

IWINAC-2017 Session Schedule.

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- Session: Plenary I June, 20. 09:00–10:00 Room: A
“Invited speaker Prof. Hojjat Adeli”
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- Session: Plenary II June, 20. 10:00–11:00 Room: A
“Invited speaker Prof. Gusz Eiben”
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- Session: AI-HRI June, 20. 11:30–13:30 Room: A
“Artificial Intelligence-oriented and cognitive approaches to Human- robot Interaction. From Human- supervised Robots to Robot Partners.”

Organizer & Chair: Darío Maravall Gómez-Allende

Co-Chair: Javier de Lope Asiaín

- “Improved control of DLO transportation by a team of quadrotors”
Julian Estevez, Manuel Graña
 - “Robust Joint Visual Attention for HRI using a laser pointer for perspective alignment and deictic”
Dario Maravall, Javier de Lope, Juan Pablo Fuentes Brea
 - “Agent-Based Spatial Dynamics Explaining Sustained Opinion Survival”
Leire Ozaeta, Manuel Graña
 - “Enhancing neuropsychological testing with gamification and tangible interfaces: the Baking Tray Task”
Antonio Cerrato, Michela Ponticorvo
 - “Smart gesture selection with word embeddings applied to NAO robot”
Mario Almagro Cadiz, Victor Fresno, Felix de la Paz Lopez
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- Session: MLBDAPV June, 20. 11:30–13:30 Room: B
“Machine Learning Methods applied to Big Data Analysis, Processing and Visualization”

Organizer & Chair: José García-Rodríguez

Co-Chair: Enrique Domínguez

- “Big Data infrastructure: A survey”
Jaime Salvador, Zoila Ruiz, Jose Garcia-Rodriguez
 - “A Survey of Machine Learning Methods for Big Data”
Zoila Ruiz, Jaime Salvador, Jose Garcia-Rodriguez
 - “Vehicle type detection by convolutional neural networks”
Miguel A. Molina-Cabello, Rafael Marcos Luque-Baena, Ezequiel Lopez-Rubio, Karl Thurnhofer-Hemsi
 - “Motion detection by microcontroller for panning cameras”
Jesus Benito-Picazo, Ezequiel Lopez-Rubio, Juan Miguel Ortiz-de-Lazcano-Lobato, Enrique Dominguez, Esteban J Palomo
 - “Data visualization using interactive dimensionality reduction and improved color-based interaction model”
Paul Rosero, Diego Pena, Diego Peluffo, Ana Umaquinga, Edwin Rosero, Juan Antonio Castro Silva
 - “Bayesian Unbiasing of the Gaia space mission time series database”
Hector Delgado, Luis M Sarro
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- Session: BCI-Cloud June, 20. 11:30–13:30 Room: C
“**Mobile BCI for the cloud-computing of neuro activity**”
Organizer & Chair: Miguel Ángel López Gordo
Co-Chair: Jesús Minguillón

- “Classification of Gait Motor Imagery while Standing Based on Electroencephalographic Bandpower”
Irma N Angulo-Sherman, Marisol R Ugarte, Eduardo Ianez, José M. Azorín
- “A Mobile Brain-Computer Interface for Clinical Applications: From the Lab to the Ubiquity”
Jesus Minguillon, Miguel Lopez, Christian Morillas, Francisco Pelayo
- “Securing Passwords beyond Human Capabilities with a Wearable Neuro-Device”
Miguel Lopez, Jesus Minguillon, Juan Francisco Valenzuela-Valdes, Pablo Padilla, Jose Luis Padilla, Francisco Pelayo
- “Delta-theta intertrial phase coherence increases during task switching in a BCI paradigm”
Juan A Barios, Santiago Ezquerro, Arturo Bertomeu, Eduardo Fernandez, Marius Nann, Surjo Soekadar, Nicolas Garcia-Aracil
- “Using EEG Signals to Detect Different Surfaces while Walking”
Raúl Chaperó, Eduardo Ianez, Marisol R Ugarte, Mario Ortiz, José M. Azorín
- “Spatial Resolution of EEG Source Reconstruction in Assessing Brain Connectivity Analysis”
Jorge Ivan Padilla Buritica, Juan David Martinez Vargas, Alejandro A Suarez Ruiz, José Manuel Ferrandez, German Castellanos-Dominguez

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- Session: W-SPML-BNA I June, 20. 16:00–18:00 Room: A
“**Workshop on Signal Processing and Machine Learning applied to Biomedical and Neuroscience Applications I**”
Organizer & Chair: Juan Manuel Górriz
Co-Chair: Javier Ramírez

- “Preliminary Study on Unilateral Sensorineural Hearing Loss Identification via Dual-tree Complex Wave”
Shuihua Wang, Yudong Zhang, Ming Yang, Bin Liu, Javier Ramirez, Juan M Gorriz
 - “On a heavy-tailed intensity normalization of the PPMI brain database”
Diego Castillo-Barnes, Carlos Arenas, Fermin Segovia, Francisco Jesús Martínez-Murcia, Ignacio A Illan, Juan M Gorriz, Javier Ramirez, Diego Salas-Gonzalez
 - “Case-based statistical learning: a non parametric implementation with a conditional-error rate”
Juan M Gorriz, Javier Ramirez, Francisco Jesús Martínez-Murcia, Diego Salas-Gonzalez, Ignacio Alvarez Illan, Fermin Segovia, Andres Ortiz
 - “PET image classification using HHT-based features through fractal sampling”
Andres Ortiz García, Francisco Lozano, Alberto Peinado, Maria Jose Garcia-Tarifa, Juan M Gorriz, Javier Ramirez
 - “A 3D Convolutional Neural Network Approach for the Diagnosis of Parkinson’s Disease”
Francisco Jesús Martínez-Murcia, Andres Ortiz García, Juan M Gorriz, Javier Ramirez, Fermin Segovia, Diego Salas-Gonzalez, Diego Castillo-Barnes, Ignacio A Illan
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• Session: **Posters**

June, 20. 16:00–18:00 Room: P

Chair: José Manuel Ferrández-Vicente

Co-Chair: Rafael Martínez-Tomás

1. “Simulation of a Prey-Predator Model with Cellular Automata using the African Buffalo Metaheuristic” *Boris Leonardo Almonacid*
2. “A Knowledge-Based Clinical Decision Support System for Monitoring Chronic Patients”
V. Vives-Boix, D. Ruiz, A. de Ramon-Fernandez, D. Marcos-Jorquera, V. Gilart-Iglesias
3. “Architecture of a monitoring system for hypertensive patients” *A. de Ramon-Fernandez, D. Ruiz, J. Ramirez-Navarro, D. Marcos-Jorquera, V. Gilart-Iglesias, A. Soriano-Paya*
4. “Deep learning-based approach for time series forecasting with application to electricity load”
Jose Torres, Antonio Fernandez, Alicia Troncoso, Francisco Martinez-Alvarez
5. “Visual tools to lecture data analytics and engineering”
Sung-Bae Cho, Antonio J. Tallón-Ballesteros
6. “Relevant kinematic feature selection to support human action recognition in MoCap data”
J. D. Pulgarin-Giraldo, A. A. Ruales-Torres, A. M Alvarez-Meza, G. Castellanos-Dominguez
7. “Exploring the physiological basis of emotional HRI using a BCI interface” *M. Val-Calvo, M. D. Grima-Murcia, J. Sorinas, J. R. Alvarez-Sanchez, F. de la Paz Lopez, J. M. Ferrandez, E. Fernandez*
8. “EEG Source Imaging based on Dynamic Sparse Coding as ADHD Biomarker”
Fily Mateos Grisales Franco, Javier M Medina-Salcedo, Juan David Martinez Vargas, Daniel G García-Murillo, German Castellanos-Dominguez
9. “Influence of anisotropic blood vessels modeling on EEG source localization”
Ernesto Cuartas Morales, Angel Torrado Carvajal, Juan Antonio Hernandez Tamames, Norberto Malpica, German Castellanos-Dominguez
10. “Influence of population dependent forward models on distributed EEG source reconstruction”
Ernesto Cuartas Morales, Yohan Ricardo YR Cespedes Villar, Juan David Martinez, Luis Felipe Arteaga, German Castellanos-Dominguez
11. “Identification of Nonstationary Brain Networks using Time-variant Autoregressive Models”
Juan David Martinez Vargas, Jose Lopez Hincapie, Felipe Rendon-Castrillon, Gregor Strobbe, Pieter van Mierlo, German Castellanos-Dominguez
12. “Chaotic encryption of 3D objects” *Angel Martin del Rey*
13. “Calculating the power spectrum of digital x-ray images in the wavelet domain”
Antonio González-López, Juan Morales Sanchez
14. “Using the power spectra of images and noise for portal imaging systems characterization”
Antonio González-López, Juan Morales Sanchez
15. “Simulative models to understand numerical cognition”
Michela Ponticorvo, Onofrio Gigliotta, Orazio Miglino
16. “Dynamic Sign Language Recognition Using Gaussian Process Dynamical Models”
Hernan Garcia Arias, Juan Velasquez Minoli, Jorge I Marin
17. “Phonation and Articulation Analyses in Laryngeal Pathologies, Cleft Lip and Palate, and Parkinson’s Disease” *Juan C. Jimenez-Monsalve, Juan C. Vasquez-Correa, Juan Orozco, Pedro Gomez-Vilda*
18. “A Propose Architecture for Situated Multi-agent Systems and Virtual Simulated Environments applied to Educational Immersive Experiences”
Oscar Calvo, Jose Manuel Molina Lopez, Miguel Angel Patricio Guisado, Antonio Berlanga
19. “A Cognitive Architecture Framework for Critical Situation Awareness Systems”
Felipe Fernandez, Angel Sanchez, Jose F Velez, Ana Belen Moreno Diaz
20. “Execution of Written Tasks by a Biologically-Inspired Artificial Brain”
Sebastian Narvaez Rodriguez, Angel Garcia, Raul Ernesto Gutierrez
21. “Robot’s and human’s self: a computational perspective” *Angel Garcia*
22. “Hierarchical-Architecture Oriented to Multi-Task Planning for Prosthetic Hands Controlling”
Cesar Quinayas, Andres Ruiz-Olaya, Leonardo Torres, Carlos A Gaviria
23. “Automatic Detection of Blood Vessels in Retinal OCT Images”
Jose Joaquim de Moura Ramos, Jorge Novo, Jose Rouco, Manuel Penedo, Marcos Ortega
24. “Towards a Deep Learning model of retina: retinal neural encoding of color flash patterns”
A. Lozano, F. J. Garrigos Guerrero, J. J. Martinez-Alvarez, J. M. Ferrandez, E. Fernandez

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- Session: Plenary III June, 21. 09:00–10:00 Room: A
“Invited speaker Prof. Manuel Graña”
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- Session: Plenary IV June, 21. 10:00–11:00 Room: A
“Invited speaker Prof. Martin Greschner”
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- Session: W-SPML-BNA II June, 21. 11:30–13:30 Room: A
“Workshop on Signal Processing and Machine Learning applied to Biomedical and NeuroScience Applications II”

Organizer & Chair: Juan Manuel Górriz

Co-Chair: Javier Ramírez

- “Non-Linear covariance estimation for reconstructing neural activity with MEG/EEG data”
Leonardo Duque Munoz, Juan David Martínez Vargas, German Castellanos-Domínguez, Jesus F Vargas Bonilla, Jose Lopez Hincapie
 - “Automatic separation of parkinsonian patients and control subjects based on the striatal morphology”
Fermin Segovia, Juan M Gorriz, Javier Ramírez, Francisco Jesús Martínez-Murcia, Ignacio Alvarez Illan, Diego Castillo-Barnes, Andres Ortiz García, Diego Salas-Gonzalez
 - “Emotion assessment based on functional connectivity variability and relevance analysis”
Cristian Torres-Valencia, Andres M Alvarez-Meza, Álvaro Orozco-Gutiérrez
 - “MRI-based Feature Extraction using Supervised General Stochastic Networks in Dementia Diagnosis”
Diego Fabian Collazos-Huertas, Andres Tobar Rodriguez, David Cárdenas-Peña, German Castellanos-Domínguez
 - “Brain white matter lesion segmentation with 2D/3D CNN”
Asier Lopez-Zorrilla, Mikel de Velasco-Vazquez, Oscar Serradilla-Casado, Leire Roa-Barco, Manuel Graña, Darya Chyzyk, Catherine Price
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- Session: W-PC-ASE June, 21. 11:30–13:30 Room: B
“Workshop on Physiological Computing in Affective Smart Environments”

Organizer & Chair: Arturo Martínez-Rodrigo

Co-Chair: Antonio Fernández-Caballero

- “An Innovative Tool To Create Neurofeedback Games for ADHD Treatment”
Miguel Angel Teruel, Elena Navarro, Dulce Romero, Mario Garcia, Antonio Fernández-Caballero, Pascual González
 - “Nonlinear Symbolic Assessment of Electroencephalographic Recordings for Negative Stress Recognition”
Beatriz Garcia-Martinez, Arturo Martinez-Rodrigo, Antonio Fernández-Caballero, Jose Moncho-Bogani, Jose Manuel Pastor, Raul Alcaraz
 - “Recent advances and challenges in nonlinear characterization of brain dynamics”
Raul Alcaraz, Beatriz Garcia-Martinez, Roberto Zangroniz, Arturo Martinez-Rodrigo
 - “Towards assistive solutions for people with central vision loss”
Marina Sokolova, Francisco J. Gomez, Jose Manuel Ortiz Egea, Miguel Fernandez, Adoracion Perez Andres
 - “Performance of predicting surface quality model using Softcomputing, a comparative study of results”
Victor Manuel Flores Fonseca, Maritza Correa, Alma Quiñonez
 - “Conditional Entropy Estimates for Distress Detection with EEG Signals”
Beatriz Garcia-Martinez, Arturo Martinez-Rodrigo, Antonio Fernández-Caballero, Pascual González, Raul Alcaraz
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- Session: BioInsp. Comp. Apps. June, 21. 11:30–13:30 Room: C
“**Bio-inspired Computing Applications**”
Organizer & Chair: José Santos Reyes
Co-Chair: Camino Rodríguez Vela
 - “Efficient Localization in Edge Detection by Adapting Artificial Bee Colony (ABC) Algorithm”
Jaime Vasquez, Ricardo Contreras, Maria Punninghoff
 - “Electric vehicle charging scheduling using an artificial bee colony algorithm”
Jorge Garcia-Alvarez, Miguel Gonzalez, Camino Rodriguez Vela, Ramiro Varela Arias
 - “A memetic algorithm for due-date satisfaction in fuzzy job shop scheduling”
Juan José Palacios, Ines Gonzalez Rodriguez, Camino Rodriguez Vela, Jorge Puente
 - “Indicator-based Evolutionary Level Set Approximation: Mixed Mutation Strategy and Extended Analysis”
Lai-Yee Liu, Vitor Basto-Fernandes, Iryna Yevseyeva, Joost Kok, Michael Emmerich
 - “Genetic algorithm for scheduling charging times of electric vehicles subject to time dependent power”
Carlos Mencia, María R. Sierra, Raúl Mencía, Ramiro Varela Arias
 - “Protein folding modeling with neural cellular automata using the Face-Centered Cubic model”
Daniel Varela, Jose Santos Reyes
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- Session: W-SPML-BNA III June, 21. 16:00–18:00 Room: A
“**Workshop on Signal Processing and Machine Learning applied to Biomedical and Neuroscience Applications III**”
Organizer & Chair: Juan Manuel Górriz
Co-Chair: Javier Ramírez
 - “Circadian modulation of sleep-wake dynamics evaluated by transition probabilities”
Leonel Francisco Perez-Atencio, Nicolas Garcia-Aracil, Eduardo Fernandez, Luis C Barrio, Juan A Barios
 - “Detection of EEG Dynamic Changes due to Stimulus-related Activity in Motor Imagery recordings”
Luisa Velásquez-Martínez, Andres Alvarez, German Castellanos
 - “Sleep stages clustering using time and spectral features of EEG signals”
Jose L. Rodriguez-Sotelo, Alejandro Osorio-Forero, Alejandro Jiménez-Rodríguez, Francia Restrepo, Diego Peluffo, Jorge Serrano
 - “Segment Clustering for Holter Recordings Analysis”
Jose L. Rodriguez-Sotelo, Diego Peluffo, Daniela López-Londoño, Andrés Eduardo Castro-Ospina
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- Session: **Biomedical** June, 22. 09:00–11:00 Room: A
Chair: Pedro Gómez-Vilda
Co-Chair: Diego Andina
 - “Identification of the Semantic Disconnection in Alzheimer’s Patients Conducted by Bayesian Algorithms”
Susana Arias Tapia, Rafael Martinez Tomas, Margarita Narvaez Rios, Hector F. Gomez, Maria Paez, Verónica Chicaiza
 - “Emergency Department Readmission Risk Prediction A case study in Chile”
Arkaitz Artetxe, Andoni Beristain, Manuel Graña, Sebastian Rios
 - “Vowel Articulation Distortion in Parkinson Disease”
Pedro Gomez-Vilda, José Manuel Ferrandez, Daniel Palacios-Alonso, Andres Gomez-Rodellar, Victoria Rodellar, Jiri Mekyska, Zdenek Smekal, Irena Rektorova, Ilona Eliasova, Milena Kostalova
 - “Koniocortex-Like Network Unsupervised Learning Surpasses Supervised Results on WBCD Breast Cancer Database”
Juan Fombellida, Francisco Pelález, Diego Andina
 - “Ongoing work on deep learning for lung cancer prediction”
Oier Echaniz, Manuel Graña
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- Session: **Applications I** June, 22. 09:00–11:00 Room: B
Chair: Antonio Fernández-Caballero
Co-Chair: Roberto Iglesias Rodríguez
 - “Robust step detection in mobile phones through a learning process carried out in the mobile”
Roberto Iglesias, Carlos V. Regueiro, Senen Barro Ameneiro, German Rodriguez, Adrian Nieto Rodriguez
 - “Predicting trust in Wikipedia s Vote Network using social networks measures”
Jose David Nuñez Gonzalez, Manuel Graña
 - “Acceleration of Moving Object Detection in Bio-Inspired Computer Vision”
Jose L Sanchez, Raul Viana, María T. López, Antonio Fernández-Caballero
 - “Supervised Metaplasticity for Big Data: Application to Pollutant Concentrations Forecast”
Juan Fombellida, Martin J Alarcon, Santiago Torres-Alegre, Diego Andina
 - “Towards hospitalization after readmission risk prediction using ELMs”
José Manuel López Guede, Asier Garmendia, Manuel Graña, Sebastian Rios, Julian Estevez
 - “Probabilistic classifiers and statistical dependency: the case for grade prediction”
Eduardo Sánchez Vila, Bakhtiyor Bahritidinov
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- Session: **Emotions** June, 22. 09:00–10:00 Room: C
Chair: Emilia Barakova
Co-Chair: Eduardo Fernández Jover
 - “Temporal dynamics of human emotions: An study combining images and music”
María Dolores Grima Murcia, Jennifer Sorinas, Miguel Lopez, José Manuel Ferrandez, Eduardo Fernandez
 - “Memory Effect in Expressed Emotions during Long Term Group Interactions”
Roman Gorbunov, Emilia I. Barakova, Matthias Rauterberg
 - “Setting the parameters for an accurate EEG (electroencephalography)-based emotion recognition system”
Jennifer Sorinas, María Dolores Grima Murcia, Jesus Minguillon, Francisco Sánchez-Ferrer, Mikel Val-Calvo, José Manuel Ferrandez, Eduardo Fernandez
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- Session: CI-DCT June, 22. 10:00–11:00 Room: C
“**Computational Intelligence in Data Coding, and Transmission**”
Organizer & Chair: Adriana Dapena
Co-Chair: Blanca Priego & Juan Carlos Burguillo Rial

- “Adapting Side Information to Transmission Conditions in Precoding Systems”
Josmary Labrador, Paula M. Castro, Adriana Dapena, Francisco J. Vazquez-Araujo
- “Energy based clustering method to estimate channel occupation of LTE in unlicensed spectrum”
Malafaia Daniel, José Vieira, Ana Tomé
- “Cellular automata-based image sequence denoising algorithm for signal dependent noise”
Blanca Priego, Richard J. Duro, Jocelyn Chanussot

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- Session: **Modeling Cognitive Tasks** June, 22. 11:30–12:30 Room: A
Chair: Richard Duro
Co-Chair: Jan Treur

- “A Neurologically Inspired Network Model for Graziano’s Attention Schema Theory for Consciousness”
Erik van den Boogaard, Jan Treur, Maxim Turpijn
- “Multilevel Darwinist Brain: Context Nodes in a Network Memory Inspired Long Term Memory”
Richard J. Duro, Jose A. Becerra, Juan Monroy, Luis Calvo
- “Motivational Engine for Cognitive Robotics in Non-Static Tasks”
Rodrigo Salgado, Abraham Prieto, Francisco Bellas, Richard J. Duro

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- Session: **Applications II** June, 22. 11:30–13:30 Room: B
Chair: Antonio Javier Tallón-Ballesteros
Co-Chair: Ricardo Contreras

- “Combining Multiscale Filtering and Neural Networks for Local Rainfall Forecast”
Fulgencio S Buendia, Gabriel Buendia, Diego Andina
 - “Relating Facial Myoelectric Activity to Speech Formants”
Pedro Gómez-Vilda, Daniel Palacios-Alonso, Andrés Gómez-Rodellar, José Manuel Ferrandez, Agustín Álvarez-Marquina, Rafael Martínez-Olalla, Víctor Nieto-Lluis
 - “Ensembles of decision trees for recommending touristic items”
Ameed Almomani, Paula Saavedra, Eduardo Sánchez Vila
 - “Low dimensionality or same subsets as a result of feature selection: An in-depth roadmap”
Antonio J. Tallón-Ballesteros, José C. Riquelme
 - “OntoLexmath: An ontology for dealing with mathematical lexicon”
Maria Punninghoff, Angel Castillo, Pedro Salcedo Lagos, Ricardo Contreras
 - “Segmentation of circular contours from laser beams measurements”
Jose Manuel Cuadra Troncoso, M. A. Muñoz-Bañón, Felix de la Paz Lopez, Jose Ramon Alvarez-Sanchez
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• Session: Deep Learning

June, 22. 11:30–13:30 Room: C

“**Deep Learning**”

Organizer & Chair: Alfredo Cuesta Infante

Co-Chair: Juan José Pantrigo

- “A Deep Learning Approach to Handwritten Number Recognition”
Victoria Ruiz, Maria T Gonzalez, Jorge Sueiras, Angel Sanchez, Jose F Velez
 - “Deep Learning and Bayesian Networks for Labelling User Activity Context Through Acoustic Signals”
Francisco Rodriguez Lera, Francisco Martin Rico, Vicente Matellan Olivera
 - “Values deletion to improve deep imputation processes”
Adrián Sánchez-Morales, Jose Luis Sancho-Gomez, Aníbal R Figueiras-Vidal
 - “Deconvolutional neural network for pupil detection in real-world environments”
Fco. Javier Vera Olmos, Norberto Malpica
 - “Air quality forecasting in Madrid using Long Short-term memory networks”
Esteban Pardo, Norberto Malpica
 - “A Deep Learning Approach for Underwater Image Enhancement”
Javier Perez Soler, Attanasio Aleks, Nataliya Nechyporenko, Pedro Jose Sanz
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• Session: **Retinal Models**

June, 22. 12:30–13:30 Room: A

Chair: Eduardo Sánchez Vila

Co-Chair: Francisco Pelayo

- “A Conductance-Based Neuronal Network Model for Color Coding in the Primate Foveal Retina”
Pablo Martínez Cañada, Christian Morillas, Francisco Pelayo
 - “Restoration model for attenuated low spatial frequencies in the retinal output”
Adrian Arias, Eduardo Sánchez Vila, Luis Martínez
 - “Assessment and comparison of evolutionary algorithms for tuning a bio-inspired retinal model”
Ruben Crespo-Cano, Antonio Martínez-Álvarez, Sergio Cuenca Asensi, Eduardo Fernandez
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