

# IWINAC2017

## 7<sup>th</sup> INTERNATIONAL WORK-CONFERENCE ON THE INTERPLAY BETWEEN NATURAL AND ARTIFICIAL COMPUTATION

**FULL PROGRAM**

A Coruña, Spain.

June 19–23, 2017

Organized by

Universidad Nacional de Educación a Distancia (UNED)

Universidad Politécnica de Cartagena

<http://www.iwinac.org/iwinac2017/>

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# Acknowledgments

IWINAC2017 still owes too much to our friend Prof. Mira. As a pioneer in the field of Cybernetics, he enthusiastically promoted and organized the first editions of these interdisciplinary meetings. We still miss him and we want to dedicate IWINAC2017 in memoriam to Prof. Mira.

IWINAC2017 has been organized by the Universidad Nacional de Educación a Distancia (UNED) and the Universidad Politécnica de Cartagena (UPCT) in cooperation with the Universidade da Coruña and UNED-Coruña Associated Center.

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- Universidad Nacional de Educación a Distancia.
- Universidad Politécnica de Cartagena.
- Universidade da Coruña
- Concello da Coruña.
- UNED-Coruña Associated Center.
- Campus Mare Nostrum 37/38.
- Apliquem Microones 21, s.l.
- Spanish CYTED.

## Scope

This interdisciplinary meeting, with focus on the interplay between Nature and Computation, expands the scope of neural computation at the physical level to cope with symbols and knowledge level models of cognitive and social processes. The global purpose is to offer a forum for discussion and exchange of ideas in both directions, from Computation to Sciences of Natural, and vice versa, between scientists and engineers from fields such as Electronic Engineering, Artificial Intelligence, Knowledge Engineering, Physics, Mathematics, Computation, Artificial Vision, Situated Robotics, Neurophysiology, Cognitive Science, Linguistics and Philosophy.

# Conference Organization

## General Chairman

JOSÉ MANUEL FERRÁNDEZ VICENTE      *Univ. Politécnica de Cartagena (Spain)*

## Organizing Committee

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**Richard Duro Fernández**

**José Santos Reyes**

**José Antonio Becerra Permuy**

**Francisco Bellas Bouza**

**Abraham Prieto**

**Fernando López Peña**

**Álvaro Deibe Díaz**

**Blanca Priego**

## Invited Speakers

**Hojjat Adeli**      *Ohio State University (USA)*

**Manuel Graña**      *Universidad del País Vasco (Spain)*

**Martin Greschner**      *Carl von Ossietzky Universität Oldenburg (Germany)*

**Gusz Eiben**      *Vrije Universiteit Amsterdam (The Netherlands)*

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Alfredo Cuesta Infante, Spain  
Adriana Dapena, Spain  
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Jose García-Rodríguez, Spain  
Juan Manuel Górriz, Spain  
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Diego Andina, Spain  
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Rafael Martinez Tomas, Spain  
Sergio Miguel-Tomé, Spain  
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Miguel Angel Patricio Guisado, Spain  
Francisco Peláez, Brazil  
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David Pérez Lizán, Spain  
Maria Pinninghoff, Chile  
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Diego Salas-Gonzalez, Spain  
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Luis M Sarro, Spain  
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Rafael Toledo-Moreo, Spain  
Jan Treur, Netherlands  
Ramiro Varela Arias, Spain  
Carlos Vazquez Regueiro, Spain  
Hujun Yin, UK

## PROGRAM OUTLINE

<b>Monday June 19</b>	
morning	<i>Free time</i>
17:00–20:00	<i>Registration at Technical Secretariat desk</i>

<b>Tuesday June 20</b>			
08:45–09:00	<i>Opening Ceremony</i>		
09:00–10:00	<i>Plenary Session I: Prof. Hojjat Adeli</i>		
10:00–11:00	<i>Plenary Session II: Prof. Gusz Eiben</i>		
11:00–11:30	<i>Coffee break</i>		
	Room A:	Room B:	Room C:
11:30–13:30	<i>AI-HRI</i>	<i>MLBDAPV</i>	<i>BCI-Cloud</i>
14:00–	<i>Lunch</i>		
16:00–18:00	<i>W-SPML-BNA I</i>	<i>Posters</i>	
18:00–19:00	<i>RTNAC members meeting</i>		
	<i>Free time</i>		
21:00–	<i>Welcome reception and cocktail</i>		

Please, see detailed session contents and social events in pages [8](#) through [20](#).

## PROGRAM OUTLINE

<b>Wednesday June 21</b>			
09:00–10:00	<i>Plenary Session III: Prof. Manuel Graña</i>		
10:00–11:00	<i>Plenary Session IV: Prof. Martin Greschner</i>		
11:00–11:30	<i>Coffee break</i>		
11:30–13:30	Room A:	Room B:	Room C:
	<i>W-SPML-BNA II</i>	<i>W-PC-ASE</i>	<i>BioInsp. Comp. Apps.</i>
14:00–	<i>Lunch</i>		
16:00–18:00	<i>W-SPML-BNA III</i>		
18:00–19:00	<i>CYTED members meeting</i>		
	<i>Free time</i>		
21:00–	<i>Official Dinner</i>		

<b>Thursday June 22</b>			
	Room A:	Room B:	Room C:
09:00–10:00	<i>Biomedical</i>	<i>Applications I</i>	<i>Emotions</i>
10:00–11:00			<i>CI-DCT</i>
11:00–11:30	<i>Coffee break</i>		
11:30–12:30	<i>Modeling Cognitive Tasks</i>	<i>Applications II</i>	<i>Deep Learning</i>
12:30–13:30	<i>Retinal Models</i>		
13:30–13:45	<i>Closing Ceremony</i>		
afternoon	<i>Free time</i>		

<b>Friday June 23</b>	
09:00–13:00	<i>Reserved only for special working groups meetings</i>
afternoon	<i>Free time</i>

Please, see detailed session contents and social events in pages 8 through 20.

- Session: Plenary I June, 20. 09:00–10:00 Room: A  
**“Invited speaker Prof. Hojjat Adeli”**
  
- Session: Plenary II June, 20. 10:00–11:00 Room: A  
**“Invited speaker Prof. Gusz Eiben”**
  
- 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*
  
- 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*

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- “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 Umaquina, Edwin Rosero, Juan Antonio Castro Silva*
- “Bayesian Unbiasing of the Gaia space mission time series database”  
*Hector Delgado, Luis M Sarro*

- 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*

- 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*

• 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”  
*Victor Vives-Boix, Daniel Ruiz, Alberto de Ramon-Fernandez, Diego Marcos-Jorquera, Virgilio Gilart-Iglesias*
  3. “Architecture of a monitoring system for hypertensive patients”  
*Alberto de Ramon-Fernandez, Daniel Ruiz, Javier Ramirez-Navarro, Diego Marcos-Jorquera, Virgilio Gilart-Iglesias, Antonio 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”  
*Juan Diego Pulgarin-Giraldo, Anderson Alberto Ruales-Torres, Andres M Alvarez-Meza, German Castellanos-Dominguez*
  7. “Exploring the physiological basis of emotional HRI using a BCI interface”  
*Mikel Val-Calvo, Maria Dolores Grima-Murcia, Jennifer Sorinas, Jose Ramon Alvarez-Sanchez, Felix de la Paz Lopez, José Manuel Ferrandez, Eduardo 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*
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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 Camilo 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"  
*Antonio Lozano, Francisco J. Garrigos Guerrero, Jose Javier Martinez-Alvarez, José Manuel Ferrandez, Eduardo Fernandez*

- Session: Plenary III June, 21. 09:00–10:00 Room: A  
**“Invited speaker Prof. Manuel Graña”**
  
- Session: Plenary IV June, 21. 10:00–11:00 Room: A  
**“Invited speaker Prof. Martin Greschner”**
  
- 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 Martinez Vargas, German Castellanos-Dominguez, 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 Ramirez, 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-Dominguez*
  - “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*

- 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*

- 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*

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- “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*

- 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 Barrios*
- “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*

- 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 Martínez 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 Peláez, Diego Andina*
- “Ongoing work on deep learning for lung cancer prediction”  
*Oier Echaniz, Manuel Graña*

- 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*
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- “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*

- 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*

- 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*

- 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*
  
- 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*

- 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*

- 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 Martinez*
- “Assessment and comparison of evolutionary algorithms for tuning a bio-inspired retinal model”  
*Ruben Crespo-Cano, Antonio Martínez-Álvarez, Sergio Cuenca Asensi, Eduardo Fernandez*

## Other Technical Sessions

### June 20, Tuesday

18:00–19:00 h. *Room A*: (meeting, in Spanish, for RTNAC members)  
Reunión de la Red Nacional en Computación Natural y Artificial (RTNAC).

### June 21, Wednesday

18:00–19:00 h. *Room A*: (meeting, in Spanish, for CYTED members)  
Reunión de participantes en el Programa Iberoamericano de Ciencia y Tecnología para el Desarrollo (CYTED).

## Social Program

**Coffee break** June 20, 21 and 22, from 11:00 to 11:30 h.

**Lunch** June 20 and 21, for registered participants and accompanying persons (with lunch ticket). Served at 14:00 h. in the restaurant inside the Congress Venue (Hotel Meliá María Pita).

### June 20, Tuesday

21:00 h. – **Welcome reception and cocktail** served in *Restaurante Cafetería Tira do Playa* (on Av. Buenos Aires, 1, at 1.3 km, or 18 min walking along the promenade, from Congress Venue).  
<https://goo.gl/maps/CMaJW1YxQ6y>

### June 21, Wednesday

21:00 h. – Congress **official dinner** (casual wear) in *Restaurante Domus Casa Pardo* (situated on Rúa Ángel Rebollo, 91, approx. 600 meters from Congress Venue). <https://goo.gl/maps/6iwl5taRFPC2>

## Internet connection

During the conference venue there will be wireless access (802.11b/802.11g compatible) to Internet available inside and near the conference rooms, and also some wired connections in a specific place.

## Registration Fees

The registration form must be completed with the Conference Technical Secretariat, Viajes Hispania (please, see the address below), at your earliest convenience. The form must be accompanied by the payment in Euros. No registration will be considered until the payment is received.

Registrations fees	Until May 10th	After May 10th
Standard (*)	€525	€625
Session Organizer (*)	€425	€525
Accompanying Person A (**)	€200	€200
Accompanying Person B (**)	€125	€125
2nd paper and each additional paper (***)	€325	€375

- (\*) Includes attending the sessions, coffee breaks, lunches, social events (welcome reception cocktail and official dinner), and the “Lecture Notes in Computer Science” books (Springer-Verlag) of the work-conference proceedings.
- (\*\*) Includes social events (welcome reception cocktail and official dinner). Type A registration also includes lunches.
- (\*\*\*) Each extra paper registration includes only conference proceedings.

## Technical Secretariat of the Conference

Please, contact the Technical Secretariat for any information or details about registration, accommodation, travels, etc.

### Viajes Hispania

Avenida Maisonnave, 11, 7<sup>o</sup>

E-03002 Alicante (Spain)

Phone: (+34) 965-22-83-93

<http://www.viajeshispania.com/>

E-mail: [central@viajeshispania.es](mailto:central@viajeshispania.es)

Starting 17:00 h. June 19, and during the Conference, the Secretariat will maintain a desk at the congress venue. Previous registration will be necessary to attend the Conference (<http://iwinac2017.inscribete.es>).



Congress URL <http://www.iwinac.org/iwinac2017/>

# General Information

## Congress venue

HOTEL MELIÁ MARÍA PITA  
Avenida Pedro Barrié de la Maza, 3  
E-15003 A Coruña  
Spain  
<https://goo.gl/maps/gPcT4xkpJW42>

## Travel Information

A Coruña airport (international code “LCG”) with flights mainly from Spain and Europe, is located 12 km from the Congress venue. Taxi rates from the airport to the congress venue are around 20 euros. In the airport there are shuttle buses and shared rides that can be cheaper. There are also public buses to A Coruña.

Also, it is possible to go to Santiago de Compostela airport (70 km from the Congress venue) and from there to A Coruña by train or bus.

Please, contact our [Technical Secretariat](#) (Viajes Hispania) for more detailed information on travel and accommodation.

## Language

English will be the official language of IWINAC2017. Simultaneous translation will *not* be provided.

## Climate

A Coruña is located at about 43°22'N and 8°23'W, near the coast by the Atlantic Ocean in northwest Spain. The Congress Venue is in the center of town near the beach. A Coruña has humid moderate oceanic climate with dry summers. The temperature in June can vary from 16-21°C by day to 14-18 °C by night.

## Banks

Business is transacted from 09:00 to 14:00 h. Monday to Friday. Money can be changed outside normal banking hours at Hotels, Travel Agencies and other business, displaying a “*Cambio/Change*” sign. Take your Passport or Identity Card with you when changing travelers checks.

## **Currency**

The monetary unit in Spain is the *EURO* (symbol €). The euro is divided into a hundred cents (symbol ¢). Coins: 1, 2, 5, 10, 20 and 50 cents; 1 and 2 euros. Banknotes: 5, 10, 20, 50, 100, 200 and 500 euros.

All international Credit Cards (Visa, American Express, Master Card, Eurocard, Diners Club, etc.) are widely accepted by Hotels, Restaurants and Shops, and also in many ATMs or cashpoints.

## **Tipping**

Since the service charge is normally included in restaurant, hotel and taxi bills, tipping is always optional.

## **Electricity**

Electric supply is AC 220 V / 50 Hz Standard continental European two round pin plugs for appliances.

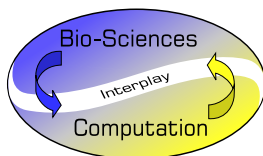
## **Assistance and insurance**

Participants are advised to make their own arrangements regarding travel insurance and medical assistance during the Conference. Neither the Organization nor the Conference Secretariat is able to accept any responsibility whatsoever for damage or injury to persons or their belongings during the Conference.

## **Additional information**

You can find more information (maps, addresses, tourism, visits, etc.) about A Coruña through the web pages:

- <http://www.turismocoruna.com/>
- [http://www.turismo.gal/que-visitar/cidades/a-coruna?langId=en\\_US](http://www.turismo.gal/que-visitar/cidades/a-coruna?langId=en_US)
- [https://en.wikipedia.org/wiki/A\\_Coru%C3%B1a](https://en.wikipedia.org/wiki/A_Coru%C3%B1a)
- <http://www.tourspain.org/coruna/>
- <http://www.coruna.es/>



IWINAC2017



Universidad Nacional de  
Educación a Distancia



Universidad Politécnica  
de Cartagena



Ministerio de Economía,  
Industria y Competitividad



Universidade da Coruña

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Concello da Coruña

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Campus Marenostrum 37/38



Spanish CYTED

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**Congress Venue:**  
Hotel Meliá María Pita, A Coruña (Spain)  
**June 19–23, 2017**  
<http://www.iwinac.org/iwinac2017/>

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