IWANN 2015

PROGRAM

Palma de Mallorca, Spain; June 10-12, 2015
<table>
<thead>
<tr>
<th>Time</th>
<th>Session 10-1A. Advances in Computational Intelligence (Part I)</th>
<th>Session 10-1B. Multi-Robot Systems: Applications and Theory (MRSAT)</th>
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</thead>
<tbody>
<tr>
<td>9:00-11:00</td>
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<td>11:00-11:30</td>
<td>Coffee Break</td>
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<tr>
<td>11:30-13:00</td>
<td>Session 10-2A. Advances in Computational Intelligence (Part II)</td>
<td>Session 10-2B. Structures, algorithms and methods in artificial intelligence</td>
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<tr>
<td>13:00-14:15</td>
<td>Official Opening Ceremony. Prof. Karl Goser</td>
<td>Invited Talk 1</td>
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<tr>
<td></td>
<td>&quot;Deep Neural Networks for Visual Pattern Recognition&quot;</td>
<td>Prof. Dan Ciresan</td>
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<tr>
<td>14:00-16:00</td>
<td>Lunch at TRYP Palma Bellver</td>
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<tr>
<td>16:00-17:00</td>
<td>Session 10-3A. Interactive and Cognitive Environments</td>
<td>Session 10-3B. Transfer Learning (Part I)</td>
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<tr>
<td>17:00-17:30</td>
<td>Coffee Break</td>
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<tr>
<td>17:30-18:30</td>
<td>Session 10-4A. Mathematical and theoretical methods in Fuzzy Systems (Part I)</td>
<td>Session 10-4B. Transfer Learning (Part II)</td>
</tr>
<tr>
<td>18:30-19:30</td>
<td>Session 10-5A. Mathematical and theoretical methods in Fuzzy Systems (Part II)</td>
<td>Session 10-5B. Demo Session</td>
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<td>Welcome Reception</td>
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<td>Session 11-6A. Video and Image Processing</td>
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<td>Session 11-6B. Pattern Recognition (Part I)</td>
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<td>Session 11-7A. Expert Systems (Part I)</td>
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<td>Session 11-7B. Pattern Recognition (Part II)</td>
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<td>&quot;Self-reconfiguring distributed vision&quot;</td>
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<td>Prof. Andrea Cavallaro</td>
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<td>Session 11-8A. Embedded intelligent systems</td>
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<td>Session 11-8B. Pattern Recognition (Part III)</td>
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<td>Session 11-9A. Expert Systems (Part II)</td>
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<td>Session 11-9B. Applications of Comp. Intelligence (Part I)</td>
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<td>18:30-19:15</td>
<td>Session 11-10A. Poster Session</td>
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<td>Session 11-10B. Demo Session</td>
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<td>20:00</td>
<td>Gala Dinner</td>
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<td>Time</td>
<td>Session 12-11A. Brain-Computer Interfaces: Applications and Tele-services (Part I)</td>
<td>Session 12-11B. Computing Languages with Bio-Inspired Devices and Multi-Agent Systems</td>
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<td>Session 12-12B. Applications of Computational Intelligence (Part II)</td>
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<td>Invited Talk 3 and Closing Ceremony</td>
<td>&quot;The shared control paradigm for assistive and rehabilitation robots&quot;</td>
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</tbody>
</table>
Invited Talks to IWANN 2015

Deep Neural Networks for Visual Pattern Recognition

Dan Ciresan

Self-reconfiguring distributed vision

Andrea Cavallaro

The shared control paradigm for assistive and rehabilitation robots

Cristina Urdiales

Wednesday, June 10

Session 10-1A (9:00-11:00).-Advances in Computational Intelligence (Part I)

Chairman: Prof. Ruxandra Stoean and Prof. Gonzalo Joya

Aggregation of partial rankings - an approach based on the Kemeny ranking problem

Gonzalo Nápoles, Zoumpoulia Dikopoulou, Elpiniki Papageorgiou, Rafael Bello and Koen Vanhoof

On Acceleration of Incremental Learning in Chaotic Neural Network

Toshinori Deguchi, Toshiki Takahashi and Naohiro Ishii

An Hybrid Ensemble Method Based on Data Clustering and Weak Learners Reliabilities Estimated Through Neural Networks

Marco Vannucci, Valentina Colla and Silvia Cateni

Revisiting Image Vignetting Correction by Constrained Minimization of log-Intensity Entropy

Laura Lopez-Fuentes, Gabriel Oliver and Sebastia Massanet
Session 10-1B (9:00-11:00).-Multi-Robot Systems: Applications and Theory (MRSAT)

Chairman: Prof. Jose Guerrero and Prof. Oscar Valero

A First Step Toward a Possibilistic Swarm Multi-Robot Task Allocation
José Guerrero, Óscar Valero and Gabriel Oliver

A bottom-up robot architecture based on learnt behaviors driven design
Ignacio Herrero Reder, Cristina Urdiales García, Jose Manuel Peula Palacios and Francisco Sandoval Hernández

From Human Eye Fixation to Human-like Autonomous Artificial Vision
Viachaslau Kachurka, Kurosh Madani, Cristophe Sabourin and Vladimir Golovko

AMiRo: A Mini Robot for Scientific Applications
Thomas Schöpping, Timo Korthals, Stefan Herbrechtsmeier and Ulrich Rückert

Session 10-2A (11:30-13:00).-Advances in Computational Intelligence (Part II)

Chairman: Prof. Kurosh Madani and Prof. Marco Vannucci

On the generalization of the uninorm morphological gradient
Manuel González-Hidalgo, Sebastià Massanet, Arnau Mir and Daniel Ruiz-Aguilera

Hybrid Dynamic Learning Systems for Regression
Kaushala Dias and Terry Windeatt

On Member Labelling in Social Networks
Rafael Corchuelo, Antonia M. Reina-Quintero and Patricia Jiménez

Towards a shared control navigation function: efficiency based command modulation
Manuel Fernández Carmona, José Manuel Peula Palacios, Cristina Urdiales and Francisco Sandoval

Session 10-2B (11:30-13:00).-Structures, algorithms and methods in artificial intelligence

Chairman: Prof. Daniela Danciu and Prof. Vladimir Rasvan

BSO-FS: Bee Swarm Optimization for Feature Selection in Classification
Souhila Sadeg, Leila Hamdad, Karima Benatchba and Zineb Habbas

Improved retrieval for challenging scenarios in clique-based neural networks
Xiaoran Jiang, Max Raphael Sobroza Marques, Pierre-Julien Kirsch and Claude Berrou

On Structures with Emergent Computing Properties. A Connectionist versus Control Engineering Approach
Daniela Danciu and Vladimir Rasvan

Deep Neural Networks for Wind Energy Prediction
David Díaz-Vico, Alberto Torres-Barrán and José R. Dorronsoro-Ibero

Ensemble of Classifiers for Length of Stay Prediction in Colorectal Cancer
Ruxandra Stoean, Catalin Stoean, Adrian Sandita, Daniela Ciobanu and Cristian Mesina

Official Opening Ceremony (13:00-13:20). It will be chaired by:
Dr. Jaume Carot, Vice Chancellor for Research, Universitat de les Illes Balears

"Evolution of IWANN. Transition from academic ideas to economic Projects, especially for an strong Information Society in Europe"
Prof. Karl Goser

Invited Talk 1 (13:20-14:15)
"Deep Neural Networks for Visual Pattern Recognition"
Prof. Dan Ciresan

Session 10-3A (16:00-17:00).-Interactive and Cognitive Environments
Chairman: Prof. Albert Sama and Prof. Wei Chen

Monitoring Motor Fluctuations in Parkinson’s Disease Using a Waistworn Inertial Sensor
Carlos Pérez-López, Albert Samà, Daniel Rodríguez-Martín, Andreu Català, Joan Cabestany, Eva de Mingo and Alejandro Rodríguezmolinero

Convolutional Neural Networks for Detecting and Mapping Crowds in First Person Vision Applications
Juan Sebastian Olier, Carlo Regazzoni, Lucio Marcenaro and Matthias Rauterberg

E-COMate: what’s your non-consumption?
Veranika Lim, Mathias Funk, Matthias Rauterberg, Lucio Marcenaro and Carlo Regazzoni
Session 10-3B (16:00-17:00).- Transfer Learning (Part I)

Chairman: Prof. Jorge M. Santos and Prof. Luis M. Silva

Short Introduction to Special Session: Transfer Learning
Lus M. Silva, Jorge M. Santos

Short presentation of Prof. Dan Ciresan about his experience in Transfer Learning
Dan Ciresan

Domain Generalization based on Transfer Component Analysis
Thomas Grubinger, Adriana Birlutiu, Holger Schöner, Thomas Natschläger and Tom Heskes

Deep Transfer Learning Ensemble for Classification
Chetak Kandaswamy, Luis M. Silva, Luis A. Alexandre and Jorge M. Santos

Session 10-4A (17:30-18:30).- Mathematical and theoretical methods in Fuzzy Systems (Part I)

Chairman: Prof. Elena Mielcova and Prof. Ignacio Rojas

On fuzzy c-means and membership based clustering
Vicenc Torra

A neural-network-based robust observer for simultaneous unknown input decoupling and fault estimation
Piotr Witczak, Marcin Mrugalski, Krzysztof Patan and Marcin Witczak

Consequences of Structural Differences Between Hierarchical Systems While Fuzzy Inference
Begum Mutlu, Ebru A. Sezer and Hakan A. Nefeslioglu

Session 10-4B (17:30-18:30).- Transfer Learning (Part II)

Chairman: Prof. Jorge M. Santos and Prof. Luis M. Silva

CO2RBFN-CS: First approach introducing cost-sensitivity in the cooperative-competitive RBFN design
María Dolores Pérez Godoy, Antonio Jesús Rivera Rivas, Francisco Charte Ojeda and Maria Jose Del Jesus Díaz

Transfer Learning for the Recognition of Immunogold Particles in TEM imaging
Ricardo Gamelas Sousa, Tiago Esteves, Joaquim Marques De Sá, Luís A. Alexandre, Jorge Santos and Luis Silva
Session 10-5A (18:30-19:30).- Mathematical and theoretical methods in Fuzzy Systems (Part II)

Chairman: Prof. Vicenc Torra

Ordering Relations over Intuitionistic Fuzzy Quantities

Elena Mielcova

Improving Multi-adjoint Logic Programs by Unfolding Fuzzy Connective Definitions

Pedro-Jose Morcillo and Gines Moreno

Session 10-5B (18:30-19:15).- Demo Session

Chairman: Prof. Andreu Catala
Thursday, June 11

**Session 11-6A (9:00-11:00).- Video and Image Processing**

**Chairman:** Prof. Enrique Dominguez

**Visualization of complex datasets with the Self-Organizing Spanning Tree**

*Ezequiel López-Rubio, Esteban José Palomo, Rafael Marcos Luque Baena and Enrique Dominguez*

**A detection system for vertical slot fishways using laser technology and computer vision techniques**

*Angel J. Rico-Diaz, Alvaro Rodriguez, Daniel Villares, Juan R. Rabuñal, Jeronimo Puertas and Luis Pena*

**An experimental comparison for the identification of weeds in sunflower crops via unmanned aerial vehicles and object-based analysis**

*María Pérez Ortiz, Pedro Antonio Gutiérrez, Jose Manuel Peña, Jorge Torres Sánchez, César Hervás Martínez and Francisca López Granados*

**Applying a Genetic Algorithm Solution to Improve Compression of Wavelet Coefficient Sign**

*Antonio Martí Campoy, Otoniel Mario López Granado, Francisco Rodríguez Ballester and Manuel Pérez Malumbres*

**Finding the Texture Features Characterizing the Most Homogeneous Texture Segment in the Image**

*Alexander Goltsev, Vladimir Gritsenko, Ernst Kussul and Tatiana Baidyk*

**Robust tracking for augmented reality**

*José González, Nicolás Guil and Julián Ramos Cózar*

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**Session 11-6B (9:00-11:00).- Pattern Recognition (Part I)**

**Chairman:** Prof. Madalina Olteanu and Prof. Joan Cabestany

**Developing Gene Classifier System for Autism Recognition**

*Stanislaw Osowski and Tomasz Latkowski*

**A distributed feature selection approach based on a complexity measure**

*Veronica Bolon Canedo, Noelia Sanchez-Marono and Amparo Alonso-Betanzos*

**Ensemble Feature Selection for Rankings of Features**

*Borja Seijo-Pardo, Veronica Bolon-Canedo, Iago Porto-Diaz and Amparo Alonso-Betanzos*
A medical case-based reasoning approach using image classification and text information for recommendation

Sara Nasiri, Johannes Zenkert and Madjid Fathi

Non spontaneous saccadic movements identification in clinical electrooculography using machine learning

Roberto Antonio Becerra García, Rodolfo García-Bermúdez, Gonzalo Joya, Abel Fernández-Higuera, Camilo Velázquez-Rodríguez, Michel Velázquez-Mariño, Franger Cuevas-Beltrán, Francisco García Lagos and Roberto Rodríguez-Labrada

Applying a hybrid algorithm to the segmentation of the Spanish stock market index time series

Antonio Manuel Durán-Rosal, Mónica de La Paz-Marín, Pedro Antonio Gutiérrez and César Hervás-Martínez

Session 11-7A (11:30-13:00).-Expert Systems (Part I)

Chairman: Prof. Joan Cabestany and Prof. Michael Li (tentative)

QSVM: A Support Vector Machine For Rule Extraction

Guido Bologna and Yoichi Hayashi

Short-term Spanish Aggregated Solar Energy Forecast

Nicolas Perez-Mora, Vincent Canals and Victor Matinez-Moll

Intelligent Presentation Skills Trainer Analyses Body Movement

Anh Tuan Nguyen, Wei Chen and Matthias Rauterberg

Performing variable selection by multiobjective criterion: an application to mobile payment

Alberto Guillen, Francisco Liebana, Luis Herrera, Oresti Banos and Ignacio Rojas

Session 11-7B (11:30-13:00).- Pattern Recognition (Part II)

Chairman: Prof. Francisco Sandoval and Prof. Stanislaw Osowski

Nonlinear Ordinal Logistic Regression using covariates obtained by Radial Basis Function neural networks models

Manuel Dorado-Moreno, Pedro Antonio Gutiérrez, Javier Sánchez-Monedero and César Hervás-Martínez

Energy flux range classification by using a dynamic window autoregressive model

Pedro Antonio Gutierrez, Juan Carlos Fernández, María Pérez Ortiz, Laura Cornejo Bueno, Enrique Alexandre Cortizo, Sáncho Salcedo-Sanz and Cesar Hervas
Insights on the Use of Convolutional Neural Networks for Document Image Binarization
J. Pastor-Pellicer, S. España-Boquera, F. Zamora-Martínez, M. Zeshan Afzal and Maria Jose Castro-Bleda

A Genetic Algorithms-Based LSSVM Classifier for Fixed-Size Set of Support Vectors
Danilo Silva and Ajalmar Rêgo Da Rocha Neto

Search for meaning through the study of co-occurrences in texts
Nicolas Bourgeois, Marie Cottrell, Stéphane Lamassé and Madalina Olteanu

Invited Talk 2 (13:00-14:00)
"Self-reconfiguring distributed vision"
Prof. Andrea Cavallaro

Session 11-8A (16:00-17:00).- Embedded intelligent systems
Chairman: Prof. Ulrich Rückert and Prof. Julio Ortega

Stochastic-based Implementation of Reservoir Computers
Miquel L. Alomar, Vincent Canals, Víctor Martínez-Moll and Josep L. Rosselló

FPGA implementation comparison between C-Mantec and Back-Propagation neural network algorithms
Francisco Ortega, Jose M. Jerez, Gustavo Juárez and Leonardo Franco

Bio-inspired motion estimation with event-driven sensors
Francisco Barranco, Cornelia Fermüller and Yiannis Aloimonos

Session 11-8B (16:00-17:00).- Pattern Recognition (Part III)
Chairman: Prof. Alberto Prieto and Dr. Sara Nasiri

Ensemble of Minimal Learning Machines for Pattern Classification
Diego Mesquita, Joao Paulo Gomes and Amauri Holanda Souza Junior

Extreme Learning Machines for Multiclass Classification: Refining Predictions with Gaussian Mixture Models
Emil Eirola, Andrey Gritsenko, Anton Akusok, Kaj-Mikael Bjork, Yoan Miche, Dusan Sovilj, Rui Nian, Bo He and Amaury Lendasse

Modeling the EUR/USD index using LS-SVM and performing variable selection
Luis Herrera, Alberto Guillen, Rubén Martínez, Carlos García, Hector Pomares, Oresti Banos and Ignacio Rojas
**Session 11-9A (17:00-18:00).-Expert Systems (Part II)**

Chairman: Prof. Gabriel Oliver and Prof. Guido Bologna

**Logic Programming and Artificial Neural Networks in Breast Cancer Detection**  
*Jose Neves, Tiago Guimaraes, Sabino Gomes, Henrique Vicente, Mariana Santos, Joao Neves, António Abelha, José Machado and Paulo Novais*

An improved RBF neural network approach to nonlinear curve fitting  
*Michael Li*

A label-aided filter method for multi-objective feature selection in EEG classification for BCI  
*Pedro Martin-Smith, Julio Ortega, Javier Asensio-Cubero, John Q. Gan and Andrés Ortiz*

**Session 11-9B (17:00-18:00).- Applications of Computational Intelligence (Part I)**

Chairman: Prof. Marie Cottrell and Prof. Miguel Atencia

**Cluster Analysis of Finger-to-nose Test for Spinocerebellar Ataxia Assessment**  
*Michel Velázquez-Mariño, Miguel Atencia, Rodolfo García-Bermúdez, Daniel Pupo-Ricardo, Roberto Becerra-García, Luis Velázquez-Pérez and Francisco Sandoval*

A new method for an optimal SOM size determination in Neuro-Fuzzy for the Digital Forensics applications  
*Andrii Shalaginov and Katrin Franke*

**Development of a power output forecasting tool for wind farms based in Principal Components and Artificial Neural Networks.**  
*Pablo Del Saz-Orozco, Javier Fernandez de Cañete and Ricardo Alba*

**Modeling retina adaptation with multiobjective parameter fitting**  
*Pablo Martínez Cañada, Christian Morillas, Samuel Romero and Francisco Pelayo*

**Session 11-10A (18:30-19:15).- Poster Session**

Chairman: Prof. Hector Pomares

**Conventional Prediction Vs Beyond Data Range Prediction of Loss Coefficient for Quarter Circle Breakwater using ANFIS**  
*Arkal Vittal Hegde and Raju Budime*

**A Novel Algorithm to Train Multilayer Hardlimit Neural Networks Based on a Mixed Integer Linear Program Model**
Jose Barahona Da Fonseca

Interactive Relevance Visual Learning for Image Retrieval
Hsin-Chia Fu, L. X. Zheng, J. B. Wang and Hsiao-Tien Pao

A novel framework for hyperemia grading based on artificial neural networks
Maria Luisa Sánchez Brea, Noelia Barreira Rodríguez, Hugo Pena-Verdeal and Eva Yebra-Pimentel

ANFIS-based Fault Classification Approach in Double-Circuit Transmission Line Using Current Samples
Mohammad Amin Jarrahi, Haidar Samet, Hossein Raayatpisheh, Ahmad Jafari and Mohsen Rakhshan

Evolutionary hybrid configuration applied to a polymerization process modelling
Silvia Curteanu, Elena-Niculina Dragoi and Vlad Dafinescu

Multiwindow Fusion for Wearable Activity Recognition
Oresti Banos, Juan Manuel Galvez, Miguel Damas, Alberto Guillen, Luis Herrera, Hector Pomares, Ignacio Rojas, Claudia Villalonga, Choong-Seon Hong and Sungyoung Lee

Ontological Sensor Selection for Wearable Activity Recognition
Claudia Villalonga, Oresti Banos, Hector Pomares and Ignacio Rojas

Using ANN in Financial Markets Micro-Structure Analysis
Octavio Salcedo Parra and Brayan Reyes

Evaluation of Fitting Functions for the Saccade Velocity Profile in Electrooculographic Records
Rodolfo García-Bermúdez, Camilo Velázquez-Rodríguez, Fernando Rojas, Manuel Rodríguez, Roberto Becerra, Michel Velázquez-Mariño, José Arteaga-Vera and Luis Velázquez

Comparing optimization methods, in continuous space, for modelling with a diffusion process
Nuria Rico Castro, Maribel García Arenas, Desirée Romero and Pedro Castillo

Session 11-10B (18:30-19:10).- Demo Session
Chairman: Prof. Andreu Catala
**Session 12-11A (10:00-11:00).-Brain-Computer Interfaces: Applications and Tele-services (Part I)**

Chairman: Prof. Ricardo Ron and Prof. Miguel Angel Lopez

**Authentication of Brain-computer Interface users in Network Applications**

*Miguel Lopez, Ricardo Ron and Francisco Pelayo*

**A comparison of SSVEP-based BCI-performance between different age groups**

*Felix Gembler, Piotr Stawicki and Ivan Volosyak*

**Session 12-11B (9:00-11:00).-Computing Languages with Bio-Inspired Devices and Multi-Agent Systems**

Chairman: Prof. M. Dolores Jimenez-Lopez and Prof. Alfonso Ortega de la Puente

**A Grammatical Inference Model for Measuring Language Complexity**

*M. Dolores Jimenez-Lopez and Leonor Becerra-Bonache*

**A Proposal for Contextual Grammatical Inference**

*Leonor Becerra-Bonache, María Galván and François Jacquenet*

**How to search optimal solutions in big spaces with Networks of Bio-inspired Processors**

*José Ramón Sánchez Couso, Sandra Gómez Canaval and David Batard Lorenzo*

**Distributed simulation of NEPs based on-demand cloud elastic computation**

*Sandra Gómez, Alfonso Ortega de La Puente and Pablo Orgaz González*

**Multi-layer Perceptrons for Voxel-based Classification of Point Clouds from Natural Environments**

*Victoria Plaza, Jose Antonio Gomez-Ruiz, Anthony Mandow and Alfonso J. Garcia-Cerze*

**How Nets of Evolutionary Processors (NEPs) Could be Simulated in a Distributed Way**

*Karina Jimenez, Antonio Jimenez, Marina de la Cruz, and Sandra Gomez Canaval*
Session 12-12A (11:30-13:00).-Brain-Computer Interfaces: Applications and Tele-services (Part II)

Chairman: Prof. Ricardo Ron and Prof. Miguel Angel Lopez

Brain-Computer Interface: Usability evaluation of different P300 speller configurations. A preliminary study
Garcia Liliana, Lespinet-Najib Véronique, Saioud Sarah, Meistermann Victor, Renaud Samuel, Diaz Jaime, André Jean-Marc and Ron Angevin Ricardo

Accessing Tele-Services using a Hybrid BCI Approach
Chris Brennan, Paul McCullagh, Gaye Lightbody, Leo Galway, Diana Feuser, Jose Luiz Gonzalez and Suzanne Martin

Training in Realistic Virtual Environments: Impact on User Performance in a Motor Imagery-Based Brain–Computer Interface
Leandro Da Silva-Sauer, Luis Valero-Aguayo, Francisco Velasco-Alvarez, Sergio Varona-Moya and Ricardo Ron-Angevin

Session 12-12B (11:30-13:00).- Applications of Computational Intelligence (Part II)

Chairman: Prof. Sebastian Massanet and Prof. Miguel Atencia

SVRs and Uncertainty Estimates in Wind Energy Prediction
Jesús Prada and José Ramón Dorronsoro

esCam: A mobile application to capture and enhance text images
J. Pastor-Pellicer, Maria Jose Castro-Bleda and J. L. Adelantado-Torres

Computer Access and Alternative and Augmentative Communication (AAC) for People with Disabilities: A Multi-modal Hardware and Software Solution
Salvador Sancha Ros and Esther García Garaluz

Automatic eye blink detection using consumer web cameras
Beatriz Remeseiro, Alba Fernández and Madalena Lira

Development of a power output forecasting tool for wind farms based in Principal Components and Artificial Neural Networks.
Pablo Del Saz-Orozco, Javier Fernandez de Caeete and Ricardo Alba

Invited Talk 3 and Closing Ceremony (13:00-14:00)
"The shared control paradigm for assistive and rehabilitation robots"

Prof. Cristina Urdiales
A new approach of fuzzy neural networks in monthly forecast of water flow

Ruben Araújo, Mêuser Valença and Sérgio Fernandes

Existence and Synthesis of Hopfield Type Associative Memories

Rama Murthy Garimella and Moncef Gabbouj

Performance Evaluation of Least Squares SVR in Robust Dynamical System Identification Problems

José Santos, César Mattos and Guilherme Barreto


Sidolina P. Santos, Juan A. Gomez-Pulido and Florentino Sanchez-Bajo

A Mixed Fuzzy Similarity Approach to Detect Plagiarism in Persian Texts

Hamid Ahangarbahan and Gholam Ali Montazer

Extended Bag Of Visual Words for Face Detection

Gholam Ali Montazer, Mohammad Ali Soltanshahi and Davar Giveki

Scene Classification Using Local Binary Pattern and Improved Bag of Visual Words

Gholam Ali Montazer, Davar Giveki and Mohammad Ali Soltanshahi

Exploiting Neuro-Fuzzy System for Mobility Prediction in Wireless Ad-Hoc Networks

Mohamed Elleuch, Heni Kaaniche and Mohamed Ayadi

SIRMs Fuzzy Inference Model with Linear Transformation of Input Variables and Universal Approximation

Hirofumi Miyajima, Noritaka Shigei and Hiromi Miyajima

Real-time monitoring of biomedical signals to improve road safety

José Miguel Morales, Leandro Luigi Di Stasi, Carolina Díaz-Piedra, Christian Morillas and Samuel Romero

Estimating Artificial Neural Networks with Generalized Method Moments

João Cunha and Alexandre Aguiar
ORGANIZERS AND SPONSORS OF THE IWANN 2015