



**IWANN**

**INTERNATIONAL  
WORK CONFERENCE  
ON ARTIFICIAL NEURAL NETWORKS**

# **PROGRAM**

**14-16 June, 2017  
Cádiz (SPAIN)**

## Wednesday, June 14, 2017

8:30-9:00	<b>REGISTRATION DESK</b> <i>(start at 8:30h but it is opened during all the conference)</i>	
9:00-11:00	<b>Session 1.A. Machine Learning for Renewable Energy Applications</b>	(9:30-11:00) <b>Session 1.B. Image and Signal Processing (Part. I)</b>
11:00-11:30	<b>Coffee Break</b>	
11:30-13:00	<b>Session 2.A. Bio-inspired computing</b>	<b>Session 2.B. Computational Intelligence Tools and Techniques for Biomedical Applications</b>
13:00-14:00	<b>Official Opening Ceremony.</b> <b>Invited Talk 1</b> <i>Cognitronics: Resource-efficient Architectures for Cognitive Systems</i> <b>Prof. Dr. Ulrich Rückert</b>	
14:00-16:00	<b>Lunch</b>	
16:00-17:00	<b>Session 3.A. Assistive Rehabilitation Technology</b>	<b>Session 3.B. Supervised, non-supervised, reinforcement and statistical algorithms</b>
17:00-17:30	<b>Coffee Break</b>	
17:30-18:30	<b>Session 4.A. Human activity recognition for health and well-being applications</b>	<b>Session 4.B. E-Health and Computational Biology</b>
18:30-19:30	<b>Session 5.A. Spiking neurons</b>	<b>Session 5.B. Surveillance and Rescue Systems and Algorithms for Unmanned Aerial Vehicles</b>
20:00	<b>Welcome Reception. Light dinner at the Hotel Playa Victoria</b>	

**NOTES:** The venue of IWANN 2017 is 1812 Constitution building, former "La Bomba" Barracks, Universidad de Cádiz

- All **Sessions A** will be held in “**Salón Bolívar**” in “1812 Constitution” building.
- All **Sessions B** will be held in will be held in “**Salón Lequerica**” in “1812 Constitution” building.
- The **Poster Sessions** will be held in the **Hall** of “1812 Constitution” building.
- For the Welcome reception (light dinner), buses will be at the main entrance of “1812 Constitution” building.

## Thursday, June 15, 2017

9:00-11:00	<b>Session 6.A. Computational Intelligence Methods for Time Series (Part. I)</b>	<b>Session 6.B. Machine Learning Applied to Vision and Robotics</b>
11:00-11:30	Coffee Break	
11:30-13:00	<b>Session 7.A. Real World applications of BCI systems</b>	<b>Session 7.B. Machine Learning in Imbalanced Domains</b>
13:00-14:00	<b>Invited Talk 2</b> <i>Towards "Big Data, Weak Label and True Clinical Impact" on Medical Image Diagnosis: The Roles of Deep Label Discovery and Open-ended Recognition</i> <b>Prof. Dr. Le Lu</b>	
14:00-16:00	Lunch	
16:00-17:20	<b>Session 8.A. Computational Intelligence Methods for Time Series (Part. II)</b>	<b>Session 8.B. End-user development for social robotics</b>
17:20-18:30	<b>Session 9.A. Artificial Neural Networks in Industry ANNI'17</b>	<b>Session 9.B. Software Testing and Intelligent Systems</b>
18:30-19:00	Coffee Break	
18:30-19:45	Session 10. Poster Session/ Demo Session	
20:30	Gala Dinner at Parador de Cádiz	

## Friday, June 16, 2017

9:00-11:00	(9:30-11:00) <b>Session 11.A. Artificial Intelligence and Games</b>	<b>Session 11.B. Mathematics for neural networks (Part. I)</b>
11:00-11:30	Coffee Break	
11:30-13:00	<b>Session 12.A. Image and Signal Processing (Part. II)</b>	<b>Session 12.B. Mathematics for neural networks (Part. II)</b>
13:00-14:00	<b>Invited Talk 3 and Closing Ceremony</b> <i>"How to design for the unconscious"</i> <b>Prof. Dr. Matthias Rauterberg</b>	
14:00-16:00	Lunch	

# IWANN 2017 FULL PROGRAM

Wednesday, June 14, 2017

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## Session 1.A: Machine Learning for Renewable Energy Applications

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*Chairman: Dr. Sancho Salcedo Sanz and Dr. Pedro Antonio Gutierrez*

Modeling the Transformation of Olive Tree Biomass into Bioethanol with Reg-CO2RBFN

*Francisco Charde Ojeda, Inmaculada Romero Pulido, Antonio Jesús Rivera Rivas and Eulogio Castro Galiano*

State of Health estimation of zinc air batteries using neural networks

*Andre Loechte, Daniel Heming, Klaus T. Kallis and Peter Gloesekoetter*

A coral reef optimization algorithm for wave height time series segmentation problems

*Antonio Manuel Durán-Rosal, David Guijo-Rubio, Pedro Antonio Gutierrez, Sancho Salcedo-Sanz and Cesar Hervás-Martínez*

Satellite Based Nowcasting of PV Energy over Peninsular Spain

*Alejandro Catalina Feliu, Alberto Torres-Barrán and Jose Dorronsoro*

A Hybrid Neuro-Evolutionary Algorithm for Wind Power Ramp Events Detection

*Laura Cornejo-Bueno, Adrián Aybar-Ruiz, Carlos Camacho-Gómez, Luis Prieto, Alberto Barea-Ropero and Sancho Salcedo-Sanz*

Bayesian Optimization of a Hybrid Prediction System for Optimal Wave Energy Estimation Problems

*Laura Cornejo Bueno, Eduardo Garrido-Merchán, Daniel Hernández-Lobato and Sancho Salcedo-Sanz*

Combining reservoir computing and over-sampling for ordinal wind power ramp prediction

*Manuel Dorado-Moreno, Laura Cornejo-Bueno, Pedro Antonio Gutierrez, Luis Prieto, Sancho Salcedo-Sanz and Cesar Hervas*

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## Session 1.B: Image and Signal Processing (Part. I)

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*Chairman: Dr. Marco Vannucci*

Using deep learning for image similarity in Product Matching

*Mario Rivas Sánchez, María De La Paz Guerrero Lebrero, Elisa Guerrero, Guillermo Bárcena González, Jaime Martel and Pedro L. Galindo*

Synchronized Multi-Chain Mixture Of Independent Component Analyzers

*Gonzalo Safont, Addison Salazar, Ahmed Bouziane and Luis Vergara*

XRAY Algorithm for Separable Nonnegative Tensor Factorization

*Rafal Zdunek and Tomasz Sadowski*

Automatic Detection of Epiretinal Membrane in OCT Images by Means of Local Luminosity Patterns

*Sergio Baamonde, Joaquim de Moura, Jorge Novo and Marcos Ortega*

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**Session 2.A: Bio-inspired computing**

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*Chairman: Dr. Francisco Sandoval*

Deep Belief Networks and Multiobjective Feature Selection for BCI with Multiresolution Analysis

*Julio Ortega, Andrés Ortiz, Pedro Martín-Smith, John Q. Gan and Jesús González-Peñalver*

Evolutionary Support Vector Regression via Genetic Algorithms: A Dual Approach

*Shara Alves, Madson Dias, Ajalmar Rêgo Da Rocha Neto and Ananda Freire*

A Parallel Island Approach to Multiobjective Feature Selection for Brain-Computer Interfaces

*Julio Ortega, Dragi Kimovski, John Q. Gan, Andrés Ortiz and Miguel Damas*

A Transformation Approach Towards Big Data Multilabel Decision Trees

*Antonio Jesús Rivera Rivas, Francisco Charte Ojeda, Francisco Javier Pulgar and Maria Jose Del Jesus*

A Parallel Swarm Library based on Functional Programming

*Fernando Rubio, Alberto De La Encina, Pablo Rabanal and Ismael Rodriguez*

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**Session 2.B: Computational Intelligence Tools and Techniques for Biomedical Applications**

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*Chairman: Dr. Miguel Atencia, Dr. Leonardo Franco and Dr. Ruxandra Stoean*

Architecture for neurological coordination tests implementation

*Michel Velázquez-Mariño, Miguel Atencia, Rodolfo García Bermúdez, Francisco Sandoval and Daniel Pupo-Ricardo*

Neuronal Texture Analysis in Murine Model of Down's Syndrome

*Auxiliadora Sarmiento Vega, Miguel Angel Fernandez-Granero, Beatriz Galán, Maria Luz Montesinos and Irene Fondón*

Deep learning to analyze RNA-Seq gene expression data

*Daniel Urda Muñoz, Julio Montes Torres, Fernando Moreno, Leonardo Franco and Jose M. Jerez*

Adaptation of Deep Convolutional Neural Networks for Cancer Grading from Histopathological Images

*Stefan Postavaru, Ruxandra Stoean, Catalin Stoean and Gonzalo Joya Caparros*

Prediction of Protein Oxidation Sites

*Francisco J. Veredas, Francisco R. Cantón and Juan C. Aledo*

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## Official Opening Ceremony.

### Plenary Talk:

*Cognitronics: Resource-efficient Architectures for Cognitive Systems*

**Prof. Dr. Ulrich Rückert**

Center of Excellence - Cognitive Interaction Technology CITEC.  
Principal Investigators. Faculty of Technology/Cognitronics and  
Sensor Systems, University of Bielefeld, Germany.

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### Session 3.A: Assistive Rehabilitation Technology

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*Chairman: Dr. Oresti Baños and Dr. Jose A. Moral-Muñoz*

Designing BENECA, a m-Health app to Monitor Diet and Physical Activity in Cancer Survivors

*Mario Lozano-Lozano, Jose A. Moral-Munoz, Noelia Galiano-Castillo, Lydia Martin-Martin, Carolina Fernandez-Lao, Manuel Arroyo-Morales and Irene Cantarero-Villanueva*

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### Session 3.B: Supervised, non-supervised, reinforcement and statistical algorithms

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*Chairman: Dr. Kurosh Madani*

Towards visual training set generation framework

*Jan Hůla, Irina Perlieva and Ali Ahsan Muhammad Muzahed*

Probabilistic Leverage Scores for Parallelized Unsupervised Feature Selection

*Bruno Ordozgoiti, Sandra Gómez Canaval and Alberto Mozo*

General Noise SVRs and Uncertainty Intervals

*Jesus Prada and Jose Ramon Dorronsoro*

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### Session 4.A: Human activity recognition for health and well-being applications

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*Chairman: Dr. Daniel Rodríguez-Martín and Dr. Albert Samà*

Deep learning for detecting freezing of gait episodes in Parkinson's disease based on accelerometers

*Julià Camps, Albert Samà, Daniel Rodríguez, Carlos Pérez, Andreu Català, Joan Cabestany, Àngels Bayés, Sheila Alcaine, Berta Mestre, Anna Prats, M. Cruz Crespo and Mario Martín*

Posture transitions identification based on a triaxial accelerometer and a barometer sensor

*Daniel Rodríguez-Martín, Albert Samà, Carlos Pérez-López and Andreu Catala*

Presenting a Real-time Activity-based Bidirectional Framework for Improving Social Connectedness

*Kadian Davis, Evans Owusu, Geert van den Boomen, Henk Apeldoorn, Lucio Marcenaro, Carlo Regazzoni, Loe Feijs and Jun Hu*

#### **Session 4.B: E-Health and Computational Biology**

***Chairman: Dr. Erich Schikuta and Dr. Olga Valenzuela***

Analysis of electroreception with temporal code-driven stimulation

*Ángel Lareo, Caroline Garcia Forlim, Reynaldo D. Pinto, Pablo Varona and Francisco B. Rodríguez*

Breast cancer microarray and RNASeq data integration applied to Classification

*Daniel Castillo, Juan Manuel Galvez, Luis Javier Herrera and Ignacio Rojas*

#### **Session 5.A: Spiking neurons**

***Chairman: Dr. Ramin M. Hasani***

Smart Hardware Implementation of Spiking Neural Networks

*Fabio Galán-Prado and Josep L. Rosselló*

Computing with Biophysical and Hardware-efficient Neural Models

*Konstantin Selyunin, Ramin M. Hasani, Denise Ratasich, Ezio Bartocci and Radu Grosu*

#### **Session 5.B: Surveillance and Rescue Systems and Algorithms for Unmanned Aerial Vehicles**

***Chairman: Dr. Wilbert Aguilar***

Visual SLAM with a RGB-D camera on a quadrotor UAV using on-board processing

*Wilbert G. Aguilar, Guillermo A. Rodríguez, Leandro Álvarez, Sebastián Sandoval, Fernando J Quisaguano and Alex Limaico*

RRT\* GL based optimal path planning for real-time navigation of UAVs

*Wilbert G. Aguilar, Stephanie Morales, Hugo Ruiz and Vanessa Abad*

Pedestrian Detection for UAVs using Cascade Classifiers and Saliency Maps

*Wilbert G. Aguilar, Marco A. Luna, Julio F. Moya, Vanessa Abad, Hugo Ruiz, Humberto Parra and Cecilio Angulo*

Thursday, June 15, 2017
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**Session 6.A: Computational Intelligence Methods for Time Series (Part. I)**


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*Chairman: Dr. German Gutierrez and Dr. Héctor Pomares*

Hybrid Models for Short-term Load Forecasting Using Clustering and Time Series

*Wael Alkhatib, Alaa Alhamoud, Doreen Böhnstedt and Ralf Steinmetz*

Arbitrated Ensemble for Solar Radiation Forecasting

*Vitor Cerqueira, Luis Torgo and Carlos Soares*

A Pliant Arithmetic-based Fuzzy Time Series Model

*József Dombi, Tamás Jónás and Zsuzsanna Eszter Tóth*

Multi-resolution Time Series Discord Discovery

*Heider Sanchez and Benjamin Bustos*

Scalable forecasting techniques applied to big electricity time series

*Antonio Galicia, José Francisco Torres, Francisco Martínez-Álvarez and Alicia Troncoso Lora*

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**Session 6.B: Machine Learning Applied to Vision and Robotics**


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*Chairman: Dr. José García-Rodríguez, Dr. Enrique Domínguez, M.Sc. Mauricio Zamora and Dr. Eldon Caldwell*

Vehicle classification in traffic environments using the Growing Neural Gas

*Miguel A. Molina-Cabello, Rafael M. Luque-Baena, Ezequiel López-Rubio, Juan Miguel Ortiz-De-Lazcano-Lobato, Enrique Domínguez and Jose Muñoz*

Automatic learning of gait signatures for people identification

*Francisco Manuel Castro, Manuel J. Marín-Jiménez, Nicolás Guil and Nicolás Pérez de La Blanca*

Recognizing Pedestrian Direction using Convolutional Neural Networks

*Alex Domínguez-Sánchez, Sergio Orts-Escolano and Miguel Cazorla*

A Pseudo-3D Vision-Based Dual Approach for Machine-Awareness in Indoor Environment Combining Multi-Resolution Visual Information

*Hossam Fraihat, Kurosh Madani and Christophe Sabourin*

Biomimetic navigation using CBR

*Jose M. Peula, Joaquín Ballesteros, Cristina Urdiales and Francisco Sandoval*

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**Session 7.A: Real World applications of BCI systems**


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*Chairman: Dr. Ricardo Ron and Dr. Ivan Volosyak*

SSVEP-based BCI in a Smart Home Scenario

*Abdul Saboor, Aya Rezeika, Piotr Stawicki, Felix Gemblar, Mihaly Benda, Thomas Grunenberg and Ivan Volosyak*



How to reduce classification error in ERP-based BCI: Maximum Relative Areas as a feature for P300 detection

*Vinicio Changoluisa, Pablo Varona and Francisco B. Rodriguez*

Suitable Number of Visual Stimuli for SSVEP-based BCI Spelling Applications

*Felix Gemblar, Piotr Stawicki and Ivan Volosyak*

A Binary Bees Algorithm for P300-Based Brain-Computer Interfaces Channel Selection

*Víctor Martínez-Cagigal and Roberto Hornero*

A comparison of a Brain-Computer Interface and an Eye tracker: is there a more appropriate technology for controlling a virtual keyboard in an ALS patient?

*Liliana García, Ricardo Ron-Angevin, Bertrand Loubière, Loïc Renault, Gwendal Le Masson, Véronique Lespinet-Najib and Jean Marc André*

### Session 7.B: Machine Learning in Imbalanced Domains

**Chairman:** *Dr. Ricardo Cruz and Dr. María Pérez Ortiz*

Iterated greedy algorithm for improving the generation of synthetic patterns in imbalanced learning

*Francisco Javier Maestre-García, Carlos García-Martínez, María Pérez-Ortiz and Pedro Antonio Gutierrez*

Constraining Type II Error: Building Intentionally Biased Classifiers

*Ricardo Cruz, Kelwin Fernandes, Joaquim F. Pinto Costa and Jaime S. Cardoso*

Deep Fisher Discriminant Analysis

*David Díaz Vico, Adil Omari, Alberto Torres Barrán and José Ramón Dorronsoro Ibero*

Fine-to-Coarse Ranking in Ordinal and Imbalanced Domains: An Application to Liver Transplantation

*María Pérez Ortiz, Kelwin Fernandes, Ricardo Cruz, Jaime S. Cardoso, Javier Briceño and César Hervás-Martínez*

Combining Ranking with Traditional Methods for Ordinal Class Imbalance

*Ricardo Cruz, Kelwin Fernandes, Joaquim F. Pinto Costa, María Pérez Ortiz and Jaime S. Cardoso*

### Plenary Talk:

*Towards "Big Data, Weak Label and True Clinical Impact" on Medical Image Diagnosis: The Roles of Deep Label Discovery and Open-ended Recognition*

**Prof. Dr. Le Lu**

Department of Radiology and Imaging Sciences, National Institutes of Health Clinical Center, USA.

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**Session 8.A: Computational Intelligence Methods for Time Series (Part. II)**

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*Chairman: Dr. German Gutierrez and Dr. Héctor Pomares*

Robust Clustering for Time Series Using Spectral Densities and Functional Data Analysis

*Diego Rivera-García, Luis Angel García Escudero, Agustín Mayo-Iscar and Joaquín Ortega*

Forecasting Financial Time Series with Multiple Kernel Learning

*Luis Fábregues, Argimiro Arratia and Lluís Belanche*

Hidden-Markov models for time series of continuous proportions with excess zeros

*Julien Alerini, Marie Cottrell and Madalina Olteanu*

Automated EEG signals analysis using quantile graphs

*Andriana Campanharo, Erwin Doescher and Fernando Ramos*

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**Session 8.B: End-user development for social robotics**

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*Chairman: M.Sc. Igor Zubrycki, M.Sc. Hoang-Long Cao and Dr. Emilia Barakova*

Graphical Programming Interface for enabling non-technical professionals to program robots and internet-of-things devices.

*Igor Zubrycki, Marcin Kolesiński and Grzegorz Granosik*

An end-user interface to generate homeostatic behavior for NAO robot in robot-assisted social therapies

*Hoang-Long Cao, Albert De Beir, Pablo Gomez Esteban, Ramona Simut, Greet Van de Perre, Dirk Lefebber and Bram Vanderborcht*

Mobile Application for Executing Therapies with Robots

*Manuel Martin-Ortiz, Min-Gyu Kim, Emilia I. Barakova1*

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**Session 9.A: Artificial Neural Networks in Industry ANNI'17**

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*Chairman: Dr. Ahmed Hafaiifa, Dr. Kouzou Abdellah and Dr. Guemana Mouloud*

Artificial Neural Networks Based Approaches for the Prediction of Mean Flow Stress in Hot Rolling of Steel

*Marco Vannucci, Valentina Colla and Vincenzo Iannino*

Neural Network Overtopping Predictor Proof of Concept

*Alberto Alvarellos, Enrique Peña, Andrés Figuero, José Sande and Juan Rabuñal*

Randomized Neural Networks for Recursive System Identification in the Presence of Outliers: A Performance Comparison

*César Lincoln C. Mattos, Guilherme A. Barreto and Gonzalo Acuña*

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**Session 9.B: Software Testing and Intelligent Systems**

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*Chairman: Dr. Hasan Ural and M.Sc. Pablo Cerro Cañizares*

Using Evolutionary Computation to Improve Mutation Testing

*Pedro Delgado-Pérez, Inmaculada Medina-Bulo and Mercedes G. Merayo*

Using ants to fight wildfire

*Pablo C. Cañizares, Mercedes Merayo and Alberto Núñez*

A formal framework to specify and test systems with fuzzy-time information

*Juan Boubeta-Puig, Azahara Camacho, Luis Llana and Manuel Núñez*

Intelligent Transportation System to Control Air Pollution in Cities Using Complex Event Processing and Colored Petri Nets

*Gregorio Díaz, Hermenegilda Macia, Valero Valentín and Fernando Cuartero*

### **Session 10.A/B: Poster Session.**

***Chairman: Dr. Andreu Catala, Dr. Gonzalo Joya and Dr. Ignacio Rojas***

A Classification System to Assess Low Back Muscle Endurance and Activity Using mHealth Technologies

*Ignacio Díaz Reyes, Miguel Damas, Jose A. Moral-Munoz and Oresti Baños*

An Expert System Based on Using Artificial Neural Network and Region-Based Image Processing to Recognition Substantia Nigra and Atherosclerotic Plaques in B-images: A Prospective Study

*Jiří Blahuta, Tomáš Soukup and Jiri Martinu*

Spatial-Temporal Analysis for Noise Reduction in NDVI Time Series

*Fernanda Servián and Julio C. Oliveira*

Obstacle avoidance for flight safety on unmanned aerial vehicles

*Wilbert G. Aguilar, Verónica P. Casaliglla, José L. Pólit, Vanessa Abad and Hugo Ruiz*

Forecasting univariate time series by input transformation and selection of the more suitable model

*German Gutierrez, M. Paz Sesmero and Araceli Sanchis*

Towards Deterministic and Stochastic Computations with the Izhikevich Spiking Neuron Model

*Ramin M. Hasani, Guodong Wang and Radu Grosu*

Heuristics for ROSA's LTS searching

*Fernando López Pelayo, Fernando Cuartero Gomez, Diego Cazorla, Pedro Valero-Lara and Mercedes Garcia Merayo*

Application of an eye tracker over facility layout problem to minimize user fatigue

*Juan García-Saravia, Lorenzo Salas-Morera, Laura García-Hernández and Adoración Antolí Cabrera*

Accuracy improvement of Neural Networks through Self-Organizing-Maps over training datasets

*D. Gutierrez, J.P. Dominguez-Morales, R. Tapiador, A. Rios, M.J. Dominguez Morales, A. Jimenez-Fernandez and A. Linares-Barranco*

Development of doped graphene oxide resistive memories for applications based on neuromorphic computing

*Marina Sparvoli, Mauro Silva and Mario Gazziro*

A Study on Feature Selection Methods for Wind Energy Prediction

*Rubén Martín Vázquez, Ricardo Aler and Inés M. Galván*

A SpiNNaker application: design, implementation and validation of SCPGs

*B. Cuevas-Arteaga, J.P. Dominguez-Morales, H. Rostro-Gonzalez, A. Espinal, A. Jimenez-Fernandez, F. Gomez-Rodriguez and A. Linares-Barranco*

Opposite-to-noise ARTMAP Neural Network

*Alan Lucas Silva Matias, Ajalmar Rocha Neto and Atslands Rocha*

Deep Learning Using EEG Data in Time and Frequency Domains for Sleep Stage Classification

*Martí Manzano, Alberto Guillén, Ignacio Rojas and Luis Herrera*

Hybrid Model for Large Scale Forecasting of Power Consumption

*Wael Alkhatib, Alaa Alhamoud, Doreen Böhnstedt and Ralf Steinmetz*

2C-SVM based Radar Detectors in Gaussian and K-Distributed real Interference

*David Mata-Moya, Maria-Pilar Jarabo-Amores, Manuel Rosa-Zuera, Javier Rosado-Sanz and Nerea Del-Rey-Maestre*

Solving Scheduling Problems with Genetic Algorithms using a Priority Encoding Scheme

*Jose Luis Subirats, Héctor Mesa, Francisco Ortega, Gustavo Eduardo Juarez, Jose M. Jerez, Ignacio Turias and Leonardo Franco*

Introducing a Fuzzy-Pattern Operator in Fuzzy Time Series

*Abel Rubio, Enriqueta Vercher and José D. Bermúdez*

Automatic Recognition of Daily Physical Activities for an Intelligent-Portable Oxygen Concentrator (iPOC)

*D. Sanchez-Morillo, O. Olaby, M. A. Fernandez-Granero and A. Leon-Jimenez*

Active Sensing in Human Activity Recognition

*Alfredo Nazábal and Antonio Artés*

A novel technique to estimate biological parameters in an epidemiology problem

*Fernando Luiz Pio Dos Santos and Antone Dos Santos Benedito*

Massive Parallel Self-organizing Map and 2-opt on GPU to Large Scale TSP

*Wenbao Qiao and Jean-Charles Creput*

Automatic 2D Motion Capture System for Joint Angle Measurement

*Carlos Bailon, Miguel Damas, Hector Pomares and Oresti Banos*

Performances study of different metaheuristics algorithm for diabetes diagnosis

*Fatima Bekaddour, Mohamed Ben Rahmoune, Salim Chikhi and Ahmed Hafaiifa*

Friday June 16, 2017
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**Session 11.A: Artificial Intelligence and Games**


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**Chairman:** *Dr. Antonio J. Fernández-Leiva, Dr. Antonio Mora-García and Dr. Pablo García Sánchez*

The Long Path of Frustration: A Case Study with Dead by Daylight

*Pablo Delatorre, Carlos León, Alberto Salguero and Cristina Mateo-Gil*

Optimising Humanness: Designing the best human-like Bot for Unreal Tournament 2004

*Antonio Mora, Álvaro Gutiérrez Rodríguez and Antonio J. Fernández Leiva*

Analysis of the Protocols Used to Assess Virtual Players in Multi-player Computer Games

*Cindy Even, Anne-Gwenn Bosser and Cedric Buche*

Combining Neural Networks for Controlling Non-Player Characters in Games.

*Ismael Sagredo-Olivenza, Pedro Pablo Gómez-Martín, Marco Antonio Gómez-Martín and Pedro Antonio González-Calero*

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**Session 11.B: Mathematics for neural networks (Part. I)**


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**Chairman:** *Dr. Marie Cottrell*

On Coherence Notions for Multi-adjoint Normal Logic Programs

*Maria Eugenia Cornejo Piñero, David Lobo and Jesús Medina*

Finding self-organized criticality in collaborative work via repository mining

*Jj Merelo, Pedro Castillo and Mario Garcia Valdez*

Gaussian Opposite Maps for Reduced-set Relevance Vector Machines

*Lucas Silva de Sousa and Ajalmar Rêgo Da Rocha Neto*

Capacity and retrieval of a modular set of diluted attractor networks with respect to the global number of neurons

*Mario Gonzalez, David Dominguez, Angel Sanchez and Francisco Rodriguez*

Pre-Emphasizing Binarized Ensembles to Improve Classification Performance

*Lorena Álvarez-Pérez, Anas Ahachad and Aníbal R. Figueiras-Vidal*

Forward Stagewise Regression on Incomplete datasets

*Marcelo Veras, Diego Mesquita, Joao Paulo Gomes, Amauri Souza Junior and Guilherme Barreto*

Convolutional Neural Networks with the F-transform Kernels

*Vojtěch Molek and Irina Perfilieva*

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**Session 12.A: Image and Signal Processing (Part. II)**


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**Chairman:** *Dr. Alberto Prieto*

Unsupervised Color Quantization with the Growing Neural Forest

*Esteban José Palomo, Jesús Benito-Picazo, Ezequiel López-Rubio and Enrique Domínguez*

Non-Linear Least Mean Squares Prediction Based on Non-Gaussian Mixtures

*Gonzalo Safont, Addison Salazar, Alberto Rodríguez and Luis Vergara*

Comprehensive Evaluation of OpenCL-based CNN implementations for FPGAs

*Ricardo Tapiador-Morales, Antonio Rios-Navarro, Alejandro Linares-Barranco, Minkyu Kim, Deepak Kadetotad and Jae-Sun Seo*

Uncertainty analysis of ANN based spectral analysis using Monte Carlo method

*José Ramón Salinas, Francisco García-Lagos, Javier Díaz de Aguilar, Gonzalo Joya and Francisco Sandoval*

IMOGA/SOM : An Intelligent Multi-objective Genetic Algorithm using Self Organizing Map

*Subhradip Aon, Ashis Sau, Prasenjit Dey and Tandra Pal*

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**Session 12.B: Mathematics for neural networks (Part. II)**

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***Chairman: Prof. Marcin Witzczak***

Attractor basin analysis of the Hopfield model: The Generalized Quadratic Knapsack Problem

*Lucas García, Pedro M. Talaván and Javier Yáñez*

Neural network-based simultaneous estimation of actuator and sensor faults

*Marcin Pazera, Marcin Witzczak and Marcin Mrugalski*

Class switching ensembles for ordinal regression

*Pedro Antonio Gutierrez, María Pérez-Ortiz and Alberto Suárez*

Exploring a mathematical model of gain control via lateral inhibition in the Antennal Lobe

*Aaron Montero, Thiago Mosqueiro, Ramon Huerta and Francisco De Borja Rodriguez*

A Systematic Approach for the Application of Restricted Boltzmann Machines in Network Intrusion Detection

*Arnaldo Gouveia and Miguel Correia*

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**Closing Ceremony.**

**Plenary Talk:**

*How to design for the unconscious*

**Prof. Dr. Matthias Rauterberg**

Industrial Design Department, TU/e Eindhoven University of  
Technology, The Netherlands.

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**Session: Virtual Presentation Session**

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**Chairman: Dr. Miguel Atencia**

Optimal Spherical Separability: Artificial Neural Networks

*Rama Murthy Garimella, Yaparla Ganesh and Rhishi Pratap Singh*

Quasi-Newton Learning Methods for Quaternion-Valued Neural Networks

*Călin-Adrian Popa*

Exponential Stability for Delayed Octonion-Valued Recurrent Neural Networks

*Călin-Adrian Popa*

Dynamics of Quaternionic Hopfield Type Neural Networks

*Rama Murthy Garimella and Anil Rayala*

Automatic tool for Optic Disc and Cup detection on retinal fundus images

*Miguel Angel Fernandez-Granero, Auxiliadora Sarmiento Vega, Anabel García, Daniel Sanchez-Morillo, Soledad Jiménez, Pedro Alemany and Irene Fondón*

Machine learning improves human-robot interaction in productive environments: A review

*Mauricio Zamora, Eldon Caldwell, Jose Garcia-Rodriguez, Jorge Azorin-Lopez and Miguel Cazorla*

Tuning of Clustering Search based Metaheuristic by Cross-Validated Racing Approach

*Thiago Henrique Fonseca and Alexandre de Oliveira*

Pooling Spike Neural Network for Acceleration of Global Illumination Rendering

*Joseph Constantin, Andre Bigand and Ibtissam Constantin*

Searching the Sky for Neural Networks

*Erich Schikuta, Abdelkader Shaaban, Irfan Ul Haq, A. Baith Mohamed, Benedikt Pittl and Werner Mach*

An Extended Algorithm using Adaptation of Momentum and Learning Rate for Spiking Neurons Emitting Multiple Spikes

*Yuling Luo, Qiang Fu, Junxiu Liu, Jim Harkin, Liam McDaid and Yi Cao*

Enhanced Similarity Measure for Sparse Subspace Clustering Method

*Sabra Hechmi, Abir Gallas and Ezzeddine Zagrouba*

Machine learning methods from group to crowd behaviour analysis

*Luis Felipe Borja, Marcelo Saval-Calvo and Jorge Azorín-López*

3D body registration from RGB-D data with unconstrained movements and single sensor

*Victor Villena-Martinez, Andres Fuster-Guillo, Marcelo Saval-Calvo and Jorge Azorin-Lopez*

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Simultaneously to the celebration of IWANN 2017, in the 1812 Constitution building, the following scientific meetings of thematic networks and research projects will be held (the name of the rooms are: Sala Argüelles and Room-4):

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**Session: DAMA. Date: 14.06.2017 (afternoon)**

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*Chairman: Dr. Anibal R. Figueiras-Vidal and Dr. Sancho Salcedo Sanz*

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**Session: CASI-CAM. Date: 15.06.2017 (morning)**

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*Chairman: Dr. Anibal R. Figueiras-Vidal and Dr. Sancho Salcedo Sanz*

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