2011 IEEE 7th International Symposium on Intelligent Signal Processing

(WISP 2011)

Floriana, Malta
19-21 September 2011

IEEE Catalog Number: CFP11WIS-PRT
ISBN: 978-1-4577-1403-0

Table of Contents

Welcome Message from the Chairpersons viii

IEEE WISP 2011 Organizers ix

Monday, September 19, 2011

15:30 - 17:30

Mo1: Sensors and Embedded Systems
Chair: *Gyula Simon*

Monitoring Workers Through Wearable Transceivers for Improving Work Safety *1*
Burak Sezer (TUBITAK BILGEM, TR)
Oguzhan Urhan (University of Kocaeli, TR)

Indoor Location System based on ZigBee devices and Metric Description Graphs *4*
Samuel Fernández (University of Alcala, ES)
David Gualda (University of Alcala, ES)
Juan Carlos García (University of Alcala, ES)
Juan J. García (University of Alcala, ES)
Jesus Ureña (University of Alcala, ES)
Raquel Gutiérrez (University of Alcala, ES)

Implementation of an intelligent sensor for measurement and prediction of solar radiation and atmospheric temperature *9*
João Gomes (Universidade do Algarve, PT)
Pedro Ferreira (University of Algarve, PT)
Antonio Ruano (University of Algarve, PT)

Design of a Sensor Network Based Security System *15*
Gergely Vakulya (University of Pannonia, HU)
Gyula Simon (University of Pannonia, HU)

Comparison and improvement of Dempster-Shafer models *20*
Bassam Abdellatif (Institut Télécom, Télécom Bretagne, FR)
Abdel-Ouahab Boudraa (IRENav Ecole Navale, FR)
Christophe Osswald (ENSIETA, FR)
Jean-Marc Boucher (Telecom Bretagne, FR)

Tuesday, September 20, 2011

9:00 - 10:40

Tul: Bioengineering
Chair: *Juan Carlos Garcia*

An add-on solution to take measures automatically from critical care urine meters *25*
Abraham Otero (University San Pablo CEU, ES)
Roemí Fernández (Centre for Automation and Robotics CSIC-UPM, ES)
Andrey Apalkov (Centre for Automation and Robotics CSIC-UPM, ES)
Manuel Armada (Centre for Automation and Robotics CSIC-UPM, ES)
Francisco Palacios (Hospital Universitario de Getafe, ES)

Is the average duration of apneas, hypopneas and desaturations useful in the diagnosis of SAHS? *31*
Abraham Otero (University San Pablo CEU, ES)
Paulo Félix (University of Santiago de Compostela, ES)
Jesús Presed (University of Santiago de Compostela, ES)
Miguel Rodríguez (University of Santiago de Compostela, ES)

Enhancing Time-Frequency Parameters Estimation for Doppler Ultrasound Blood-Flow Signals (MR) *37*
Behrooz Zabihian (University of Algarve, PT)
Maria Ruano (University of Algarve, PT)

Solving Practical Issues of a Portable Doppler Ultrasound System for Blood Flow Assessment During Coronary Graft Surgery *(MR)* *42*
Behrooz Zabihian (University of Algarve, PT)
Maria Ruano (University of Algarve, PT)
Julio Solano (UNAM, MX)
Demetrio Fabián García (IIMAS, Universidad Nacional Autónoma de México, MX)
Martín Fuentes (IIMAS, Universidad Nacional Autónoma de México, MX)

Activity Monitoring and Emergency Warning with Location Information of the user *48*
Raquel Gutiérrez (University of Alcala, ES)
Juan J. García (University of Alcala, ES)
Juan Carlos García (University of Alcala, ES)
Liam Marnane (University College, Cork, IE)
David Gualda (University of Alcala, ES)
Samuel Fernández (University of Alcala, ES)
Enrique Garcia (University of Alcala, ES)

11:10 - 13:10

Tu2: Soft Computing Techniques
Chair: *Maria da Graca Ruano*

Towards a More Analytical Training of Neural Networks and Neuro-Fuzzy Systems *54*
Antonio Ruano (University of Algarve, PT)
Cristiano Cabrita (University of Algarve, PT)
Pedro Ferreira (University of Algarve, PT)

Exploiting the functional training approach in Radial Basis Function Networks *60*
Cristiano Cabrita (University of Algarve, PT)
Antonio Ruano (University of Algarve, PT)
Pedro Ferreira (University of Algarve, PT)

Improved Back-Propagation Algorithm for Neural Network Training *66*
Annamaria Varkonyi-Koczy (Obuda University, HU)
Balazs Tusor (Integrated Intelligent Systems Japanese-Hungarian Laboratory, HU)

Genetic Algorithm for searching a Doppler Resilient Multilevel Complementary Waveform *74*
Enrique Garcia (University of Alcala, ES)
Jesus Ureña (University of Alcala, ES)
Juan García (University of Alcala, ES)
Maria Carmen Perez (University of Alcala, ES)
Fernando Alvarez (University of Extremadura, ES)
F. Daniel Ruiz (University of Alcala, ES)
David Gualda (University of Alcala, ES)
Raquel Gutiérrez (University of Alcala, ES)

A Solution for Delivery Problem Based on HIMS Model and Service Science *79*
Fangyan Dong (Tokyo Institute of Technology, JP)
Kewei Chen (CDI Inc, JP)
Kaoru Hirota (Tokyo Institute of Technology, JP)

Intelligent IP Traffic Matrix Estimation by Neural Network and Genetic Algorithm ***85***
Azadeh Omidvar (Iran University of Science and Technology, IR)
Hadi Shahriar Shahhoseini (Iran University of Science and Technology, IR)

15:30 - 16:50

Tu3: Analog, Digital, and Mixed Signal Processing
Chair: *Dusan Kocur*

Experimental Analyses of Mutual Shadowing Effect for Multiple Target Tracking by UWB Radar ***91***
Dusan Kocur (Technical University of Kosice, SK)
Jana Rovnakova (Technical University of Kosice, SK)
Daniel Urdzík (Technical University of Kosice, SK)

MMSE speech enhancement based on GMM and solving an over-determined system of equations ***95***
Sarang Chehresa (Shahid Beheshti University, IR)
Mohammad Hasan Savoji (Shahid Beheshti University, IR)

On the Use of NMF for Onset Detection in Polyphonic Piano Music..... ***100***
Giovanni Costantini (University of Tor Vergata, Rome, IT)
Massimiliano Todisco (University of Tor Vergata, Rome, IT)
Renzo Perfetti (University of Perugia, IT)
Giovanni Saggio (University of Tor Vergata, Rome, IT)

Chaos Synchronization in Duffing Systems with Robust Fixed Point Transformations ***104***
Teréz Várkonyi (Óbuda University, HU)
József Tar (Óbuda University, HU)
Imre Rudas (Óbuda University, HU)

17:15 - 18:05

Tu4: Poster Session
Chair: *Antonio Ruano*

Pitfalls in Using Dual Tree Complex Wavelet Transform for Texture Featuring: a Discussion ***110***
Mihaela Costin (Romanian Academy, RO)
Anca Ignat (UAIC, RO)

Wavelet-based Image Enhancement Using Fourth Order PDE ***116***
Ehsan Nadernejad (Technical University of Denmark, DK)
Soren Forchhammer (Technical University of Denmark, DK)

Adaptive-Rate Inductive Impedance Based Coin Validation ***122***
Olev Martens (Tallinn University of Technology, EE)
Raul Land (Tallinn University of Technology, EE)
Alina Gavrijaseva (Tallinn University of Technology, EE)
Ago Molder (Tallinn University of Technology, EE)

Image Inpainting using Sparse Approximation with Adaptive Window Selection..... ***126***
Sujit Sahoo (Nanyang Technological University, SG)
Lu Wenmiao (Nanyang Technological University, SG)

Intellectual software for analysis of histological images ***130***
Valery Starovoitov (United Institute of Informatics Problems of the National Academy of Sciences of Belarus, BY)
Alexander Nedzved (United Institute of Informatics Problems of the National Academy of Sciences of Belarus, BY)

9:00 - 10:40

We1: Intelligent Signal Processing
Chair: *Jean-Marc Boucher*

Wideband Speech Coding Using ADPCM and a New Enhanced Bandwidth Extension Method ***134***
Mohammad Ghaderi (ECEF, Shahid Beheshti University, Tehran, IR)
Mohammad Hasan Savoji (ECEF, Shahid Beheshti University, Tehran, IR)

Vibration signals compression with time-frequency adaptive quantization ***138***
Marius Oltean (SUPELEC Gif sur Yvette, FR)
José Picheral (SUPELEC Gif sur Yvette, FR)
Elisabeth Lahalle (Ecole Supérieure d'Electricité, FR)
Hani Hamdan (SUPELEC Gif sur Yvette, FR)

Wavelet-based sensor validation: differentiating abrupt sensor faults from system dynamics ***142***
Alexey Kozionov (Siemens LLC, Corporate Technology Department, RU)
Mikhail Kalinkin (Siemens LLC, Corporate Technology Department, RU)
Alexey Natekin (Siemens LLC, Corporate Technology Department, RU)
Alexander Loginov (Siemens LLC, Corporate Technology Department, RU)

Towards Online Operation of a RBF Neural Network Model to Forecast the Portuguese Electricity Consumption ***147***
Pedro Ferreira (University of Algarve, PT)
Antonio Ruano (University of Algarve, PT)
Rui Pestana (REN - Rede Eléctrica Nacional, S.A., PT)

Possibilities for Intelligent Sensor Network Assistance of Product Definition ***154***
László Horváth (Óbuda University, HU) Imre Rudas (Óbuda University, HU)

11:20 - 13:00

We2: Image Processing and Computer Vision
Chair: *Fangyan Dong*

A Multi-Channel Representation for Images on Quantum Computers using the RGB Alpha Color Space ***160***
Bo Sun (Tokyo Institute of Technology, JP)
Phuc Q. Le (Tokyo Institute of Technology, JP)
Abdullah M. Iliyasu (Tokyo Institute of Technology, JP)
Fei Yan (Tokyo Institute of Technology, JP)
J. Adrian Garcia (Tokyo Institute of Technology, JP)
Fangyan Dong (Tokyo Institute of Technology, JP)
Kaoru Hirota (Tokyo Institute of Technology, JP)

A New Tool for Comparison and Evaluation of Medical Images ***166***
Lucie Grafova (Institute of Chemical Technology in Prague, CZ)
Jan Horejs (Institute of Chemical Technology in Prague, CZ)
Ales Prochazka (Institute of Chemical Technology in Prague, CZ)
Magdaléna Kašparová (Charles University Prague, 2nd Medical Faculty, CZ)
Taťjana Dostálová (Charles University Prague, 2nd Medical Faculty, CZ)

Fuzzy Modeling of Natural Terrain Elevation from a 3D Scanner Point Cloud ***171***
Anthony Mandow (University of Malaga, ES)
Tomás Cantador (University of Malaga, ES)
Alfonso García-Cerezo (Universidad de Malaga, ES)
Antonio Reina (University of Malaga, ES)
Martínez Jorge (University of Malaga, ES)
Jesús Morales (University of Malaga, ES)

Variable-resolution image processing for validation of coins ***176***
Olev Martens (Tallinn University of Technology, EE)
Tonis Saar (Tallinn University of Technology, EE)
Alina Gavrijaseva (Tallinn University of Technology, EE)
Ago Molder (Tallinn University of Technology, EE)

Hand Gesture Interaction Using Color-Based Method For Tabletop Interfaces ***180***
Abdelkader Bellarbi (Center for Development of Advanced Technologies, DZ)

AUTHOR INDEX ***186***