

## IWINAC-2019 Sessions Schedule.

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- Session: Plenary I June, 4. 10:00–11:00 Room: A  
“Invited speaker Prof. Hojjat Adeli”
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- Session: MaLeNe-I June, 4. 11:30–13:50 Room: A  
“Special Workshop on Machine Learning in Neuroscience (MALENE) I”

Organizer & Chair: Juan M. Górriz

Co-Chair: Francisco Martínez Murcia or Fermín Segovia

- “Automating Autoencoder Architecture Configuration: an Evolutionary Approach”  
*Francisco Charte, Antonio J Rivera, Francisco Martínez, María J del Jesus*
  - “Periodogram Connectivity of EEG Signals for the Detection of Dyslexia”  
*Francisco Jesus Martínez-Murcia, Andres Ortiz García, Roberto Morales-Ortega, Pedro Javier López-Pérez, Juan Luis Luque, Diego Castillo-Barnes, Fermin Segovia, Ignacio Alvarez Illan, Julio Ortega, Javier Ramirez, Juan M Gorriz*
  - “Isosurface modelling of DatSCAN images for Parkinson Disease diagnosis”  
*Andres Ortiz García, Diego Salas-Gonzalez, Juan M Gorriz, Javier Ramirez, Manuel Martínez, Jorge Munilla*
  - “An anomaly detection approach for Dyslexia diagnosis using EEG signals”  
*Andres Ortiz García, Pedro Javier López, Juan Luis Luque, Francisco Jesus Martínez-Murcia, Diego Ariel Aquino Britez, Julio Ortega*
  - “Comparison between affine and non-affine transformations applied to I[123]-FP-CIT SPECT images used for Parkinson’s Disease diagnosis”  
*Diego Castillo-Barnes, Francisco Jesus Martínez-Murcia, Fermin Segovia, Ignacio Alvarez Illan, Diego Salas-Gonzalez, Juan M Gorriz, Javier Ramirez*
  - “Deep learning on brain images in autism: what do large samples reveal of its complexity?”  
*Matthew Leming, John Suckling*
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- Session: AC-SA-I June, 4. 11:30–13:50 Room: B  
“Affective Computing and Sentiment Analysis I”

Organizer & Chair: Arturo Martínez-Rodrigo

Co-Chair: Antonio Fernández-Caballero

- “Assessing an Application of Spontaneous Stressed Speech - Emotions Portal”  
*Daniel Palacios-Alonso, Andrés Gómez-Rodellar, Víctor Nieto-Lluis, Victoria Rodellar, Pedro Gomez Vilda, Carlos Lázaro-Carrascosa, Agustín López-Arribas, Guillermo Meléndez-Morales, Andrés Loro-Álavez, Athanasios Tsanas*
  - “Empowering UX of elderly people with Parkinson’s Disease via BCI Touch”  
*Gómez López, Francisco Montero, Maria Teresa Lopez Bonal*
  - “Advanced Trajectory Generator for Two Carts with RGB-D Sensor on Circular Rail”  
*Antonio Fernández-Caballero, Rafael Morales, Ramón Panduro, Eva Segura, Lidia Belmonte, Paulo Novais, Jesús Benet*
  - “On the use of lateralization for lightweight and accurate methodology for EEG real time emotion estimation using Gaussian-Process classifier”  
*Mikel Val-Calvo, Jose Ramon Alvarez-Sanchez, Alejandro Díaz, Jose Manuel Ferrandez, Eduardo Fernandez*
  - “Stress Identification from Electrodermal Activity by Support Vector Machines”  
*Arturo Martínez-Rodrigo, Antonio Fernández-Caballero, Roberto Sánchez-Reolid*
  - “Trajectory Planning of a Quadrotor to Monitor Dependent People”  
*Lidia Belmonte, Rafael Morales, Eva Segura, Paulo Novais, Antonio Fernández-Caballero, Arturo S. García*
  - “Development and Validation of Basic Virtual Human Facial Emotion Expressions”  
*Arturo S. García, Antonio Fernández-Caballero, Miguel Á. Vicente-Querol, Patricia Fernández-Sotos, Roberto Rodriguez-Jimenez*
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- Session: DeepLearn June, 4. 11:30–13:50 Room: C  
“**Deep Learning**”  
Organizer & Chair: Alfredo Cuesta  
Co-Chair: Juan J. Pantrigo or Antonio S. Montemayor

- “Artificial Semantic Memory with Autonomous Learning applied to Social Robots”  
*Francisco Martin Rico, Miguel Cazorla, Francisco Gomez Donoso, Felix Escalona, Jose Garcia Rodriguez*
  - “A Showcase of the Use of Autoencoders in Feature Learning Applications”  
*David Charte, Francisco Charte, María J del Jesus, Francisco Herrera*
  - “Automatic Image-Based Waste Classification”  
*Victoria Ruiz, Angel Sanchez, Jose Velez, Bogdan Raducanu*
  - “Propositional Rules Generated at the Top Layers of a CNN”  
*Guido Bologna*
  - “Deep ordinal classification based on the proportional odds model”  
*Víctor Manuel Vargas Yun, Pedro Antonio Gutierrez, Cesar Hervas Martinez*
  - “Data preprocessing for automatic WMH segmentation with FCNNs”  
*Pablo Duque, Ester Jimenez, José Manuel Cuadra Troncoso, Mariano Rincon Zamorano*
  - “FER in Primary School Children for Affective Robot Tutors”  
*Luis-Eduardo Imbernón, Ángeles Manjarrés, Félix de la Paz López*
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- Session: MaLeNe-II June, 4. 16:00–17:20 Room: A  
“**Special Workshop on Machine Learning in Neuroscience (MALENE) II**”  
Organizer & Chair: Javier Ramírez  
Co-Chair: Andrés Ortiz

- “Multivariate pattern analysis of electroencephalography data in a Demand-Selection Task”  
*David López-García, Juan M Gorriz, Alberto Sobrado, Jose María González Peñalver, María Ruz*
  - “Support vector machine failure in imbalanced datasets”  
*Ignacio Alvarez Illan, Juan M Gorriz, Javier Ramirez, Francisco Jesus Martínez-Murcia, Diego Castillo-Barnes, Fermin Segovia, Diego Salas-Gonzalez*
  - “Machine Learning Methods for Environmental-EnrichmentRelated Variations in Behavioral Responses of laboratory Rats”  
*Karmele Ipina, Cristina Requejo, Hodei Cepeda, Elsa Fernandez de Segura, Pilar Maria Calvo, Jose Vicente Lafuente*
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- Session: AC-SA-II June, 4. 16:00–17:20 Room: B  
“**Affective Computing and Sentiment Analysis II**”  
Organizer & Chair: Arturo Martínez-Rodrigo  
Co-Chair: Antonio Fernández-Caballero

- “Brushstrokes of the emotional brain: cortical asymmetries for valence dimension”  
*Jennifer Sorinas, José Manuel Ferrandez, Eduardo Fernandez*
  - “Multiple-instance lasso regularization via embedded instance selection for emotion recognition”  
*Julian Camilo Caicedo Acosta, David Cárdenas-Peña, Diego Fabian Collazos-Huertas, Jorge Ivan Padilla Buritica, German Castellanos-Dominguez, Germán Castaño-Duque*
  - “Emotion Detection in Aging Adults Through Continuous Monitoring of Electro-Dermal Activity and Heart-Rate Variability”  
*Arturo Martinez-Rodrigo, Jose Moncho-Bogani, Antonio Fernández-Caballero, José Miguel Latorre, Luz Fernández-Aguilar*
  - “Game-based human robot interaction promotes self-disclosure for people with a visual and intellectual disability”  
*Jelle-Jan De Groot, Emilia Barakova, Tino Lourens, Evelien van Wingerden, Paula Sterkenburg*
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- Session: Plenary II June, 5. 09:00–10:00 Room: A  
“Invited speaker Prof. Francisco Herrera”
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- Session: Plenary III June, 5. 10:00–11:00 Room: A  
“Invited speaker Prof. John Suckling”
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- Session: IBCSCNSA June, 5. 11:30–13:50 Room: A  
“Interplay Between Cyberphysical Systems and Computational Neuroethology:  
Synergistic Applications”  
Organizer & Chair: Manuel Graña  
Co-Chair: Javier de Lope

- “A Short Review of Some Aspects of Computational Neuroethology”  
*Manuel Graña, Javier de Lope*
  - “Deep learning prediction of gait based on inertial measurements”  
*Javier de Lope, Manuel Graña, Pedro Romero-Hernandez*
  - “Recognizing cognitive activities through eye tracking”  
*Javier de Lope, Manuel Graña, Sara Moraleda*
  - “An approach to teach Nao dialogue skills”  
*Manuel Graña, Alexander Triguero*
  - “Boosting Object Detection in Cyberphysical Systems”  
*José Miguel Buenaposada Biencinto, Luis Baumela Molina*
  - “Fusion of inertial motion sensors and electroencephalogram for activity detection”  
*Manuel Graña, Javier de Lope, Ibai Baglietto, Xabier Garmendia*
  - “BIOTINGS: A pipeline creation tool for PAR-CLIP sequence analysis”  
*Manuel Graña, Oier Echaniz*
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- Session: MLBDAPV June, 5. 11:30–13:50 Room: B  
“Machine Learning Methods Applied to Big Data Analysis, Processing and Visualization  
(MLBDAPV)”  
Organizer & Chair: José García-Rodríguez  
Co-Chair: Enrique Domínguez or David Tomás or Jaime Oswaldo Salvador Meneses or Zoila Ruiz

- “Content Based Image Retrieval by Convolutional Neural Networks”  
*Miguel A. Molina-Cabello, Ezequiel Lopez-Rubio, Safa Hamreras, Rafaela Benítez-Rochel, Bachir Boucheham*
  - “Deep Learning networks with p-norm loss layers for spatial resolution enhancement of 3D medical images”  
*Karl Thurnhofer-Hemsi, Ezequiel Lopez-Rubio, Núria Roé-Vellvé, Miguel A. Molina-Cabello*
  - “Analysis of dogs’s abandonment problem using georeferenced multi-agent systems”  
*Zoila Ruiz, Jaime Salvador, Cristina Mejía-Astudillo, Soledad Diaz-Quilachami*
  - “Background modeling by shifted tilings of stacked denoising autoencoders”  
*Jorge García-González, Juan Miguel Ortiz-de-Lazcano-Lobato, Rafael Marcos Luque-Baena, Ezequiel Lopez-Rubio*
  - “Deep learning-based security system powered by low cost hardware and panoramic cameras”  
*Jesus Benito-Picazo, Enrique Dominguez, Esteban Palomo, Ezequiel Lopez-Rubio*
  - “Real-Time Emotional Recognition for Sociable Robotics Based on Deep Neural Networks Ensemble”  
*Nadir Kamel Benamara, Mikel Val-Calvo, Jose Ramon Alvarez-Sanchez, Eduardo Fernandez, Jose Manuel Ferrandez, Tarik Boudghene Stambouli*
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• Session: **BioInsp. Eng. I**

June, 5. 11:30–13:50 Room: C

Chair: Antonio Fernández-Caballero

Co-Chair: Rafael Toledo-Moreo

- “Hardware and Software for Integrating Brain–Computer Interface with Internet of Things”  
*Francisco Laport, Adriana Dapena, Francisco J. Vazquez-Araujo, Paula M. Castro*
  - “Gesture Control Wearables for Human-Machine Interaction in Industry 4.0”  
*Luis Roda-Sanchez, Teresa Olivares, Celia Garrido-Hidalgo, Antonio Fernández-Caballero*
  - “A principled two-step method for example-dependent cost binary classification”  
*Javier Mediavilla, Aitor Gutiérrez, Marcelino Lázaro, Aníbal R. Figueiras*
  - “Improving Scheduling Performance of a Real-Time System by Incorporation of an Artificial Intelligence Planner”  
*Jesús Fernandez-Conde, Rafael Toledo-Moreo, Pedro Cuenca-Jimenez*
  - “An indoor illuminance prediction model based on Neural Networks for visual comfort and energy efficiency optimization purposes”  
*María Martell, María del Mar Castilla, Francisco Rodriguez, Manuel Berenguel*
  - “Using probabilistic context awareness in a deliberative planner system”  
*Jonatan Gines Clavero, Francisco Martin Rico, Francisco J Rodriguez-Lera, Angel Manuel Guerrero, Vicente Matellán*
  - “Deep Support Vector Classification and Regression”  
*David Díaz-Vico, Jesús Prada, Adil Omari, José R. Dorronsoro*
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• Session: **Posters**

June, 5. 16:00–17:00 Room: P

Chair: José Manuel Ferrández-Vicente

Co-Chair: Rafael Martínez-Tomás

1. “Design and implementation of a robotics learning environment to teach physics in secondary schools”  
*Félix de la Paz López, Elena Gaudio, Samantha Orlando*
  2. “How to improve spatial and numerical cognition with a Game-based and Technology-Enhanced learning approach”  
*Michela Ponticorvo, Massimiliano Schembri, Orazio Miglino*
  3. “Gaming the Attention with a SSVEP-based Brain-computer Interface”  
*Miguel Lopez, Eduardo Perez, Jesus Minguillon*
  4. “Conceptual Description of Nature-Inspired Cognitive Cities: Properties and Challenges”  
*Agusti Solanas, Juvenal Machin*
  5. “Autonomic modulation during a cognitive task using a wearable device”  
*Maria Paula Bonomini, Mikel Val-Calvo, Alejandro Díaz, Jose Manuel Ferrandez, Eduardo Fernandez*
  6. “Symbiotic Autonomous Systems with Consciousness using Digital Twins”  
*Felipe Fernandez, Angel Sanchez, Jose Velez, Ana Belen Moreno Diaz*
  7. “Convolutional Neural Networks for Olive Oil Classification”  
*Belén Vega, Andrea Carminati, Natividad Jurado, Andrés Martín, Lourdes Arce, Cristina Rubio, Isabel Nepomuceno*
  8. “Multi-robot user interface for cooperative transportation tasks”  
*Majd Kassawat, Angel P. del Pobil, Enric Cervera Mateu*
  9. “Midpoint: a Tool to Build Artificial Models of Numerical Cognition”  
*Onofrio Gigliotta, Michela Ponticorvo, Fabrizio Doricchi, Orazio Miglino*
  10. “HAPAN: Support Tool for Practicing Regional Anesthesia in Peripheral Nerves”  
*Jose Alberto Hernandez Muriel*
  11. “Group differences in time-frequency relevant patterns for user-independent BCI applications”  
*Luisa Velasquez, Jorge Padilla, German Castellanos-Dominguez, Frank Zapata-Castaño*
  12. “Analysis of the consumption of household appliances for the detection of anomalies in the behaviour of older people”  
*Miguel Angel Patricio Guisado, Jose Manuel Molina Lopez, Daniel Gonzalez, Antonio Berlanga*
  13. “Computing the missing lexicon in students using Bayesian networks”  
*Ricardo Contreras, Pedro Salcedo Lagos, Maria Punninghoff*
  14. “Ontologies for early detection of the Alzheimer Disease and other Neurodegenerative Diseases”  
*Alba Gómez-Valadés, Rafael Martinez Tomas, Mariano Rincon Zamorano*
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- Session: Plenary IV June, 6. 09:00–10:00 Room: A  
“Invited speaker Prof. Hiroaki Wagatsuma”
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- Session: **BioInsp. Eng. II** June, 6. 10:00–11:00 Room: A  
Chair: Richard Duro  
Co-Chair: Eduardo Sánchez Vila

- “Optimization of Bridges Reinforcements with Tied-Arch Using Moth Search Algorithm”  
*Broderick Crawford, Ricardo Soto, José Lemus-Romani, Gino Astorga, Agustín Salas-Fernández, Óscar Carrasco*
  - “Bootstrapping Autonomous Skill Learning in the MDB Cognitive Architecture”  
*Richard Duro, Francisco Bellas, José Antonio Becerra, Alejandro Romero*
  - “Uninformed methods to build optimal choice-based ensembles”  
*Eduardo Sánchez Vila, Ameer Almomani*
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- Session: **Robotics** June, 6. 10:00–11:00 Room: B  
Chair: Roberto Iglesias  
Co-Chair: Jose Manuel López-Guede

- “Precise positioning and heading for autonomous scouting robots in a harsh environment”  
*David Obregón-Castellanos, Raúl Arnau, María Campo-Cossio, Juan G. Arroyo-Parras, Michael Pattinson, Smita Tiwari*
  - “Control of transitory take-off regime in the transportation of a pendulum by a quadrotor”  
*Julian Estevez, Jose Manuel López-Guede*
  - “Robust Heading Estimation in Mobile Phones”  
*Fernando E. Casado, Adrián Nieto, Roberto Iglesias, Carlos Vazquez Regueiro, Senén Barro Ameneiro*
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- Session: **BioInsp. Eng. III** June, 6. 10:00–11:00 Room: C  
Chair: Cristina Soto-Sánchez  
Co-Chair: Ana-Maria Olteteanu

- “NeuroLight alpha: interfacing computational neural models for stimulus modulation in cortical visual neuroprostheses”  
*Cristina Soto-Sánchez, Francisco Javier Garrigos Guerrero, Jose Javier Martinez-Alvarez, José Manuel Ferrandez, Eduardo Fernandez, Antonio Lozano, Juan Sebastián Suárez*
  - “Combining Data-Driven and Domain Knowledge Components in an Intelligent Assistant to Build Personalized Menus”  
*Miquel Sànchez-Marrè, Karina Gibert, Beatriz Sevilla-Villanueva*
  - “Cognitive AI Systems Contribute to Improving Creativity Modeling and Measuring Tools”  
*Faheem Hassan Zunjani, Ana-Maria Olteteanu*
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- Session: BICA  
“**Bio-Inspired Computing Approaches**”  
Organizer & Chair: José Santos Reyes  
Co-Chair: Ramiro Varela Arias

June, 6. 11:30–13:30 Room: A

- “Crowding differential evolution for protein structure prediction”  
*José Santos Reyes, Daniel Varela*
- “Bacterial resistance algorithm. An application to CVRP”  
*Ricardo Contreras, Maria Pinninghoff, Jose Orellana*
- “Genetic Algorithm to evolve ensembles of rules for on-line scheduling on single machine with variable capacity”  
*Ramiro Varela Arias, Francisco J. Gil-Gala*
- “Multivariate Approach to Alcohol Detection in Drivers by Sensors and Artificial Vision”  
*Paul D. Rosero-Montalvo, Diego Peluffo, Vivian F. Lopez-Batista, Vanessa Erazo-Chamorro, Ricardo P. Arciniiega-Rocha*
- “Repairing Infeasibility in Scheduling via Genetic Algorithms”  
*Raúl Mencía, Carlos Mencia, Ramiro Varela Arias*
- “Application of Koniocortex-Like Networks to cardiac arrhythmias classification”  
*Santiago Torres-Alegre, José Manuel Ferrandez, Diego Andina, Yasmine Benchaib*

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- Session: BMIDUA  
“**Bio-Medical and Industrial Data Understanding Applications**”  
Organizer & Chair: Rafael Verdú Monedero  
Co-Chair: José Luis Sancho Gómez

June, 6. 11:30–13:30 Room: B

- “Neuroacoustical Stimulation of Parkinson’s Disease Patients: A Case Study”  
*Gerardo Gálvez García, Andrés Gómez-Rodellar, Daniel Palacios-Alonso, Guillermo de Arcas Castro, Pedro Gomez Vilda*
- “Evaluating Instability on Phonation in Parkinson’s Disease and Aging Speech”  
*Andrés Gómez-Rodellar, Daniel Palacios-Alonso, Jiri Mekyska, Pedro Gomez Vilda, Agustín Álvarez-Marquina, José Manuel Ferrandez*
- “Automatic measurement of ISNT and CDR on retinal images by means of a fast and efficient method based on mathematical morphology and active contours”  
*Rafael Verdú-Monedero, Juan Morales Sanchez, Rafael Berenguer-Vidal, Inmaculada Sellés-Navarro, Ana Palazón-Cabanes*
- “Bihemispheric Beta Desynchronization during an upper-limb motor task in chronic stroke survivors”  
*Juan Barios, Arturo Bertomeu, Eduardo Fernandez, Nicolas Garcia-Aracil, Santiago Ezquerro, Luis Donis*
- “Modeling and Estimation of Non-Functional Properties: Leveraging the Power of QoS Metrics”  
*Cristina Vicente-Chicote, Daniel García-Pérez, Pablo García-Ojeda, Juan Francisco Inglés-Romero, Adrián Romero-Garcés, Jesús Martínez*
- “Machine-health Application Based on Machine Learning Techniques for Prediction of Valve Wear in a Manufacturing Plant”  
*María Elena Fernández-García, Jorge Larrey-Ruiz, Antonio Ros Ros, Aníbal Figueiras-Vidal, Jose Luis Sancho-Gomez*

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• Session: **Comp. Neuroscience**

June, 6. 11:30–13:30 Room: C

Chair: Guido Sciacicco

Co-Chair: Sergio Miguel-Tomé

- “The effect of tDCS on EEG-based functional connectivity in gait motor imagery”  
*Jorge Gaxiola, Marisol Rodríguez-Ugarte, Eduardo Iáñez, Mario Ortiz, David Gutiérrez, José M. Azorín*
  - “Towards a General Method for Logical Rule Extraction from Time Series”  
*Guido Sciacicco, Ionel Eduard Stan, Alessandro Vaccari*
  - “Distinguishing Aging Clusters and Mobile Devices by Hand-Wrist Articulation: A Case of Study”  
*Daniel Palacios-Alonso, Carlos Lázaro-Carrascosa, Andrés Gómez-Rodellar, Pedro Gomez Vilda, Raquel Mas-García, José Manuel Ferrandez*
  - “Differentiation between Ischemic and Heart Rate Related Events Using the Continuous Wavelet Transform”  
*Carolina Fernandez Biscay, Anderson Rincon Soler, Pedro D. Arini, Maria Bonomini*
  - “The Assessment of Visuospatial Abilities with Tangible Interfaces and Machine Learning”  
*Antonio Cerrato, Michela Ponticorvo, Onofrio Gigliotta, Paolo Bartolomeo, Orazio Miglino*
  - “An experimental study on the relationships among neural codes and the computational properties of neural networks”  
*Sergio Miguel-Tomé*
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