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- Session: Plenary I May, 31. 09:00–10:00 Room: A  
“Invited speaker Prof. Changjiu Zhou”
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- Session: Plenary II May, 31. 10:00–11:00 Room: A  
“Invited speaker Prof. Rüdiger Dillmann”
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- Session: Bioinspired Applications I May, 31. 11:30–13:10 Room: A  
“Computing Languages with Bio-Inspired Systems”  
Organizer & Chair: Verónica Dahl  
Co-Chair: M<sup>a</sup>. Dolores Jiménez
    - “Classification Tree Generation Constrained with Variable Weights”  
*Pedro Barahona, Gemma Bel, Veronica Dahl, M. Dolores Jimenez-Lopez, Ludwig Krippahl*
    - “Arithmetical Metabolic P Systems” *Rosario Lombardo, Vincenzo Manca*
    - “Simulating ANEPs with Filtered Connections by Accepting Evolutionary P Systems”  
*Juan Castellanos, Victor Mitrana, Eugenio Santos, Jose Sempere*
    - “Towards the automatic programming of NEPs”  
*Emilio del Rosal García, Marina de la Cruz, Alfonso Ortega de la Puente*
    - “Bio-Inspired Grammatical Inference” *Leonor Becerra-Bonache*
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- Session: Biological ANN May, 31. 11:30–13:30 Room: B  
“Biological Clues for Up-to-date Artificial Neural Networks”  
Organizer & Chair: Diego Andina  
Co-Chair: Javier Ropero Peláez
    - “Probabilistic versus incremental presynaptic learning in biologically plausible synapses”  
*Francisco Peláez, Diego Andina*
    - “Dynamics of a three neurons network with excitatory-inhibitory interactions”  
*Carlos Aguirre, Juan I. Cano, Eloy Anguiano*
    - “The reversal potential of inhibitory synapses” *Santi Chillemi, Michele Barbi, Angelo Di Garbo*
    - “Doman’s inclined floor method for early motor organization with a four neurons robot”  
*Francisco Peláez, Lucas Santana*
    - “On the Biological Plausibility of Artificial Metaplasticity”  
*Diego Andina, Francisco Peláez*
    - “Dynamic model of the dLGN push-pull circuitry”  
*Rubén Ferreiroa García, Eduardo Sánchez Vila, Luis Martinez*
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- Session: **Social Robots** May, 31. 11:30–13:30 Room: C  
Chair: Emilia Barakova  
Co-Chair: Roberto Iglesias
    - “Design of Social Agents” *Roman Gorbunov, Emilia I. Barakova, Matthias Rauterberg*
    - “Event-based System for Generation of Traffic Services in Road Congestions”  
*Cristina Sotomayor Martínez, Rafael Toledo-Moreo*
    - “User-friendly Robot Environment for Creation of Social Scenarios”  
*Emilia I. Barakova, Tino Lourens*
    - “Online Feature Weighting for Human Discrimination in a Person Following Robot” *Victor Alvarez-Santos, Xose Manuel Pardo, Roberto Iglesias, Adrián Canedo-Rodríguez, Carlos V. Regueiro*
    - “Improving area center robot navigation using a novel range scan segmentation method”  
*Jose Manuel Cuadra Troncoso, Jose Ramon Alvarez-Sanchez, Felix de la Paz Lopez, Antonio Fernandez-Caballero*
    - “Mobile Robot Localization through Identifying Spatial Relations from Detected Corners”  
*Sergio Almansa-Valverde, José Carlos Castillo, Antonio Fernández-Caballero, Jose Manuel Cuadra Troncoso, Javier Acevedo*
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- Session: Plenary III June, 1. 09:00–10:00 Room: A  
“Invited speaker Prof. Paul Cull ”
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- Session: Plenary IV June, 1. 10:00–11:00 Room: A  
“Invited speaker Prof. Jon Hall”
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- Session: Bioinspired Applications II June, 1. 11:30–12:30 Room: A  
“Bio-Inspired Systems in Speech and Speaker Recognition”  
Organizer & Chair: Vicente Garcerán Hernández  
Co-Chair: Pedro Gómez-Vilda

- “Neuromorphic Detection of Vowel Representation Spaces”  
*Pedro Gomez Vilda, Jose Manuel Ferrandez*
  - “Speaker recognition based on a bio-inspired auditory model: Influence of its components, sound pressure and noise level”  
*Vicente Garceran-Hernandez, Ernesto Martinez-Rams*
  - “Inner-Hair Cells Parameterized-Hardware Implementation for Personalized Auditory Nerve Stimulation”  
*Miguel Sacristan, Jose Manuel Ferrandez, Vicente Garceran-Hernandez, Victoria Rodellar, Pedro Gomez-Vilda*
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- Session: Cognitive Modelling June, 1. 11:30–12:30 Room: B  
“Basic Concepts in Cognitive and Brain Sciences”  
Organizer & Chair: Andreas Schierwagen

- “Complex neuro-cognitive systems”  
*Andreas Schierwagen*
  - “A Markov Model of Conditional Associative Learning in a Cognitive Behavioral Scenario”  
*Stefan Glüge*
  - “General Theory of Exobehaviours: A New Proposal to Unify Behaviors”  
*Sergio Miguel*
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- Session: Multi-robot Systems June, 1. 11:30–13:10 Room: C  
“Multi-robot Systems: From Physical Systems to Computational Metaphors”  
Organizer & Chair: Dario Maravall  
Co-Chair: Javier de Lope

- “Bio-Inspired Decentralized Self-Coordination Algorithms for Multi-heterogeneous Specialized Tasks Distribution in Multi-Robot Systems”  
*Alma Quiñonez Carrillo, Javier de Lope, Dario Maravall*
  - “Concurrent Modular Q-Learning with Local Rewards on Linked Multi-Component Robotic Systems”  
*Borja Fernández Gauna, José Manuel López Guede, Manuel Graña*
  - “Coordination of Communication in Robot Teams by Reinforcement Learning”  
*Dario Maravall, Javier de Lope, Raul Dominguez*
  - “Selective method based on auctions for map inspection by robotic teams”  
*Manuel Martín Ortiz, Juan Pereda, Javier de Lope, Felix de la Paz Lopez*
  - “Study of a multi-robot collaborative task through reinforcement learning”  
*Juan Pereda, Manuel Martín Ortiz, Javier de Lope, Felix de la Paz Lopez*
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- Session: Evolutionary Computation June, 1. 11:30–12:50 Room: D  
“**Evolutionary Computation for Solving Complex Combinatorial Problems**”  
Organizer & Chair: Carlos Cotta Porras  
Co-Chair: Antonio J. Fernández Leiva

- “On the Use of Human-Guided Evolutionary Algorithms for Tackling 2D Packing Problems”  
*Javier Espinar, Carlos Cotta, Antonio J. Fernández Leiva*
  - “Particle Swarm Optimisation for Open Shop Problems with Fuzzy Durations”  
*Juan José Palacios, Inés González-Rodríguez, Camino Vela, Jorge Puente*
  - “Design of Emergent and Adaptive Virtual Players in a War RTS Game”  
*José A. García Gutiérrez, Carlos Cotta, Antonio J. Fernández Leiva*
  - “Decision Tree-based Algorithms for Implementing Bot AI in UT2004”  
*Antonio J. Fernández Leiva, Jorge L. O’Valle Barragán*
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- Session: **Machine Learning Applications** June, 1. 12:30–13:30 Room: A  
Chair: Guido Bologna  
Co-Chair: Jose Santos

- “Differential Evolution for Protein Structure Prediction Using the HP Model”  
*Jose Santos Reyes*
  - “A Preliminary Study on the Prediction of Human Protein Functions”  
*Guido Bologna*
  - “Evaluating Case Selection Algorithms for Analogical Reasoning Systems”  
*Eduardo Lupiani, Jose M. Juarez, Fernando Jimenez, Jose Palma*
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- Session: Brain Interfaces June, 1. 12:30–13:30 Room: B  
“**New Challenges in Brain-Machine Interfaces**”  
Organizer & Chair: José M. Azorín  
Co-Chair: Eduardo Fernández

- “Analysis of EEG Mapping Images to Differentiate Mental Tasks in Brain-Computer Interfaces”  
*Andrés Úbeda, Eduardo Iáñez, José M. Azorín, Eduardo Fernandez*
  - “Design of a Hemispherical Antenna Array Receiver for Medical Applications”  
*Mohammad Safar*
  - “Long term modulation and control of neuronal firing in excitable tissue using optogenetics”  
*Lawrence Humphreys, Jose Manuel Ferrandez, Eduardo Fernandez*
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- Session: **Posters attending** June, 1. 16:00–17:00 Room: P  
Chair: José Manuel Ferrández  
Co-Chair: Javier Toledo Moreo

1. “An Expandable Hardware platform for implementation of CNN-based applications”  
*Jose Javier Martinez-Alvarez, Francisco J. Garrigos Guerrero, Javier Toledo, Jose Manuel Ferrandez*
2. “Classification of welding defects in radiographic images using an adaptive-network-based fuzzy system”  
*Rafael Vilar, Juan Zapata, Ramon Ruiz Merino*
3. “Reinforcement Learning Techniques for the Control of WasteWater Treatment Plants”  
*Félix Hernández del Olmo, Elena Gaudioso*
4. “Genetic Programming for prediction of water flow and transport of solids in a basin”  
*Juan R. Rabuñal, Jerónimo Puertas, Daniel Rivero, Ignacio Fraga, Luis Cea, Marta Garrido*
5. “Comparing Elastic Alignment Algorithms for the Off-Line Signature Verification Problem”  
*Jose F. Velez, Angel Sanchez Calle, Ana Belen Moreno Diaz, Laura Morillo-Velarde*
6. “A Fuzzy Cognitive Maps Modeling, Learning and Simulation Framework for studying Complex Systems”  
*Maikel León*

7. "Study of Strength Tests with Computer Vision Techniques"  
*Alvaro Rodriguez, Juan R. Rabuñal, Juan Luis Perez, Fernando Martinez-Abella*
8. "Scaling Effects in Crossmodal Improvement of Visual Perception"  
*Isabel Gonzalo Fonrodona, Miguel A. Porras*
9. "Pattern Recognition Using a Recurrent Neural Network Inspired on the Olfactory Bulb"  
*Lucas Figueira, Antonio Carlos Roque*
10. "Experiments on Lattice Independent Component Analysis for Face Recognition"  
*Ion Marqués, Manuel Graña*
11. "A Hyperheuristic Approach for Dynamic Enumeration Strategy Selection in Constraint Satisfaction"  
*Broderick Crawford, Ricardo Soto, Carlos Castro, Eric Monfroy*
12. "Genetic Algorithm for Job-Shop Scheduling with Operators"  
*Raúl Mencía, María R. Sierra, Carlos Mencía, Ramiro Varela*
13. "Bio-inspired System in Automatic Speaker Recognition"  
*Vicente Garceran-Hernandez, Lina Rosique-Lopez*
14. "Independent Component Analysis: a low-complexity technique"  
*Ruben Martin-Clemente, Susana Hornillo-Mellado, Jose Luis Camargo-Olivares*
15. "AdaBoost Face Detection on the GPU using Haar-like Features"  
*Mario Martínez-Zarzuela, Francisco Javier Díaz-Pernas, Míriam Antón Rodríguez, Freddy Perozo-Rondón, David González-Ortega*
16. "Fuzzy ARTMAP based neural networks on the GPU for high-performance pattern recognition"  
*Mario Martínez-Zarzuela, Francisco Javier Díaz-Pernas, Antonio Tejero de Pablos, Freddy Perozo-Rondón, Míriam Antón Rodríguez, David González-Ortega*
17. "Bio-Inspired Color Image Segmentation on the GPU (BioSPCIS)"  
*Mario Martínez-Zarzuela, Francisco Javier Díaz-Pernas, Míriam Antón Rodríguez, Freddy Perozo-Rondón, David González-Ortega*
18. "Simulating a simple Rock-Scissors-Paper bacterial game with diffusing quorum sensing signals"  
*Alfonso Rodriguez-Paton*
19. "Improving the accuracy of a two-stage algorithm in evolutionary product unit neural networks for classification by means of feature selection"  
*Antonio J. Tallón-Ballesteros, César Hervás-Martínez, José C. Riquelme, Roberto Ruiz*
20. "Knowledge Living on the Web (KLW)"  
*Miguel Fernandez*
21. "Local Context Discrimination in Signature Neural Networks"  
*Roberto Latorre, Francisco de Borja Rodríguez, Pablo Varona*
22. "Spider Recognition by Biometric Web Analysis"  
*Jaime R. Ticay-Rivas, Marcos del Pozo-Baños, William G. Eberhard, Jesús B. Alonso, Carlos M. Travieso*
23. "A Prediction Model to Diabetes using Artificial Metaplasticity"  
*Alexis Marcano Cedeño*
24. "Band Correction in Random Amplified Polymorphism DNA Images Using Hybrid Genetic Algorithm with Multilevel Thresholding"  
*Carolina Gárate, Maria Punninghoff, Ricardo Contreras*
25. "Discrimination of Epileptic Events using EEG Rhythm Decomposition"  
*Leonardo Duque Muñoz*
26. "Methodology for attention deficit/hyperactivity disorder detection by means of Event-related potentials"  
*Paola Alexandra Castro Cabrera*
27. "Methodology for epileptic episode detection using complexity-based features"  
*Jorge Gomez, Carolina Ospina, Edilson Delgado, German Castellanos*
28. "Segmentation of the Carotid Artery in Ultrasound Images Using Neural Networks"  
*Rosa-María Menchón-Lara, M-Consuelo Bastida-Jumilla, Juan Morales Sanchez, Rafael Verdú-Monedero, Jorge Larrey-Ruiz, Jose Luis Sancho-Gomez*
29. "A System for a Controlled Experiments Development based on Living Tissues Cultures"  
*Daniel de Santos Sierra, Jose Manuel Cuadra Troncoso, Felix de la Paz Lopez, Víctor Lorente, Jose Ramon Alvarez-Sanchez, Jose Manuel Ferrandez*

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- Session: Web Intelligence June, 2. 09:00–10:00 Room: A  
“**Innovative Research in Web Intelligence**”  
Organizer & Chair: Rafael Martínez-Tomás  
Co-Chair: M<sup>a</sup>. Jesús Taboada
    - “Proposal for extending new Linked Data rules for the Semantic Web”  
*Luis Criado-Fernández, Rafael Martínez Tomas*
    - “AWARDprime: An Adaptive Web Based-Tool Prototype for Neurocognitive Individualized Assessment and Training”  
*Raquel Salmeron, Serafin Crespo, Maria Teresa Daza, Francisco Guil-Reyes*
    - “Automated Mapping of Observation Archetypes to SNOMED-CT Concepts”  
*María Meizoso, Jose Allones, Maria Taboada, Diego Martínez, Serafín Tellado*
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- Session: Brain Modelling I June, 2. 09:00–11:00 Room: B  
“**Neuroimaging and Neuroinformatics Tools for Modeling of the Brain - I**”  
Organizer & Chair: Mariano Rincón Zamorano  
Co-Chair: Tomás García Saiz
    - “Semiautomatic Segmentation of the Medial Temporal Lobe Anatomical Structures”  
*Mariano Rincon Zamorano, Estela Díaz-López, Fidel Alfaro, Amparo Díez Peña, Tomás Garcia-Saiz, Margarita Bachiller Mayoral, Ana Insausti, Ricardo Insausti*
    - “Analysis of Spect Brain Images Using Wilcoxon and Relative Entropy Criteria and Quadratic Multivariate Classifiers for the Diagnosis of Alzheimer’s Disease”  
*Jesus Martinez, Juan M Gorriz, Diego Salas-Gonzalez, Javier Ramirez*
    - “MRI Brain Image Segmentation with supervised SOM and probability-based clustering method”  
*Andres Ortiz García, Juan M Gorriz, Javier Ramirez, Diego Salas-Gonzalez*
    - “Effective Diagnosis of Alzheimer’s Disease by means of Distance Metric Learning and Random Forest”  
*Rosa María Chaves Rodríguez, Javier Ramirez, Juan M Gorriz, Ignacio Alvarez Illan, Fermin Segovia Roman, Alberto Olivares Vicente*
    - “Distance Metric Learning as feature reduction technique for the Alzheimer’s Disease Diagnosis”  
*Rosa María Chaves Rodríguez, Javier Ramirez, Juan M Gorriz, Diego Salas-Gonzalez, Miriam Maria Lopez Perez*
    - “Brain Status Data Analysis by Sliding EMD”  
*Angela Zeiler, Rupert Faltermeier, Alexander Brawanski, Ana Maria Tomé, Carlos G Puntonet, Juan M Gorriz, Elmar Lang*
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- Session: Evolutionary Robots June, 2. 09:00–11:00 Room: C  
“**Applied Evolutionary Robotics**”  
Organizer & Chair: Francisco Bellas  
Co-Chair: Richard Duro
    - “Task-driven species in evolutionary robotic teams”  
*Pedro Trueba, Abraham Prieto, Pilar Caamano, Francisco Bellas, Richard Duro*
    - “Self-organized multi-agent system for robot deployment in unknown environments”  
*Adrián Canedo-Rodríguez, Roberto Iglesias, Carlos V. Regueiro, Víctor Álvarez-Santos, Xose Manuel Pardo*
    - “An Incremental Model of Lexicon Consensus in a Population of Agents by means of Semantic-GER”  
*Jack Mario Mingo, Ricardo Aler*
    - “Towards an Evolutionary Design of Modular Robots for Industry”  
*Andres Faina, Francisco Bellas, Daniel Souto, Richard Duro*
    - “Grammar-Guided Evolutionary Construction of Bayesian Networks”  
*José M. Font, Daniel Manrique, Eduardo Pascua*
    - “A Novel Linear Cellular Automata-based Data Clustering Algorithm”  
*Javier de Lope, Dario Maravall*
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- Session: Multisensory Systems I June, 2. 10:00–11:00 Room: A  
“**Intelligent Monitoring and High-level Activity Interpretation using Multisensory Systems - I**”

Organizer & Chair: Antonio Fernández-Caballero

Co-Chair: Rafael Martínez-Tomás

- “A Multisensory Monitoring and Interpretation Framework based on the Model-View-Controller Paradigm” *José C. Castillo, Angel Rivas-Casado, Antonio Fernández-Caballero, María T. López, Rafael Martínez-Tomás*
  - “Agent-Based Development of Multisensory Monitoring Systems” *José M. Gascuña, Antonio Fernández-Caballero, Elena Navarro, Juan Serrano-Cuerda, Francisco A. Cano*
  - “Clustering of Trajectories in Video Surveillance Using Growing Neural Gas”  
*Javier Acevedo*
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- Session: Multisensory Systems II June, 2. 11:30–13:30 Room: A  
“**Intelligent Monitoring and High-level Activity Interpretation using Multisensory Systems - II**”

Organizer & Chair: Antonio Fernández-Caballero

Co-Chair: Rafael Martínez-Tomás

- “Human action recognition based on tracking features”  
*Javier Hernández, Antonio Sanz, Juan J Pantrigo, Angel Sanchez Calle*
  - “Modeling and Discovering Occupancy Patterns in Sensor Networks using Latent Dirichlet Allocation”  
*Federico Castanedo, Hamid Aghajan, Richard Kleihorst*
  - “Multicamera Action Recognition with Canonical Correlation Analysis and Discriminative Sequence Classification”  
*Rodrigo Cilla, Miguel Angel Patricio Guisado, Antonio Berlanga, Jose Manuel Molina Lopez*
  - “Low-Power Bed / Seat Occupancy Sensor based on EMFi”  
*Francisco Fernandez-Luque, Juan Zapata, Ramon Ruiz Merino*
  - “Protocol Integration for Intelligent Monitoring Applications in Wireless Sensor Networks”  
*Antonio M. Ortiz, Fernando Royo, Teresa Olivares, Luis Orozco-Barbosa, José Carlos Castillo, Antonio Fernández-Caballero*
  - “Event Detection and Fusion Model for semantic interpretation of monitored scenarios within ASIMS architecture”  
*Angel Rivas-Casado, Rafael Martinez Tomas*
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- Session: Brain Modelling II June, 2. 11:30–13:30 Room: B  
“**Neuroimaging and Neuroinformatics Tools for Modeling of the Brain - II**”

Organizer & Chair: Juan Manuel Górriz Sáez

Co-Chair: Diego Salas González

- “A Quantitative Study on Acupuncture Effects for Fighting Migraine Using SPECT Images”  
*Miriam Maria Lopez Perez, Javier Ramirez, Juan M Gorriz, Rosa María Chaves Rodríguez, Manuel Gómez-Río*
  - “High Resolution Segmentation of CSF on Phase Contrast MRI”  
*Elsa Fernandez, Manuel Grana, Jorge Villanua*
  - “Exploration of LICA detections in resting state fMRI”  
*Darya Chyzhyk, Manuel Grana, Ann Shinn*
  - “FreeSurfer automatic brain segmentation adaptation to medial temporal lobe structures: volumetric assessment and diagnosis of mild cognitive impairment”  
*Ricardo Insausti, Mariano Rincon Zamorano, Estela Díaz-López, Emilio Artacho-Pérula, Fernando Mansilla, J. Florensa, César González, J. Álvarez-Linera, Sara García, Herminia Peraita*
  - “Alzheimer Disease Classification on Diffusion Weighted Imaging features”  
*Maite Termenon, Ariadna Besga, Jon Echeveste, Ana Gonzalez-Pinto, Manuel Grana*
  - “Future Applications with Diffusion Tensor Imaging”  
*Tomás García-Saiz, Mariano Rincon Zamorano, Arvid Lundervold*
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- Session: CYTED-CANS June, 2. 11:30–13:30 Room: C  
**“CYTED-CANS: Natural and Artificial Computation for Health Applications”**  
Organizer & Chair: José Manuel Ferrández  
Co-Chair: Félix de la Paz

- “Monitoring Neurological Disease in Phonation”  
*Pedro Gomez Vilda, Jose Manuel Ferrandez*
- “Group formation for minimizing bullying probability. A proposal based on genetic algorithms”  
*Pedro Salcedo Lagos, Ricardo Contreras, Maria Punninghoff*
- “A Speaker Recognition System based on an Auditory Model and Neural Nets: performance at different levels of Sound Pressure and of Gaussian White Noise”  
*Vicente Garceran-Hernandez, Ernesto Martinez-Rams*
- “Automatic Detection of Hypernasality in Children”  
*Santiago Murillo , Juan Orozco, Jesús Francisco Vargas Bonilla, Julian David Arias-Londoño, German Castellanos*
- “Characterization of Focal Seizures in Scalp Electroencephalograms Based on Energy of Signal and Time”  
*Alexander Cerquera, Laura V. Guío, Elías Buitrago, Rafael M. Gutiérrez, Carlos Medina*
- “An optimized framework to model vertebrate retinas”  
*Andrés Olmedo Payá, Antonio Martínez Álvarez, Sergio Cuenca Asensi, Jose Manuel Ferrandez, Eduardo Fernandez*

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- Session: Medical Applications June, 2. 11:30–13:10 Room: D  
**“Artificial Intelligence Applied to Medical Aid”**  
Organizer & Chair: Daniel Ruiz Fernández  
Co-Chair: Antonio Soriano

- “Neural networks versus genetic algorithms as medical classifiers”  
*Oscar Marin, Irene Pérez, Daniel Ruiz, Antonio Soriano, Joaquín David García*
  - “Complexity changes in human wrist temperature circadian rhythms through ageing”  
*Roque Marin, M. Campos, A. Gomariz, A. Lopez, M. A. Rol, J. A. Madrid*
  - “Radial basis function neural network for classification of quantitative EEG in patients with advanced chronic renal failure”  
*César González, Juan Antonio Barios, José María Gaztelu*
  - “Bayesian Network-based Model for the Diagnosis of Deterioration of Semantic Content Compatible with Alzheimer’s Disease”  
*José María Guerrero Triviño, Rafael Martinez Tomas*
  - “Localization and Segmentation of the ONH in Eye Fundus Images using Pyramid Representation and GAs”  
*José María Molina Casado, Enrique J. Carmona Suarez*
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