged device. Such a device was probably unimaginable 20 years ago - it is this opportunity that is knocking at the doors of the Utility Industry that has the job of creating, managing, utilizing and maintaining the electric grid of this country and now is leading the charge to modernize the grid. My talk will present the recent efforts from utilities and their suppliers to modernize the U.S. electric grid into what is being referred to as the Smart Grid. In this context, the UCLA WINSmartGrid (Wireless Internet Smart Grid http://winmec.ucla.edu/smartgrid) research will be presented. While WINSmartGrid represents a discrete technology for in-factory, in-office or in-home, the broader scale of the potential opportunities with the Smart Grid such as monitoring cables, wires, weather, etc., will also be discussed. Questions will be raised on what will the Smart Grid look like in 5, 10 or even 50 years. Some of the proposed visions and models presented by industry and government organizations such as the DOE labs will be discussed and compared. In the context of these opportunities, the efforts by President

Obama to modernize the grid by way of the stimulus funding to the tune of .4 billion will be discussed. New business opportunities, their respective challenges and research/technological opportunities for the community will be addressed.

BIO:

Ray Gilbert is President of ICTkeynote Inc, a consultancy that creates educational Keynotes and workshops to enhance collaboration between CIO-IT leaders and their technology partners.

Through ICTkeynote, Ray provides engagement advice and leadership to advance client insights and accelerate the adoption of new Information and Communication Technologies (ICT). This role leverages perspectives acquired through 6+ years as a VP in IT for Enterprise Collaboration at Lucent Technologies. In addition to this IT strategy and planning experience Ray has 15+ years in senior operations positions with Nortel and Lucent in Canada and the US.

Ray has been a frequent keynote speaker for hundreds of CIO-IT and business audiences that sought new perspectives on the business and IT impacts of telecommunications trends. He has led dozens of briefings and workshops with CIO's or their leadership teams in major corporations. Carriers in the US and Canada have specifically invited Ray to provide independent end-user insights at product launches, industry conferences and during one-on-one technology roundtables with sales/marketing teams and key customers.

Ray has a Bachelors and Masters in Engineering and MBA from the University of Toronto. He is a registered engineer, and mentors local startups on ICT issues and governance. He is a member of the IEEE, the American Marketing Association (AMA) Toronto, and he's the VP for the Society for Information Management (SIM) Toronto Chapter. He volunteers at the University of Toronto Rotman School and has participated in conference advisory groups at WINMEC plus the Anderson School at UCLA and the BUILD-E industry group at Boston University.

NOTE CHANGE IN SPEAKER- Presented on behalf of Prof. Rajit Gadh, University of California, UCLA

Chair: Mieso Denko (University of Guelph, Canada)

Symposium on Human Factors and Ergonomics 5: User Interface

Chair: Carmen Branje (Ryerson University, Canada)

Evaluating Visual/Motor Co-location in Fish-Tank Virtual Reality
Robert Teather (York University, Canada); Robert Allison (York University, Canada); Wolfgang Stuerzlinger (York University, Canada)
pp. 624-629

ICE-Lasso: An Enhanced Form Of Lasso Selection
Hoda Dehmeshki (York University, Canada); Wolfgang Stuerzlinger (York University, Canada)
pp. 630-635

Enhancing entertainment through a multimodal chair interface
Carmen Branje (Ryerson University, Canada); Maria Karam (Ryerson University, Canada); Frank Russo (Ryerson University, Canada); Deborah Fels (Ryerson University, Canada)
pp. 636-641

A New Layout Method for Graphical User Interfaces
Adriano Scoditti (Universite Grenoble, France); Wolfgang Stuerzlinger (York University, Canada)
pp. 642-647

Symposium on Sustainable Development and Energy Availability: 1

Sustainable Energy Availability
Chair: Narayana Padhy (IIT, Roorkee, India)

Mho Relay for Protection of Series Compensated Line.
Vijay K Sood (University of Ontario Institute of Technology, Canada); Abhay Shah (Concordia University, Canada)
pp. 648-651

Super Super Decoupled Loadflow
Suresh (Surya) Patel (Suryasys Inc, Canada)
pp. 652-659

Optimal Reconfiguration of Radial Distribution System using Artificial Intelligence Methods
Bala Venkatesh (Ryerson University, Canada); S Chandramohan (Anna University, India)
pp. 660-665

Predicting Electric Power System Restoration
Romney B. Duffey (AECL, Canada); Tae sung Ha (Atomic Energy of Canada Limited, Canada)
pp. 666-668

The Influence of Hydrophobic Polymer Content in the Gas Diffusion Layer on the Performance of Proton Exchange Membrane Fuel Cells
Shahram Karimi (Lambton College, Canada); Jeff Vidmar (Lambton College, Canada); Matthew da Costa (Lambton College, Canada); Frank Foulkes (University of Toronto, Canada)
pp. 669-674

09:45 - 10:30

Symposium on Emerging Scientific Methods and Technologies 1

Please note that this session will commence following the joint invited speaker held with SENCS that is scheduled for 9:00.

Chair: Mieso Denko (University of Guelph, Canada)

A Multi-Robot Coordination Methodology for Autonomous Search and Rescue
Ashish Macwan (University of Toronto, Canada); Beno Benhabib (University of Toronto, Canada)
pp. 675-680

Distributed Video Coding over MIMO Wireless Fading Channel
Xavier N Fernando (Ryerson University, Canada); Ling Guan (Ryerson University, Canada);

Kuganeswaran Thambu (Dept of Electrical and Computer Engineering, Canada)
pp. 681-684

Symposium on Engineered and Natural Complex Systems-Modeling, Simulation and Analysis 5

Please note that this session will commence following the joint invited speaker held with SESMT that is scheduled for 9:00.

Chair: Anna T. Lawniczak (University of Guelph, Canada)

Network of firms: an analysis of the relevance of integrated ownership in market concentration
Giulia Rotundo (University of Tuscia, Italy); Anna Maria D'Arcangelis (Faculty of Economics, Tuscia University, Italy)
pp. 685-690

Detrending Moving Average Algorithm (DMA): a brief review
Anna Carbone (Politecnico di Torino, Italy)
pp. 691-696

10:30 - 11:00

Break 3

11:00 - 12:30

An Introduction to CUDA: Harnessing Graphics Processing Units for High-Throughput General-Purpose Computation (cont)

Symposium on Biomedical Engineering 6 - Bioinstrumentation

Chair: Thomas E. Doyle (McMaster University, Canada)

Design of a Simulation Test-Bed for a Magnetically Driven Capsule-Robot
Behrad Khamesee (Associate Professor, Canada); Saman Hosseini (University of Waterloo, Canada)
pp. 697-702

Non-Invasive Health Monitoring System (NIHMS)
Thomas E. Doyle (McMaster University, Canada); Mastan Kalsi (McMaster University, Canada); Aiyush Bansal (McMaster University, Canada); Jawahar Yousuf (McMaster University, Canada); Waseem Omer (McMaster University, Canada)
pp. 703-707

Automatic adaptation of a self-adhesive multielectrode array for active wrist joint stabilization in tetraplegics SCI individuals
Oliver Schill (University of Karlsruhe, Germany); Markus Reischl (Forschungszentrum Karlsruhe GmbH, Germany); Ruediger Rupp (Orthopaedic University Hospital, Germany); Christian Pylatiuk (Forschungszentrum Karlsruhe, Germany); Stefan Schulz (Forschungszentrum Karlsruhe, Germany)
pp. 708-713

Special Session on Electronic Design Automation 2

Chair: Dilip Banerji (University of Guelph, Canada)

A Hardware/Software Co-specification Methodology Based Upon OpenMP
Thomas Hall (University of New Brunswick, Canada); Ken B Kent (University of New Brunswick, Canada)
pp. 714-719

Novel Low-Power Accurate Wide-band CMOS Negative-Second-Generation-Current-Conveyor Realizations Based on Floating-Current-Source Building Blocks
Hassan Mostafa (University of Waterloo, Canada); Ahmed Soliman (Cairo University, Egypt)
pp. 720-725

Symposium on Advances in Systems and Sensors: Sensors and Applications 2

Chair: Bo Tan (Ryerson University, Canada)

Software based bioassay quantization using standard optical disc drives
Manu Pallapa (Simon Fraser University, Canada)
pp. 726-729

Intelligent Wireless Distributed Network for Power Consumption Monitoring and Analysis
Bogdan Popescu (Politehnica University of Timisoara, Romania); Andrei Stancovici (Politehnica University of Timisoara, Romania); Valentin Stangaciu (POLITEHNICA University of Timisoara, Romania); Cristina Certejan (POLITEHNICA University of Timisoara, Romania); Marius Marcu (Politehnica University of Timisoara, Romania)
pp. 730-735

Spectrum Sensing in Cognitive Radio Networks: Up-to-date Techniques and Future Challenges
Sattar Hussain (Ryerson University, Canada); Xavier N Fernando (Ryerson University, Canada)
pp. 736-741

Symposium on Education and Social Implications of Technology: Social Implications of Technology 2

Chair: Joan Touzet (University of Toronto, Canada)

Identity, Privacy and Security Challenges with Ontario's Enhanced Drivers Licence
Andrew Clement (University of Toronto, Canada); Krista Boa (University of Toronto, Canada); Joseph Ferenbok (University of Toronto, Canada); Brenda McPhail (University of Toronto, Canada); Karen Smith (University of Toronto, Canada)
pp. 742-747

An Evaluation of Systems for Presenting, Endorsing, and Evaluating Credentials in Online Communities
Shadi Ghajar-Khosravi (University of Toronto, Canada); Stephen A. Hockema (University of Toronto, Canada)
pp. 748-754

Online Access, Participation and Information Credibility Assessment
Sambhavi Chandrashekar (University of Toronto, Canada); Stephen A. Hockema (University of Toronto, Canada)
pp. 755-760

Combating Child Exploitation in Second Life
Miguel A. Garcia-Ruiz (University of Ontario Institute of Technology, Canada); Miguel Vargas Martin (University of Ontario Institute of Technology, Canada); Amin Ibrahim (University of Ontario Institute of Technology, Canada); Arthur Edwards (University of Colima, Mexico); Raul Santos (University of Colima, Mexico)
pp. 761-766

Symposium on Emerging Scientific Methods and Technologies 2

Chair: Bruno Nicola Di Stefano (Nuptek Systems Ltd, Canada)

A Cellular Automata Model for the Inter-domain Routing System
Zanxin Xu (Tsinghua University, P.R. China); Jian Yuan (Tsinghua University, P.R. China); Yue Wang (Tsinghua University, P.R. China); Wenzhu Zhang (Tsinghua University, P.R. China); Zhenming Feng (Adviser, P.R. China)
pp. 767-769

Randomized Algorithm Based Entropy Norm Computation in Hardware for Anomaly Detection of IP Data Streams
Subramanya J Nagalakshmi (Lakehead University, Canada)
pp. 770-775

A Review of Cross-Layer Scheduling and Resource Allocation for Wireless Mesh Networks
Jason Ernst (University of Guelph, Canada)
pp. 776-781

Characterization Of Chimeric Surface Submentalis EMG Activity During Hypopneas In Obstructive Sleep Apnea Patients
Mak Daulatzai (University of Melbourne, Australia); Ahsan Habib Khandoker (The University of Melbourne, Australia); Chandan Kumar Karmakar (The University of Melbourne, Australia); Neela Khan (Swinburne University, Australia); Marimuthu Palaniswami (University of Melbourne, Australia)
pp. 782-788

Symposium on Human Factors and Ergonomics 6: User Requirement

Chairs: Danielle Lottridge (University of Toronto, Canada), Stephen A. Hockema (University of Toronto, Canada)

Improving Assistive Technology Economics for People with Disabilities: Harnessing the Voluntary and Education Sectors
William Li (Massachusetts Institute of Technology, USA); Clara Sellers (University of Toronto, Canada)
pp. 789-794

Emotional Majority Agreement: A psychometric property of affective self-report instruments
Danielle Lottridge (University of Toronto, Canada); Mark Chignell (University of Toronto, Canada)
pp. 795-800

Learning from the Information Workspace of an Information Professional with Dyslexia and ADHD
Peter Coppin (University of Toronto, Canada); Stephen A. Hockema (University of Toronto, Canada)
pp. 801-807

Model-driven coding with VPAT: The Verbal Protocol Analysis Tool
Danielle Lottridge (University of Toronto, Canada); Mark Chignell (University of Toronto, Canada); Monika Kastner (University of Toronto, Canada); Quan Zhang (University of Toronto, Canada); Adrian Alexandar (University of Toronto, Canada); Sharon Straus (University of Toronto, Canada)
pp. 808-813

Symposium on Sustainable Development and Energy Availability: 2

Sustainable Development - Poverty Reduction and Appropriate Technology
Chairs: Joshua M Pearce (Queen's University, Canada), Maike Luiken (Lambton College, Canada)

Overcoming Technical Constraints for Obtaining Sustainable Development with Open Source Appropriate Technology
Joshua M Pearce (Queen's University, Canada); Usman Mushtaq (Queen's University, Canada)
pp. 814-820

Project Management For Student Projects at the Bottom of the Pyramid
Richard Turley (Colorado State University, USA)
pp. 821-826

Corporate Social Responsibility: A new perspective for alleviating poverty while maximizing profits
Kellen McMartin (Colorado State University, USA); Zubaida Bai (Colorado State University, USA)
pp. 827-830

Sustainable Metal Cutting
Brian Boswell (Curtin University of Technology, Australia); Tilak Chandratilleke (Curtin University of Technology, Australia)
pp. 831-836

12:30 - 13:00

Lunch 2

13:00 - 13:30

PlenaryTalk - Convergence of U-Health and U-Environment: An Autonomic Smart Home for the Elderly

Prof. Jamal Deen, McMaster University, Canada and Nazim Agoulmine, University of Evry Val d'Essonne, France

This presentation will describe an ongoing project combining information technology (IT), biotechnology (BT) and nanotechnology (NT), in a synergistic manner, as a contribution to the application of science and technology for humanity, especially the elderly. This project is focused on a smart home as a convergence of ubiquitous-health (U-Health) and ubiquitous-environment (U-Environment). The focus of our research is on helping elderly people live a more independent life as long as possible, in their own home, while being remotely monitored and assisted in an unobtrusive and seamless manner. The field of smart home has attracted much attention in the recent past. However, each of the projects have limitations in specific areas in cost, performance or reliability that include ultra-low power sensors and actuators; ultra-low-power integrated circuits for signal conditioning and processing, transceivers and memory; energy efficient and agile network systems; data fusion and "intelligent" decision making. Because of specific limitations of the developed solutions and the lack of pervasive low-cost technologies, the penetration of smart home-care systems has not been as significant as earlier projected. However, nowadays, two factors are pushing towards the development of more complete and cost-effective solutions due to the significant increase in the world's aging population on the one side, and on the health providers' willingness to reduce costs by treating elderly patients at home rather than within costly specialized hospitals or institutions, on the other side. We propose to use advances and potentials of IT, NT, BT, wireless communication, web-based technologies and autonomics, to develop new, smart and cost-effective solutions for the health wellness of the elderly. These solutions would enable elderly to lead independent lifestyles in their own homes while being continuously monitored for the early detection of symptoms, so diseases can be treated earlier than in later stages as is currently done; to promote health wellness; as well as to treat chronic illnesses.

Chair: Xavier N Fernando (Ryerson University, Canada)

13:30 - 15:00

Symposium on Biomedical Engineering 7 - Applications in Proteomics, Drug Delivery, and Aging

Chair: Rajeswari Sundararajan (Purdue University, USA)

Mass Spectrometry-Based Proteomic Pattern Analysis for Prostate Cancer Detection Using Neural Networks with Statistical Significance Test-Based Feature Selection
Tim Xu (University of Waterloo, Canada); Samar Mohamed (University of Waterloo, Canada); Magdy Salama (University of Waterloo, Canada); Mohamed Kamel (Pattern Analysis and Machine Intelligence, University of Waterloo, Canada); Z Rizkalla (University of Western Ontario, Canada)
pp. 837-842

Efficient and Economical Electro-Drug Delivery
Rajeswari Sundararajan (Purdue University, USA)
pp. 843-848

Use of recurrence quantification analysis in virtual reality training: A Case Study
Barry Vuong (Ryerson University, Canada); Kristiina McConville (Ryerson University, Canada)
pp. 849-854

Special Session on Superconductivity 1

Chair: Hamed Majedi (University of Waterloo, Canada)

Resistive layers formation during the superconductor-normal transition of high-Tc superconductors
Linda Ponta (Politecnico di Torino,, Italy); Anna Carbone (Politecnico di Torino, Italy); Marco Gilli (Politecnico di Torino, Italy); Piero Mazzetti (Politecnico di Torino, Italy)
pp. 855-860

Superconductivity in the Iron-Pnictide Parent Compound SrFe2As2
Kevin Kirshenbaum (University of Maryland, USA); Shanta Saha (University of Maryland, USA); Nicholas Butch (University of Maryland, USA); Jeffrey Magill (University of Maryland, USA); Johnpierre Paglione (University of Maryland, USA)
pp. 861-865

Superconductor Photonics for Terahertz Electronics
Iwao Kawayama (Osaka University, Japan); Masayoshi Tonouchi (Osaka University, Japan); Hironaru Murakami (Osaka University, Japan); Yasushi Doda (Osaka University, Japan)
pp. 866-869

Symposium on Advances in Systems and Sensors: Systems and Control

Chair: Puren Ouyang (Ryerson University, Canada)

Symposium on Education and Social Implications of Technology: Social Implications of Technology 3

Chair: Kimberley MacKinnon (OISE/UT, Canada)

Symposium on Emerging Scientific Methods and Technologies 3

Chair: Jelena Misic (Ryerson University, Canada)

Symposium on Human Factors and Ergonomics 7: Auditory Ergonomics & Human Factors in Entertainment

Chair: David Fourney (Ryerson University, Canada)

Seeing the Music
Jorge Mori (Ryerson University, Canada); Deborah Fels (Ryerson University, Canada)
pp. 951-956

Symposium on Sustainable Development and Energy Availability: 3

Sustainable Development - Renewable Energy
Chairs: Joshua M Pearce (Queen's University, Canada), Maike Luiken (Lambton College, Canada)

Moving Forward with Building-Scale Alternative Energy: Performance, Price, and Policy
David Bristow (University of Toronto, Canada); Christopher Kennedy (University of Toronto, Canada)
pp. 957-961

Alternatives Prioritization Tool for Sustainable Urban Energy Management
Khaled Nigim (Lambton Collee, Canada); Henry Reiser (Dean, Canada); Maike Luiken (Lambton College, Canada)
pp. 962-966

Cleaner Production via Industrial Symbiosis in Glass and Large-Scale Solar Photovoltaic Manufacturing
Amir Nosrat (Queen's University, Canada); Jack Jeswiet (Queen's University, Canada); Joshua M Pearce (Queen's University, Canada)
pp. 967-970

The Atmospheric Vortex Engine.
Louis Michaud (AVEtec Energy Corporation, Canada)
pp. 971-975

15:00 - 15:30

Break 4

15:30 - 17:00

Symposium on Biomedical Engineering 8 - Signal Processing II

Chair: Karthikeyan Umapathy (Ryerson University, Canada)

Audio Feature Clustering for Hearing Aid Systems
Nasim Shams (Ryerson University, Canada); Behnaz Ghoraani (Ryerson University, Canada); Sri Krishnan (Ryerson University, Canada)
pp. 976-980

Oscillometric Blood Pressure Estimation Using Principal Component Analysis and Neural Networks
Mohamad Forouzanfar (University of Ottawa, Canada); Hilmi R Dajani (University of Ottawa, Canada); Voicu Z. Groza (University of Ottawa, Canada); Miodrag Bolic (University of Ottawa, Canada); Sreeraman Rajan (DRDC-Ottawa, Canada)
pp. 981-986

Design of a sound source phantom with uniform surface signal
Hansen Mansy (Rush University, USA); Josh Grahe (Rush University, USA); Daniel Elke (Rush University, USA); Richard Sandler (Rush University, USA)
pp. 987-990

Electroencephalographic Based Hearing Identification using Back-Propagation Algorithm
Rubita Sudirman (Universiti Teknologi Malaysia, Malaysia); Seow Syee Chin Seow (Universiti Teknologi Malaysia, Malaysia)
pp. 991-995

Special Session on Nanotechnology

Chair: Jayshri Sabarinathan (University of Western Ontario, Canada)

LUT-Based QCA Implementation of a 4×4 S-Box
Mohammad Amin Amiri (Iran University of Science & Technology, Iran); Mojdeh Mahdavi (Islamic Azad University of Shahryar Shahr-e-Qods Branch, Iran); S. Mirzakuchaki (EE Department, Iran University of Science and Technology, Iran)
pp. 996-999

An Improved Macro-Model for Simulation of Single Electron Transistor (SET) using HSPICE
Mohammad Reza Karimian (Science and Research University, Iran); Mohammad Pouyan (Shahed University, Iran); Rahim Faez (Sharif University of Technology, Iran); Massoud Dousti (Science and Research Branch, Islamic Azad University, Tehran, Iran)
pp. 1000-1004

Special Session on Superconductivity 2

Chair: Frank Wilhelm-Mauch (Institute of Quantum Computing, Canada)

Prospects of Guided-Wave Superconductive Optoelectronic Devices
Behnood Ghamsari (University of Waterloo, Canada); Hamed Majedi (University of Waterloo,

Symposium on Sustainable Development and Energy Availability: 4

Sustainable Development : Design and Policy
Chairs: Maike Luiken (Lambton College, Canada), Joshua M Pearce (Queen's University, Canada)