

# IWINAC2015

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

**FULL PROGRAM**

Elche (Elx), Spain.

June 1–5, 2015

Organized by

Universidad Nacional de Educación a Distancia (UNED)

Universidad Politécnica de Cartagena

Contact URL <http://www.iwinac.org/iwinac2015/>

# Acknowledgments

IWINAC2015 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 IWINAC2015 in memoriam to Prof. Mira.

IWINAC2015 has been organized by the Universidad Nacional de Educación a Distancia (UNED) and the Universidad Politécnica de Cartagena (UPCT) in cooperation with the Elx-UNED Associated Center and the Universidad Miguel Hernández.

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- Spanish Ministerio de Economía y Competitividad.  
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- Universidad Nacional de Educación a Distancia.
- Universidad Politécnica de Cartagena.
- Ayuntamiento de Elche.
- Universidad Miguel Hernández.
- Elx-UNED 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 ways, 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.

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## Invited Speakers

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

**Marc de Kamps** *University of Leeds (UK)*

**Richard Duro** *Universidade da Coruña (Spain)*

**Luis Miguel Martínez Otero** *Universidad Miguel Hernández (Spain)*

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**Hujun Yin**, UK  
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**Changjiu Zhou**, Singapore

## PROGRAM OUTLINE

<b>Monday June 1</b>	
morning	<i>Free time</i>
17:00–20:00	<i>Registration at Technical Secretariat desk</i>

<b>Tuesday June 2</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. Luis M. Martínez Otero</i>		
11:00–11:30	<i>Coffee break</i>		
11:30–13:30	Room A:	Room B:	Room C:
	ML Vision Robotics	Int. Proc. Knowl. Extr.	AI to medical aid
14:00–	<i>Lunch</i>		
16:00–17:00	Posters attending		<i>Doctoral Consortium</i>
17:00–18:00	Robot Autonomy Revised	<i>Reunión RTNAC</i>	
18:00–19:00			
19:00–21:00	<i>Touristic tour of Elche</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 3</b>			
09:00–10:00	<i>Plenary Session III: Prof. Marc de Kamps</i>		
10:00–11:00	<i>Plenary Session IV: Prof. Richard Duro</i>		
11:00–11:30	<i>Coffee break</i>		
11:30–13:30	Room A: Gerontech. e-therapy I	Room B: Biomed. Ind. Image underst.	Room C: Evolutive Methods
	<i>Lunch</i>		
14:00–	<i>Lunch</i>		
16:00–17:00	Gerontech. e-therapy II	Neuro- modelling	Biological Vision
17:00–18:20			Image Understanding
	<i>Free time</i>		
21:00–	<i>Official Dinner</i>		

<b>Thursday June 4</b>			
	Room A:	Room B:	Room C:
09:00–10:00	BCI power BANs	Bioinspired models	Intel. Syst. Educ.
10:00–11:00		Epilepsy Monitoring I	
11:00–11:30	<i>Coffee break</i>		
11:30–13:30	Comp. Aid. Infr. Eng.	Epilepsy Monitoring II	Vision & Cog. Robot Navig.
13:30–13:40	<i>Closing Ceremony</i>		
	<i>Free time</i>		
22:00–	<i>Concert</i>		

<b>Friday June 5</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, 2. 09:00–10:00 Room: A  
**“Invited speaker Prof. Hojjat Adeli”**
- Session: Plenary II June, 2. 10:00–11:00 Room: A  
**“Invited speaker Prof. Luis Miguel Martínez Otero”**
- Session: ML Vision Robotics June, 2. 11:30–13:30 Room: A  
**“Machine Learning methods applied to vision and robotics”**  
Organizer & Chair: José García-Rodríguez  
Co-Chair: Miguel Cazorla & Jorge Azorín
  - “A Growing Functional Modules learning based controller designed to balance of a humanoid robot”  
*Jerome Leboeuf*
  - “Optimized Representation of 3D Sequences using Neural Networks”  
*Sergio Orts Escolano, Jose Garcia-Rodriguez, Vicente Morell, Miguel Cazorla, Alberto Garcia-Garcia, Sergiu Ovidiu-Oprea*
  - “Object recognition in noisy RGB-D data”  
*José Rangel, Vicente Morell, Miguel Cazorla, Sergio Orts Escolano, Jose Garcia-Rodriguez*
  - “Topology Preserving Self-Organizing Map of Features in Image Space for Trajectory Classification”  
*Jorge Azorin-Lopez, Marcelo Saval-Calvo, Andres Fuster-Guillo, Higinio Mora-Mora, Victor Villena-Martinez*
  - “A Comparative Study of Downsampling Techniques for Non-rigid Point Set Registration using Color”  
*Marcelo Saval-Calvo, Sergio Orts Escolano, Jorge Azorin-Lopez, Jose Garcia-Rodriguez, Andres Fuster-Guillo, Vicente Morell, Miguel Cazorla*
  - “State Machine Based Architecture to Increase Flexibility of Dual-Arm Robot Programming”  
*Hector Herrero, Jose Luis Outón, Urko Esnaola, Damien Sallé, Karmele López de Ipiña*



- Session: Int. Proc. Knowl. Extr. June, 2. 11:30–13:30 Room: B  
**“Intelligent Processing and Knowledge Extraction in Data Analytics”**  
 Organizer & Chair: Antonio J. Tallón-Ballesteros  
 Co-Chair: Hujun Yin
  - “Data cleansing meets feature selection: A supervised machine learning approach” *Antonio J. Tallón-Ballesteros, José C. Riquelme*
  - “Multicriterion Segmentation of Demand Markets to Increase Forecasting Accuracy of Analogous Time Series: A First Investigation”  
*Emiao Lu, Julia Handl*
  - “A Self-Organising Multi-Manifold Learning Algorithm”  
*Hujun Yin, Shireen Md. Zaki*
  - “On the spectral clustering for dynamic data” *Diego Hernán Peluffo-Ordóñez, Juan Carlos Alvarado-Pérez, Andrés Eduardo Castro-Ospina*
  - “Related tasks selection to multitask learning schemes” *Andrés Bueno-Crespo, Rosa-María Menchón-Lara, Jose Luis Sancho-Gomez*
  - “MBMEDA: an Application of Estimation of Distribution Algorithms to the Problem of Finding Biological Motifs” *Carlos Jordán, Carlos J Jordán*
  
- Session: AI to medical aid June, 2. 11:30–13:30 Room: C  
**“AI applied to medical aid”**  
 Organizer & Chair: Daniel Ruiz Fernández
  - “Computable representation of antimicrobial recommendations using clinical rules”  
*Natalia Iglesias, Jose M. Juarez, M. Campos, Francisco Palacios*
  - “Abstracting classification models heterogeneity to build clinical group diagnosis support systems”  
*Oscar Marin-Alonso, Daniel Ruiz, Antonio Soriano Paya*
  - “Independent Component Analysis-based classification of Alzheimer’s disease from Segmented MRI data”  
*Laila Khedher, Javier Ramirez, Juan M Gorriz, Abdelbasset Brahim, Ignacio Alvarez Illan*
  - “Towards an Integrated Semantic Framework for Neurological Multidimensional Data Analysis”  
*Santiago Timón Reina, Mariano Rincon Zamorano, Atle Bjørnerud*
  - “Some Results on Dynamic Causal Modeling of Auditory Hallucinations”  
*Leire Ozaeta, Darya Chyzyk, Manuel Graña*
  - “Automated diagnosis of Alzheimer’s Disease by integrating genetic biomarkers and tissue density information”  
*Andres Ortiz García, Miguel Moreno-Estévez, Juan M Gorriz, Javier Ramirez, María J. García-Tarifa, Jorge Munilla, Nuria Haba*

- Session: **Posters attending**  
Chair: Vicente Garcerán  
Co-Chair: Alexander Cerquera

June, 2. 16:00–17:00 Room: P

1. “Telemetry System for Cochlear Implant using ASK modulation and FPGA”  
*Ernesto A. Martínez-Rams, Vicente Garceran-Hernandez, Duarte Juan Sanchez*
2. “Creating robots with personality: The effect of robot’s personality on its social intelligence”  
*Alexandros Mileounis, Raymond H. Cuijpers, Emilia I. Barakova*
3. “Toward an Upper-Limb Neurorehabilitation Platform Based on FES: Decoding User’s Intentionality”  
*Andres Ruiz-Olaya, Alberto López-Delis, Alexander Cerquera*
4. “Decoding of imaginary motor movements of fists applying spatial filtering in a BCI simulated application”  
*Jan Boelts, Alexander Cerquera, Andres Ruiz-Olaya*
5. “FPGA Translation of Functional Hippocampal Cultures Structures using Cellular Neural Networks”  
*Victor Lorente, Jose Javier Martinez-Alvarez, José Manuel Ferrandez, Francisco J. Garrigos Guerrero, Eduardo Fernandez, Javier Toledo*
6. “Online Control of Enumeration Strategies via Bat-Inspired Optimization”  
*Ricardo Soto, Broderick Crawford, Rodrigo Olivares, Franklin Johnson, Fernando Paredes*
7. “Low-Power Occupancy Sensor for an Ambient Assisted Living System”  
*Francisco Fernandez-Luque, Juan Zapata, Ramon Ruiz Merino*
8. “A Binary Cuckoo Search Algorithm for Solving the Set Covering Problem”  
*Ricardo Soto, Broderick Crawford, Rodrigo Olivares, Jorge Barraza, Franklin Johnson, Fernando Paredes*
9. “A cellular automata model for mobile worm propagation”  
*Angel Martin del Rey, Ascension Hernandez Encinas, Jesus Martin Vaquero, Araceli Queiruga Dios, Gerardo Rodriguez Sanchez*
10. “A Multiple-Model Particle Filter Based Method for Slide Detection and Compensation in Road Vehicles”  
*Rafael Toledo-Moreo, Carlos Colodro-Conde, Javier Toledo*

11. "Towards Robot Localization using Bluetooth Low Energy Beacons RSSI Measures"  
*Jose Manuel Cuadra Troncoso, Ángel Rivas-Casado, Jose Ramon Alvarez-Sanchez, Felix de la Paz Lopez, David Obregón-Castellanos*
12. "Development of a Web Platform for On-line Robotics Learning Workshops Using Real Robots"  
*Roberto García-Misis, Jose Manuel Cuadra Troncoso, Felix de la Paz Lopez, Jose Ramon Alvarez-Sanchez*
13. "Preliminary design of the real-time control software for the adaptive optics of AOLI"  
*Carlos Colodro-Conde, L.F. Rodríguez-Ramos, Isidro Villo-Perez, C. Mackay, R. Rebolo, J. Crass, J.J. Fernández-Valdivia, D.L. King, L. Labadie, R. López, A. Osoz, A. Pérez-Garrido, M. Puga, J.M. Rodríguez-Ramos, S. Velasco*
14. "A Machine Learning Approach to Prediction of Exacerbations of Chronic Obstructive Pulmonary Disease"  
*Miguel Angel Fernandez Granero, Daniel Sanchez Morillo, Miguel Angel Lopez Gordo, Antonio Leon*

- Session: Robot Autonomy Revised June, 2. 17:00–19:00 Room: A  
**"Robot autonomy revised: Grounding emotional and social interaction in robot behaviour"**

Organizer & Chair: Emilia Barakova

Co-Chair: Robert Lowe, Erik Billing, Joost Broekens

- "Affective Computational Mechanisms for Expectancy-Guided Decision Making"  
*Robert Lowe*
- "The need of closing the loop of Natural Social Interaction, Perception and Emotion for robot companion: an Industrial Perspective"  
*Amit Kumar Pandey*
- "Creating robots with personality: The effect of robot's personality on its social intelligence"  
*Alexandros Mileounis, Raymond H. Cuijpers, Emilia I. Barakova*
- "Perception of Emotions from Crowd Dynamics"  
*M.W. Baig, M.S. Baig, E.I. Barakova and M. Rauterberg*
- "Elicited vocal emotional stress analysis for deception detection"  
*Daniel Palacios Alonso, Victoria Rodellar, Pedro Gómez-Vilda*

- Session: Plenary III June, 3. 09:00–10:00 Room: A  
**“Invited speaker Prof. Marc de Kamps”**
- Session: Plenary IV June, 3. 10:00–11:00 Room: A  
**“Invited speaker Prof. Richard Duro”**
- Session: Gerontech. e-therapy I June, 3. 11:30–13:30 Room: A  
**“Gerontechnology and e-therapy I”**  
Organizer & Chair: Antonio Fernández-Caballero  
Co-Chair: Pascual González & Elena Navarro
  - “Robust Linear Longitudinal Feedback Control of a Flapping Wing Micro Air Vehicle”  
*Lidia María Belmonte, Rafael Morales, Antonio Fernández-Caballero, José Andrés Somolinos*
  - “Use and Adoption of a Touch-based Occupational Therapy Tool for People Suffering from Dementia”  
*René Navarro, M.D. Rodríguez, J. Favela*
  - “Multisensory treatment of the Hemispatial Neglect by means of Virtual Reality and Haptic techniques”  
*Miguel A. Teruel, Miguel Oliver, Francisco Montero, Elena Navarro, Pascual Gonzalez*
  - “Evaluation of Color Preference for Emotion Regulation”  
*Marina V. Sokolova, Antonio Fernández-Caballero, Laura Ros, José Miguel Latorre, Juan Pedro Serrano*
  - “Elicitation of Emotions Through Music: The Influence of Note Value”  
*Alicia Fernández-Sotos, Antonio Fernández-Caballero*

- Session: Biomed.Ind. Img. underst. June, 3. 11:30–13:30 Room: B  
**“Biomedical and Industrial Image understanding applications”**  
Organizer & Chair: Rafael Berenguer Vidal  
Co-Chair: Álgvar Ginés Legaz Aparicio

- “Dynamic Modelling of the Whole Heart Based on a Frequency Formulation and Implementation of Parametric Deformable Models”  
*Rafael Berenguer-Vidal, Rafael Verdú-Monedero, Álgvar-Ginés Legaz-Aparicio*
- “Multimodal 3D registration of anatomic (MRI) and functional (fMRI and PET) intra-patient images of the brain”  
*Álgvar-Ginés Legaz-Aparicio, Rafael Verdú-Monedero, Jorge Larrey-Ruiz, Fernando Lopez-Mir, Valery Naranjo, Ángela Bernabéu*
- “Localisation of pollen grains in digitised real daily airborne samples”  
*Estela Díaz-López, Mariano Rincon Zamorano, Jesus Rojo, Consolación Vaquero, Ana Rapp, Sergio Salmeron-Majadas, Rosa Pérez-Badía*
- “Estimation of the arterial diameter in ultrasound images of the common carotid artery” *Rosa-María Menchón-Lara, Andrés Bueno-Crespo, Jose Luis Sancho-Gomez*
- “A Volumetric Radial LBP Projection of MRI Brain Images for the Diagnosis of Alzheimer’s Disease” *Francisco Jesús Martínez-Murcia, Andres Ortiz García, Juan M Gorriz, Javier Ramirez, Ignacio Alvarez Illan*
- “Intensity normalization of 123 I-ioflupane-SPECT brain images using a model-based MLR approach”  
*Abdelbasset Brahim, Juan M Gorriz, Laila Khedher, Javier Ramirez*

- Session: **Evolutionary Methods** June, 3. 11:30–13:30 Room: C  
Chair: Ramiro Varela  
Co-Chair: José Santos

- “Evolution of synaptic delay based neural controllers for implementing CPGs in hexapod structures” *Jose Santos Reyes, Pablo Fernández*
- “Genetic Algorithm for the Job-Shop Scheduling with Skilled Operators”  
*Raúl Mencía, María R. Sierra, Ramiro Varela Arias*
- “Self-Sampling Strategies for Multimemetic Algorithms in Unstable Computational Environments” *Rafael Noguera, Carlos Cotta*
- “Multicriteria Inventory Routing by Cooperative Swarms and Evolutionary Algorithms”  
*Zhiwei Yang, Michael Emmerich, Thomas Bäck, Joost Kok*
- “Embodied Evolution for Collective Indoor Surveillance and Location”  
*Pedro Trueba, Abraham Prieto, Francisco Bellas, Richard Duro*
- “Evolving Cellular Automata to Segment Hyperspectral Images Using Low Dimensional Images for Training”  
*Blanca Priego , Francisco Bellas, Richard Duro*

- Session: Gerontech. e-therapy II June, 3. 16:00–18:20 Room: A  
**“Gerontechnology and e-therapy II”**  
 Organizer & Chair: Antonio Fernández-Caballero  
 Co-Chair: Pascual González & Elena Navarro
  - “Towards emotionally sensitive conversational interfaces for E-therapy”  
*Griol David, Jose Manuel Molina Lopez, Zoraida Callejas*
  - “Automatic drawing analysis of figures included in neuropsychological tests for MCI diagnosis”  
*Mariano Rincon Zamorano, Sara García, M. Carmen Díaz-Mardomingo, Rafael Martinez Tomas, Herminia Peraita*
  - “Identification of loitering human behaviour in video surveillance environments” *Hector Gomez, Rafael Martinez Tomas, S. Arias Tapia, Antonio Fernández-Caballero, S. Ratté, A. González Eras, P. Ludeña González*
  - “Stress Detection using Wearable Physiological Sensors”  
*Virginia Sandulescu, Sally Andrews, David A Ellis, Nicola Bellotto, Oscar Martinez Mozos*
  - “An Embedded Ground Change Detector for a “Smart Walker””  
*Viviana Weiss, A. Korolev, Guido Bologna, S. Cloix, Thierry Pun*
- Session: **Neuro-modeling** June, 3. 16:00–18:20 Room: B  
 Chair: Eduardo Fernández  
 Co-Chair: Eduardo Sánchez-Vila
  - “Towards a Generic Simulation Tool of Retina Models”  
*Pablo Martínez Cañada, Christian Morillas, Begoña Pimo, Francisco Pelayo*
  - “Specialist neurons in feature extraction are responsible for pattern recognition process”  
*Aaron Montero, Ramon Huerta, Francisco B. Rodríguez*
  - “On the automatic tuning of a retina model by using a multi-objective optimization genetic algorithm”  
*Rubén Crespo-Cano, Antonio Martínez-Álvarez, Ariadna Díaz-Tahoces, Sergio Cuenca Asensi, José Manuel Ferrandez, Eduardo Fernandez*
  - “Retinal DOG filters: effects of the discretization process”  
*Adrián Arias, Eduardo Sánchez Vila, Luis Martínez*
  - “The Koniocortex-Like Network: a new biologically plausible unsupervised neural network”  
*Francisco Peláez, Diego Andina*
  - “Retinal DOG filters: high-pass or high-frequency enhancing filters?”  
*Adrián Arias, Eduardo Sánchez Vila, Luis Martínez*
  - “Trajectories-state: a new neural mechanism to interpretate cerebral dynamics” *Sergio Miguel-Tomé*

- Session: **Biological Vision** June, 3. 16:00–17:00 Room: C  
Chair: Cristina Soto-Sánchez  
Co-Chair: Lawrence Humphreys

- “Spatio-temporal dynamics of images with emotional bivalence”  
*María Dolores Grima Murcia, Miguel Lopez, María Jesús Ortíz, José Manuel Ferrandez, Eduardo Ferrandez*
- “Interstimulus interval affects population response in visual cortex in vivo”  
*Javier Alegre-Cortés, Eduardo Ferrandez, Cristina Soto-Sánchez*
- “Towards the reconstruction of moving images by populations of retinal ganglion cells”  
*Ariadna Díaz-Tahoces, Antonio Martínez-Álvarez, Alejandro García-Moll, Lawrence Humphreys, José Ángel Bolea, Eduardo Ferrandez*

- Session: **Image Understanding** June, 3. 17:00–18:20 Room: C  
Chair: Ángel Sánchez  
Co-Chair: Manuel Graña

- “On the Influence of Illumination Quality in 2D Facial Recognition”  
*Angel Sanchez, Jose F. Velez, Ana Belen Moreno Diaz*
- “Experiments of skin detection in hyperspectral images”  
*Manuel Graña, Ion Marqués*
- “Pedestrian Tracking-by-Detection using Image Density Projections and Particle Filters”  
*Borja Lacabex, Alfredo Cuesta-Infante, Antonio Sanz, Juan J Pantrigo*
- “Comparative Study of the Features Used by Algorithms Based on Viola and Jones Face Detection Algorithm”  
*Alexandre Paz Mena, Margarita Bachiller Mayoral, Estela Díaz-López*

- Session: BCI power BANs June, 4. 09:00–11:00 Room: A  
**“BCI power Brain Area Networks”**  
 Organizer & Chair: Miguel Ángel López Gordo  
 Co-Chair: Pablo Padilla de la Torre

- “Using EEG signals to detect the intention of walking initiation and stop”  
*Enrique Hortal, Andrés Úbeda, Eduardo Iáñez, Eduardo Fernandez, José M. Azorín*
- “Low-cost remote monitoring of biomedical signals”  
*José Miguel Morales, Carolina Diaz-Piedra, Leandro Luigi Di Stasi, Pablo Martínez Cañada, Samuel Romero*
- “Asynchronous EEG/ERP acquisition for EEG Teleservices”  
*Miguel Lopez*
- “English Phonetics: a learning approach based on EEG-feedback analysis”  
*Luz García Martínez, A. Álvarez Pérez, C. Benítez Ortúzar, P. Macizo Soria, T. Bajo Molina*
- “Brain-Computer Interfacing to Heuristic Search: First Results”  
*Marc Cavazza, Gabor Aranyi, Fred Charles*

- Session: **Bioinspired Models** June, 4. 09:00–10:00 Room: B  
 Chair: Pedro Gómez-Vilda  
 Co-Chair: Michela Ponticorvo

- “Parkinson’s Disease Monitoring from Phonation Biomechanics”  
*Pedro Gómez-Vilda, M.C. Vicente-Torcal, José Manuel Ferrandez, A. Álvarez-Marquina, Victoria Rodellar, V. Nieto-Lluis, R. Martínez-Olalla*
- “Artificial Metaplasticity: Application to MIT-BIH Arrhythmias Database”  
*Santiago Torres-Alegre, Juan Fombellida, Juan Antonio Piñuela, Diego Andina*
- “A Neural Model of Number Interval Position Effect (NIPE) in Children”  
*Michela Ponticorvo, Francesca Rotondaro, Fabrizio Doricchi, Orazio Miglino*



- Session: Intel. Sys. Edu. June, 4. 09:00–11:00 Room: C  
**“Intelligent Systems in Education”**  
Organizer & Chair: Rafael Martínez Tomás  
Co-Chair: José Ramón Álvarez-Sánchez

  - “Collaborative Group Formation Using Genetic Algorithms”  
*Maria Pinninghoff, Miguel Ramirez, Ricardo Contreras Arriagada, Pedro Salcedo Lagos*
  - “The CALIMACO multimodal system: providing enhanced library services using mobile devices”  
*Griol David, Miguel Angel Patricio Guisado, Jose Manuel Molina Lopez*
  - “An Augmented Reality application for learning anatomy”  
*Carlos Rodriguez-Pardo, Sergio Hernandez, Antonio Berlanga, Miguel Angel Patricio Guisado, Jose Manuel Molina Lopez*
  - “LEXMATH - A tool for the study of available lexicon in mathematics”  
*Pedro Salcedo Lagos, Maria Del Valle, Ricardo Contreras Arriagada, Maria Pinninghoff*
  - “Learning on Sparse Graph Data for Recommendation Systems in Social Networks” *Jose David Nuñez Gonzalez, Manuel Graña*
  - “Agent Based Modelling to build Serious Games: the Learn to Lead game”  
*Andrea Di Ferdinando, Massimiliano Schembri, Michela Ponticorvo, Orazio Miglino*
  
- Session: Epilepsy Monitoring I June, 4. 10:00–11:00 Room: B  
**“Brain imaging for epilepsy monitoring I”**  
Organizer & Chair: Germán Castellanos

  - “Comparison of free distribution software for EEG focal epileptic source localization”  
*Alexander Ossa, Camilo Borrego, Mario Trujillo, Jose Lopez Hincapie*
  - “Weighted Filtering for Neural Activity Reconstruction under Time Varying Constraints”  
*Jorge Iván Padilla Buriticá, Eduardo Giraldo Suárez, German Castellanos-Dominguez*
  - “Neural Activity Estimation from EEG using an Iterative Dynamic Inverse Problem Solution”  
*Eduardo Giraldo Suárez, German Castellanos-Dominguez*

- Session: Comp. Aid. Infr. Eng. June, 4. 11:30–13:30 Room: A  
“**Computer Aided Civil and Infrastructure Engineering**”  
Organizer & Chair: Diego Andina

- “Artificial Metaplasticity for Deep Learning Application to WBCD Breast Cancer Database Classification”  
*Juan Fombellida, Santiago Torres-Alegre, Juan Antonio Piñuela-Izquierdo, Diego Andina*
- “Comparing ELM against MLP for electrical power prediction in buildings”  
*Gonzalo Vergara, Javier Cózar, Cristina Romero-González, José A. Gámez, Emilio Soria-Olivas*
- “Fish monitoring and sizing using computer vision”  
*Angel J. Rico-Diaz, Alvaro Rodriguez, Juan R. Rabuñal, Jerónimo Puertas*
- “Computer-Aided Development of Thermo-Mechanical Laser Surface Treatments for the Fatigue Life Extension of Bio-Mechanical Components”  
*Jose-Luis Ocaña, Angel Garcia-Beltran, Carlos Correa, Juan-Antonio Porro, Leonardo Ruiz de Lara, Marcos Diaz*
- “From Smart Grids to Business Intelligence, a Challenge for Bioinspired Systems”  
*Irene Martín-Rubio, Antonio E Florence-Sandoval, Juan Jiménez-Trillo, Diego Andina*
- “Neural recognition of real and computer-designed architectural images”  
*María Dolores Grima Murcia, María Jesús Ortíz, Miguel Lopez, José Manuel Ferrandez, Eduardo Fernandez*

- Session: Epilepsy monitoring II June, 4. 11:30–13:30 Room: B  
**“Brain imaging for epilepsy monitoring II”**  
 Organizer & Chair: Germán Castellanos
  - “Supervised Brain Tissue Segmentation using a Spatially Enhanced Similarity Metric” *David Cárdenas-Peña, Mauricio Orbes-Arteaga, German Castellanos-Dominguez*
  - “iLU preconditioning of the Anisotropic-Finite-Difference based Solution for the EEG Forward Problem” *Ernesto Cuartas Morales, C. Daniel-Acosta, German Castellanos-Dominguez*
  - “EEG Rhythm Extraction based on Relevance Analysis and Customized Wavelet Transform” *Leonardo Duque Muñoz, Ruben D Pinzon-Morales, German Castellanos-Dominguez*
  - “Estimation of M/EEG non-stationary brain activity using spatio-temporal sparse constraints” *Juan David Martínez Vargas, Fily Mateos Grisales Franco, German Castellanos-Dominguez*
  - “Connectivity Analysis of Motor Imagery Paradigm using Short-Time Features and Kernel Similarities” *German Castellanos-Dominguez, Luisa Velásquez-Martínez, Andrés Álvarez-Meza*
  - “Global and Local Features for Char Image Classification” *Deisy Chaves, Maria Trujillo, Juan Barraza*
  
- Session: Vision Robot Nav. June, 4. 11:30–13:30 Room: C  
**“Vision-based and Cognitive approaches to Autonomous Robot Navigation”**  
 Organizer & Chair: Dario Maravall Gómez-Allende  
 Co-Chair: Javier de Lope Asiaín
  - “Robust control tuning by PSO of aerial robots hose transportation” *Julian Estevez, Manuel Graña*
  - “Visual bug algorithm for simultaneous robot homing and obstacle avoidance” *Juan Pablo Fuentes Brea, Dario Maravall, Javier de Lope*
  - “Neural modeling of hose dynamics to speedup Reinforcement Learning experiments” *José Manuel López Guede, Manuel Graña*
  - “Autonomous robot navigation based on pattern recognition techniques and artificial neural networks” *Alma Quiñonez, Luis M Ramirez, Rosa C Lizarraga, Manuel I Tostado, Juan Bekios*
  - “Scene recognition for robot localization in difficult environments” *David Santos Saavedra, Adrián Canedo-Rodríguez, Xose Manuel Pardo, Roberto Iglesias Rodríguez, Carlos V. Regueiro*
  - “Pyramid representations of the set of actions in reinforcement learning” *Roberto Iglesias Rodríguez, Víctor Álvarez-Santos, Miguel A Rodríguez González, David Santos Saavedra, Carlos V. Regueiro, Xose Manuel Pardo*

## Other Technical Sessions

### June 2, Tuesday

16:00–17:00 h. *Room C*: Doctoral Consortium.

17:00–18:00 h. *Room B*: (meeting, in Spanish, for RTNAC members)  
Reunión RTNAC (Red Nacional en Computación Natural y Artificial).

## Social Program

**Coffee breaks** only days June 2, 3 and 4, from 11:00 to 11:30 h.

**Lunches** only days June 2 and 3, for registered participants and accompanying persons (with lunch ticket). Served at 14:00 h. in restaurant *New Culinart* (next to Congress Venue, on Carrer Eugenio d’Ors 6).

### June 2, Tuesday

19:00–21:00 h. **Guided touristic tour** of Elche, departing from the Congress Venue.

21:00 h. – **Welcome reception and cocktail** served in “*Terraza Calahorra*” (on Plaça de Santa Isabel, approx. 450 meters from Congress Venue).

### June 3, Wednesday

21:00 h. – Congress **official dinner** (casual wear) in *Hotel Huerto del Cura* (situated on Carrer de la Porta de la Morera, 14, approx. 300 meters from Congress Venue).

### June 4, Thursday

22:00 h. – **Special concert** with light effects, including the world premiere of a music composition for symphony orchestra based on electrophysiological recordings, performed by Orquesta Sinfónica Ciudad de Elche and Germán Díaz, playing a medieval hurdy-gurdy (zanfona), in *Palacio de Altamira* (situated on Carrer de la Diagonal del Palau, approx. 650 meters from Congress Venue).

## 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 fulfilled with the Conference Technical Secretariat, Viajes Hispania (please, see the address bellow), 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	Before April 30 th	After April 30 th
Standard (*)	€500	€600
Session Organizer (*)	€400	€500
Accompanying Person A (**)	€175	€175
Accompanying Person B (**)	€100	€100
2nd paper and each one more (***)	€300	€350

(\*) Includes attending to the sessions, coffee breaks, lunches, social events (welcome reception cocktail, Elche touristic tour, official dinner and concert), and the “Lecture Notes in Computer Science” books (Springer-Verlag) of the work-conference proceedings.

(\*\*) Includes social events (welcome reception cocktail, touristic tour of Elche, official dinner and concert). 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

Avda. Maisonnave, 11, 7<sup>o</sup>

E-03002 Alicante (Spain)

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

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

Since 17:00 h. June 1, and during the Conference, the Secretariat will maintain a desk at the congress venue. Previous registration will be necessary to attend the Conference (<http://iwinac2015.inscribete.es>).



Congress URL <http://www.iwinac.org/iwinac2015/>

# General Information

## Congress venue

CENTRO DE CONGRESOS “CIUTAT D’ELX”

Carrer Filet de Fora, 1

E-03203 Elche (Elx)

Alicante, Spain

## Travel Information

Alicante-Elche airport (international code “ALC”) with flights mainly from Spain and Europe, is located at 10 km far away from Congress venue. Taxi rates from airport to the congress venue are around 25 euros. In the airport there are shuttle bus and shared ride that can be cheaper. There are also public buses to Elche.

Also, it is possible to go to Alicante (at 30 km from Congress venue) by high speed train (AVE) from Madrid and from there to Elche by train or bus.

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

## Language

English will be the official language of IWINAC2015. Simultaneous translation will *not* be provided.

## Climate

Elche (Elx) is located at about 38°16’N and 0°42’W, near the coast to the Mediterranean Sea in south-east of Spain mainland. The Congress Venue is in the center of town. Elche has sunny and warm moderate climate in June. The temperature in June can vary from 23-28°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 €). 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, Euro-card, 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.

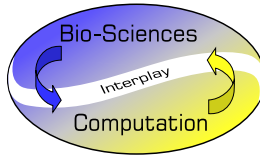
## **Assistance and insurance**

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 Elche - Elx through the web pages:

- <http://www.visitelche.com/en/>
- <https://en.wikipedia.org/wiki/Elche>
- <http://www.congresoselche.com/en/>
- <http://www.alicante-spain.com/elche.html>



IWINAC2015



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Ministerio de Economía y Competitividad



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Ayuntamiento de Elche



CAMPUS MARE NOSTRUM  
Campus Marenostrum 37/38



Spanish CYTED

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**Congress Venue:**

Centro de Congresos “Ciutat d’Elx”, Elche - Elx, Alicante (Spain)

**June 1–5, 2015**

<http://www.iwinac.org/iwinac2015/>

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