

Wednesday, 26 August

9:30 – 10:00 Opening

10:00 - 11:00 Plenary Session - Junzo Watada (Chair: A. R. Várkonyi-Kóczy)

11:00 – 11:20 Coffee break

11:20 – 13:00 Parallel Sessions

W1A: Localization in Smart Environment I (Chair: Fernando Seco)

A survey of mathematical methods for indoor localization

Fernando Seco, Antonio R. Jimenez, Carlos Prieto, Javier Roa, Katerina Koutsou

Localization in 3D Environments Using Differential Evolution

Fernando Martin Monar, Luis Moreno, Santiago Garrido, Dolores Blanco

3D Location and Orientation Estimation Using Angle of Arrival

Tarig Ballal, C. J. Bleakley

Accurate WLAN Indoor Localization Based on RSS Fluctuations Modeling

Shih-Hau Fang, **Tsung-Nan Lin**

Localization by Superposing Beats: Laboratory Experiments and Detection Algorithm

Matthias Schneider, Ralf Salomon

W1B: Signal Processing I (Chair: Diego Bellan)

Hyperanalytic Wavelet Packets

Ioana Firoiu, Dorina Isar, Jean-Marc Boucher, **Alexandru Isar**

Impact of Unknown Offset in Amplitude Estimation of a Digitized Sine Wave

Diego Bellan

Precise Mixed Signal Synchronous Detector with Spectrally Improved Binary Switch

Olev Märtens

Digital oscilloscope displays results together with confidence bounds

Péter Zoltán Csurcsia, Antal Bánovics, István Kollár

Roundoff Errors in Fixed-Point FFT

Vilmos Pálfi, István Kollár

13:00 – 14:00 Lunch

14:00 – 15:20 Parallel Sessions

W2A: Hardware and Applications (Chair: Álvaro Hernández)

Performance comparison of different codes in a ultrasonic positioning system using DS-CDMA

M. C. Perez, J. Urena, A. Hernandez, A. Jimenez, D. Ruiz, F. J. Alvarez, C. De Marziani, A. Jiménez, D. Ruíz

Image Contrast Control based on Łukasiewicz's Operators

N.M. Hussein Hassan, **Angel Barriga**

Verification of FPGA Internal Resources

Alfredo Gardel, Ignacio Bravo, Jose L. Lázaro, Beatriz Pérez, Javier Baliñas, **Álvaro Hernández**

Weakly supervised classification with bagging in fisheries acoustics

R. Lefort, R.Fablet, **J-M.Boucher**

W2B: Intelligent Processing and Assisted Living (Chair: Fernando Alvarez)

Ambient Assisted Route Planner Based on XML Files with Accessibility Information

Paulo F. S. Amaral, **Juan Carlos G. García**, Teodiano F. Bastos Filho, Manuel Mazo

On the Effect of Reduced Sampling Rate and Bitwidth on Seizure Detection

Daniel Kelleher, Stephen Faul, Andrey Temko, William Marnane

Visual Fall Detection for Intelligent Spaces

Jose M. Canas, Sara Marugan, Marta Marron, **Juan C. Garcia**

Motion Analysis of Hand Writing using Japanese Brush Pen

Tetsuya Sano, Hiroyuki Ukida, Hideki Yamamoto

15:20 – 16:00 Coffee Break

16:00 – 17:40. Parallel Sessions

W3A: Signal Processing in Bioengineering I (Chair: Abraham Otero Quintana)

A device for automatic measurement of the critical care patient's urine output

Abraham Otero, Teodor Akinfiyev, Roemi Fernandez, Francisco Palacios

Effects of the downsampling scheme on three-dimensional electron microscopy of single particles

C.O.S. Sorzano, A. Iriarte, R. Marabini, J.M. Carazo

A comparison of generative and discriminative approaches in automated neonatal seizure detection

E. M. Thomas, A. Temko, G. Lightbody, W. P. Marnane, G. B. Boylan

Computational Cluster Validation in DNA-Based Computation

Rohani binti Abu BAKAR, **Junzo WATADA**

Sensor signal processing to extract features from finger temperature in a case-based stress classification scheme

S. Begum

W3B: Localization and Robot Navigation (Chair: Jesus Maria Rodriguez Presedo)

L1-norm global localization based on a Differential Evolution Filter

Fernando Martin Monar, M. Luisa Munoz, Santiago Garrido, Dolores Blanco, Luis Moreno

Towards Indoor Location Estimation and Tracking with Wireless Sensors

Faruk Bagci, Florian Kluge, Benjamin Satzger, Theo Ungerer

Artificial Neural Network based Mobile Robot Navigation

István Engedy, Gábor Horváth

Opportunistic Localization Scheme Based on Linear Matrix Inequality

Francesco Zorzi, GuoDong Kang, **Tanguy Pérennou**, Andrea Zanella

Neural network and fingerprinting based localization in dynamic channels

Lamia Hamza, **Chahé Nerguizian**

18:00 Welcome Drink

Thursday, 27 August

10:00 – 12:00 Parallel Sessions

Th1A: Bioengineering (Chair: Xose A. Vila Sobrino)

Extracting metadata from fundus images for the screening of diabetic retinopathy

Andras Hajdu, T. Pető, A. Biró, R. Harangozó, J. Hülvey, Zs. Török, A. Csutak

A prefiltering approach for an automatic screening system

Balint Antal, Andras Hajdu

A simple model for the identification of drug effects

Hugo Alonso, **Teresa Mendonca**, Joao M. Lemosz, Torbjorn Wigren

Online Individualized Dose Estimation

Conceicao Rocha, **T. Mendonca**, M. Eduarda Silva

Analysing the performance of the algorithms used to localize the iris region in eye images submitted to severely compressed images

Milena B. P. Carneiro, Antonio C. P. Veiga, Sandreane P. Silva, Edna L. Flores, Gilberto A. Carrijo

Brain decoding of texture processing using independent component analysis and support vector machines

Simon Beckmann, Malin Bjornsdotter, Helena Backlund-Wasling, Johan Wessberg

10:00 - 11:00. Th1B: Vision and Audio Sensors in Intelligent Spaces (Chair: Juan C. Garcia)

Adaptive Threshold for Robust Segmentation of Mobile Robots from Visual Information of their own Movement

C. Losada, M. Mazo, S. Palazuelos, F. Redondo

3D Motion Segmentation and 3D Localization of Mobile Robots Using an Array of Static Cameras and Objective Function Minimization

C. Losada, M. Mazo, S. Palazuelos, D. Pizarro, M. Marrón, F. Redondo

Multi-agent 3D tracking in intelligent spaces with a single extended particle filter

M. Marrón, D. Pizarro, **J. C. García**, A. Marcos, R. Jalvo, M. Mazo

11:00 – 12:00. Th2B: Control (Chair: António Ruano)

MIMO Stochastic Minimum Variance Control Strategies for Improving Plasma Characteristics in Reactive Ion Etching

N.Tudoroiu, K. Khorasani, R.V.Patel, C.Chiru, Roxana-Elena Tudoroiu

Short-Term External Air Temperature Prediction for an Intelligent Greenhouse by Mining Climatic Time Series

Péter Eredics

Basic Study on Robot Control in an Intelligent Indoor Environment using Visible Light Communication

Xiaohan Liu, Eri Umino, Hideo Makino

14:00 – Excursion followed by Symposium Dinner

Friday, 28 August

9:30 – 10:30 Plenary: António Ruano (Chair: Jesús Ureña)

10:30 – 10:50 Coffee break

10:50 – 12:50 Parallel Sessions

F1A: Localization in Smart Environment II. (Chair: Jesús Ureña)

A Comparison of Pedestrian Dead-Reckoning Algorithms using a Low-Cost MEMS IMU

A.R. Jimenez, F. Seco, C. Prieto and J. Guevara

Relative Localization and Mapping combining Multidimensional Scaling and Levenberg-Marquardt optimization

C. De Marziani, **J. Ureña**, A. Hernández, J. J. García, A. Jiménez, M.C. Perez, F. Álvarez, J.M. Villadangos

Encoding Ultrasonic Signals with Kasami Sequences to perform Spectrum-based Localization

Fernando J. Alvarez, A. Hernandez, J. Urena, A. Jimenez, M. C. Perez, J. J. Garcia, I. Gude, Carlos De Marziani

BluePos: Positioning With Bluetooth

Thomas King, **Hendrik Lemelson**, Andreas Farber, Wolfgang Effelsberg

NLOS Mitigation Based on Range Estimation Error Characterization in an RTT-based IEEE 802.11 Indoor Location System

J. Prieto, A. Bahillo, S. Mazuelas, R. M. Lorenzoy, J. Blas, P. Fernandez

F1B: Signal Processing II (Chair: Jean – Marc Boucher)

Anytime Overcomplete Signal Coding and Reconstruction

A. R. Várkonyi-Kóczy

Aqueous-liquids Characterization Based on Encoded Ultrasonic Signals

A. Jiménez, A. Hernández, C. Santolaya, J. Ureña, M.C. Pérez, J. J. García, D. Ruíz, E. García, F. J. Álvarez

DFT-Based Detection of Sinusoids in Real-Time Applications

D. Bellan

Statistical Properties of DFT-Based Harmonic-Subgroup Evaluations in Power Systems

D. Bellan

Increasing Watermarking Robustness using Turbo Codes

Corina Nafornta, Alexandru Isar, Maria Kovaci

Errors per Scale Statistics for a Wavelet OFDM Transmission in Flat Fading Channels

Marius Oltean, Miranda Naforntă

12:50 – 13:50 Lunch

**13:50 – 15:30. F2A: Signal Processing in Bioengineering II
(Chair: Carlos Oscar Sanchez Sorzano)**

A Low Cost Screening Test for Obstructive Sleep Apnea that can be Performed at the Patient's Home

Abraham Otero, Santiago F. Dapena, Paulo Felix, Jesus Presedo, Miguel Tarasco

Clustering of Biomedical Scientific Papers

*D. Bravo-Alcobendas, **C.O.S. Sorzano***

Electroencephalogram Background Activity Characterization with Detrended Moving Average in Alzheimer's Disease Patients

***Daniel Abásolo**, Roberto Hornero, Carlos Gómez, Javier Escudero, Pedro Espino*

An R package for Heart Rate Variability Analysis

***X.A. Vila**, M.J. Lado, A. J. Mendez, D.N. Olivieri, L. Rodriguez Linares*

A PDA-based modular and multipurpose system for intelligent ubiquitous monitoring

***J. Presedo**, M. Tarasco, T. Teijeiro, D. Castro, P. Felix*

15:30 – 15:50 Closing