IWINAC2009

Bio-Sciences / Interplay / Computation

IWINAC2009

INTERNATIONAL WORK-CONFERENCE ON THE INTERPLAY BETWEEN NATURAL AND ARTIFICIAL COMPUTATION

FINAL PROGRAM

Santiago de Compostela, Spain.

June 22–26, 2009

Organized by

Universidad Nacional de Educación a Distancia (UNED).

Universidad Politécnica de Cartagena

and Universidade de Santiago de Compostela

Contact URL `http://www.iwinac.org/iwinac2009/`

Universidad Nacional de
Educación a Distancia

Universidad Politécnica
de Cartagena

Universidade de Santiago de Compostela

Ministerio de Educación y Ciencia

FET-Open

Xunta de Galicia

Santiago de Compostela

Fundación
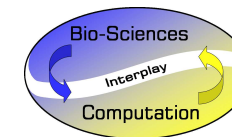Pedro Barrié de la Maza

Caja de Ahorros
del Mediterráneo

IBM

APLIQUEM MICROONES 21, S.L.
Apliquem, s.l.

Congress Venue:
Facultade de CC. da Comunicación (USC) Santiago de Compostela (Spain)
June 22–26, 2009
`http://www.iwinac.org/iwinac2009/`

Contents

IWINAC 2009 venue (Rooms A, B, C, D and Technical Secret.)

Auditorio de Galicia (lunches)

Hotel NH

alternate foot pathway

Obradoiro's square

Hostal dos Reis Católicos

Cathedral

Town Hall

Colegio Fonseca

200 meters

1000 feet

N
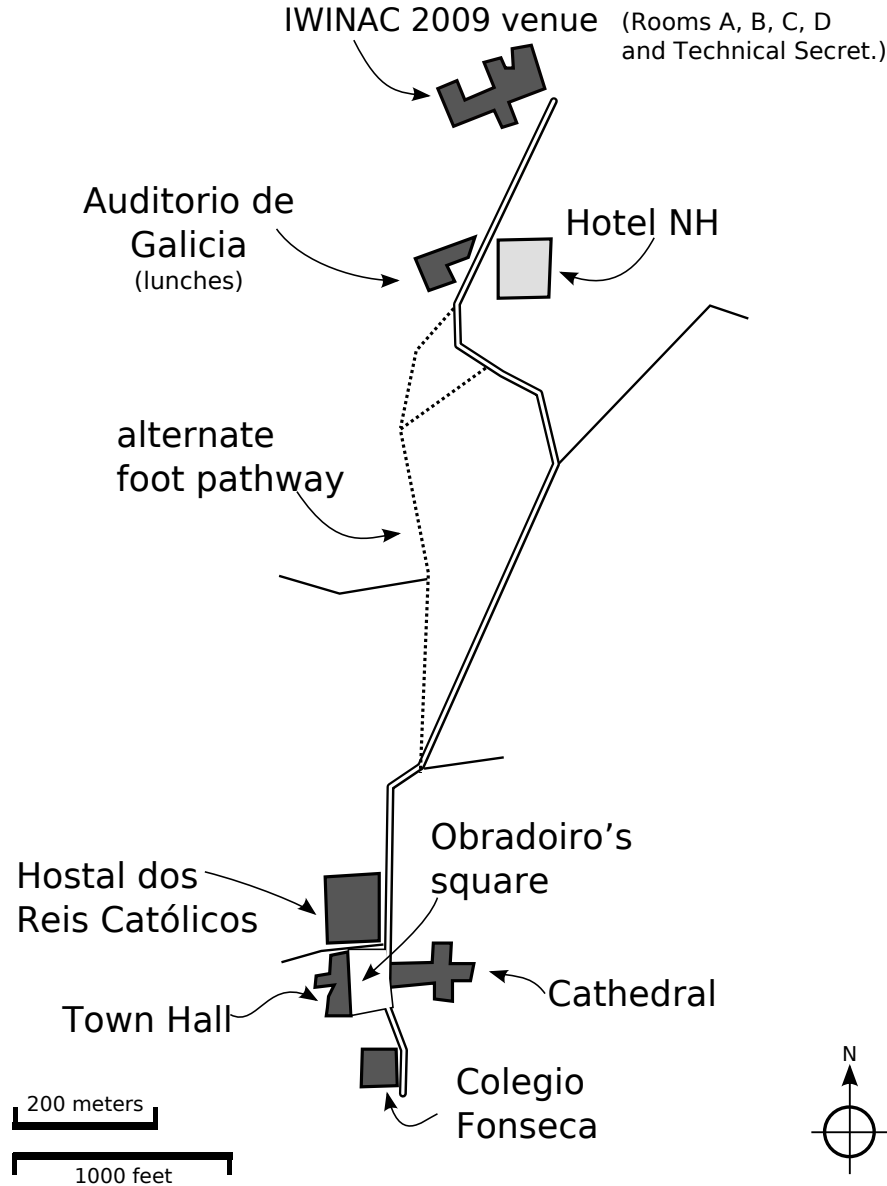
Electricity

Electric supply is AC 220 V. / 50 Hz. Standard continental 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, etc.) about Santiago de Compostela and its surroundings through the web pages:

- `http://www.santiagodecompostela.org/english.php`

- `http://www.santiagoturismo.com/` (select language in the toolbar of the page).

- `http://www.caminosantiago.com/way_of_saint_james/`

- `http://www.turgalicia.es/default.asp?cidi=I`

In Memoriam to Prof. Mira

Unfortunately, our friend Prof. Mira passed away on August 13th, 2008. As a pioneer in the field of Cybernetics, he was enthusiastically promoting and organizing these interdisciplinary meetings. We want to dedicate IWINAC2009 in honor of his scientific work.

Acknowledgments

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 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, trying to contribute to the answer of two basic questions:

I: **From Computation to Sciences of Natural.**

II: **From Sciences of Natural to Computation.**

What can Physics, Mathematics, Engineering, Computation, Artificial Intelligence (AI) and Knowledge Engineering (KE) contribute to the understanding of Nervous System, Cognitive Processes and Social Behavior? This is the scope of Computational Neuroscience and Cognition, which uses computation to model and improve our understanding of natural phenomena.

How can Engineering, Mathematics, Computation, AI and KE find inspiration in the behavior and internal functioning of physical, biological and social systems to conceive, develop and build-up new concepts, materials, mechanisms and algorithms of potential value in real world applications? This is the scope of the new Bionics, known as Bioinspired Engineering and Computation, as well as of Natural Computing.

Travel Information

The Santiago de Compostela airport (international code "SCQ") with flights mainly from Spain and Europe, is located at 10 Km. far away from Congress venue. Taxi rates from airport to the city are around 20 euros. There is also a bus line from airport to the city.

Also, it is possible to go to Santiago de Compostela by train from Madrid, Barcelona, and other Spanish cities.

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

Language

English will be the official language of IWINAC2009. Simultaneous translation will *not* be provided.

Climate

Santiago de Compostela is located at about 42° 52' N and 8° 33' W near the geographical center of Galicia, Spain's northern and westernmost region. The city, which is 260 meters above sea level, looks eastwards towards inland Galicia, through which the Way of St. James advances among fertile hillocks and traditional architecture based on stone. Westwards, the Atlantic coast is only 30 kilometers away. The humid oceanic climate guarantees mild temperatures throughout the year. The annual mean temperature is around 15°C, with an average of 8°C in winter and a pleasant summer with temperatures ranging from 20°C to 27°C. Most of the rain falls in winter, with variable amounts of soft rain in spring and autumn.

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*. Coins: 1, 2, 5, 10, 20 and 50 cents; 1 and 2 Eur. 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.

Tipping

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

General Information

Congress venue

Facultade de Ciencias da Comunicación
Universidade de Santiago de Compostela
Avda. Castelao s/n.
E-1572 Santiago de Compostela (Spain)

Technical Secretariat of the Conference

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

ESOC, s.l.
Calle Río Duero, 30, Local 10
E-03690 San vicente del Raspeig
Alicante (Spain)
Phone: (+34) 965-22-99-40
Fax: (+34) 965-92-23-46
E-mail: congresos@grupoesoc.es
http://www.grupoesoc.es/

Since 17:00 h. June 21, and during the Conference, the Secretariat will maintain a desk at the congress venue. Previous registration will be necessary to attend the Conference (http://www.congresosesoc.com/iwinac09/).

Contact URL http://www.iwinac.org/iwinac2009/

Conference Organization

General Chairman

José Mira	*Dpto. de Inteligencia Artificial*
	Univ. Nacional de Educación a Distancia (Spain)

Honour Committee

Roberto Moreno Díaz	*Univ. de Las Palmas de Gran Canaria (Spain)*
Senén Barro Ameneiro	*Univ. de Santiago de Compostela (Spain)*
Roque L. Marín Morales	*Univ. de Murcia (Spain)*
Ramón Ruiz Merino	*Univ. Politécnica de Cartagena (Spain)*
Emilio López Zapata	*Univ. de Málaga (Spain)*
Diego Cabello Ferrer	*Univ. de Santiago de Compostela (Spain)*
Francisco J. Ríos Gómez	*Univ. de Málaga (Spain)*
Francisco J. López Aligué	*Univ. de Extremadura (Spain)*
José L. Simões da Fonseca	*Univ. de Lisboa (Portugal)*

Organizing Committee

José Manuel Ferrández Vicente	*Univ. Politécnica de Cartagena (Spain)*
José Ramón Álvarez Sánchez	*Univ. Nacional de Educación a Distancia (Spain)*
Félix de la Paz López	*Univ. Nacional de Educación a Distancia (Spain)*
Fco. Javier Toledo Moreo	*Univ. Politécnica de Cartagena (Spain)*

Local Organizing Committee

Senén Barro Ameneiro	
Roberto Iglesias Rodríguez	Purificación Cariñena Amigo
Manuel Fernández Delgado	Miguel A. Rodríguez González
Eduardo Sánchez Vila	Jesús María Rodríguez Presedo
Paulo Félix Lamas	Pablo Quintía Vidal
María Jesús Taboada Iglesias	Cristina Gamallo Solórzano

Univ. de Santiago de Compostela (Spain)

Invited Speakers

Dario Maravall	Univ. Politécnica de Madrid (Spain)
Javier de Lope Asiaín	Univ. Politécnica de Madrid (Spain)
Tom Heskes	Radboud Univ. Nijmegen (Netherlands)
Jose del R. Millan	EPFL (Switzerland)
Eduardo Fernández	Univ. Miguel Hernández (Spain)

Field Editors

Dario Maravall, Spain   **M. Dolores Jimenez Lopez**, Spain

Rafael Martinez Tomas, Spain   **Mariano Rincon Zamorano**, Spain

Maria Jesus Taboada Iglesias, Spain   **Jorge Larrey Ruiz**, Spain

Juan Antonio Botia Blaya, Spain   **Eris Chinellato**, Spain

Javier de Lope Asiaín, Spain   **Miguel Angel Patricio**, Spain

Scientific Committee (Referees)

Andy Adamatzky, UK   **Javier de Lope**, Spain

Michael Affenzeller, Austria   **Gines Domenech**, Spain

Igor Aleksander, UK   **Jose Dorronsoro**, Spain

Amparo Alonso Betanzos, Spain   **Richard Duro**, Spain

Jose Ramon Alvarez-Sanchez, Spain   **Patrizia Fattori**, Italy

Shun-ichi Amari, Japan   **Eduardo Fernandez**, Spain

Razvan Andonie, USA   **Antonio Fernandez-Caballero**, Spain

Davide Anguita, Italy   **Jose Manuel Ferrandez**, Spain

Margarita Bachiller Mayoral, Spain   **Kunihiko Fukushima**, Japan

Antonio Bahamonde, Spain   **Jose A. Gamez**, Spain

Alvaro Barreiro, Spain   **Vicente Garceran-Hernandez**, Spain

Juan Botia, Spain   **Jesus Garcia Herrero**, Spain

Giorgio Cannata, Italy   **Juan Antonio Garcia Madruga**, Spain

Enrique J. Carmona Suarez, Spain   **Francisco J. Garrigos Guerrero**, Spain

Joaquin Cerda Boluda, Spain

Enric Cervera Mateu, Spain

Antonio Chella, Italy   **Charlotte Gerritsen**, Netherlands

Eris Chinellato, Spain   **Marian Gheorghe**, UK

Erzsebet Csuhaj-Varju, Hungary   **Pedro Gomez Vilda**, Spain

Jose Manuel Cuadra Troncoso, Spain   **Manuel Graña Romay**, Spain

Felix de la Paz Lopez, Spain   **Francisco Guil-Reyes**, Spain

[continued]

June 24, Wednesday

20:00 h. – Universidade de Santiago Reception and Cocktail (casual wear) *at Colegio Fonseca.*

June 25, Thursday

18:45–20:00 h. Guided visit to Santiago de *Compostela Cathedral.*

20:00 h. – Official congress dinner (casual wear) *at Royal Chapel in Hostal dos Reis Católicos (near Cathedral).*

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 (ESOC, please, see the address in the next page) 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 (**)	300 €	300 €

(*) Includes coffee breaks, meals, social events (welcome reception cocktail and official dinner), and the "Lecture Notes in Computer Science" books of the work-conference proceedings.

(**) Includes meals, social events (welcome receptions cocktails and official dinner).

Other Technical Sessions

June 23, Tuesday

16:00–17:45 h. *Room C*: FET-open workshop.

1. Presentation of FET-open program. The following main topics should be presented: (1) FP7 goals, (2) FP7 challenges, (3) FETOPEN program (goals, calls, experiences).
   Duration: 30-45 minutes + questions.

2. Round table on FP7 projects. Discussion topics: consortium formation, proposal presentation, evaluation criteria, etc. Participants in round table: FETOPEN representative, R&D USC Office director, and Business consultant on managing FP7 projects. This activity will open the opportunity for questions and discussions about how to prepare and present a successful project in FP7 calls, and specifically in FETOPEN ones. Duration: 1 hour.

June 24, Wednesday

16:00–19:00 h. Reunión Red Nacional en Biociencia y Computación (for Spanish researchers) *at Colegio Fonseca.*

June 25, Thursday

16:00–17:00 h. *Room A*: Blue Brain presentation (IBM).

Social Program

Coffee breaks only days 23, 24 and 25, from 11:00 to 11:30 h. *Served near the Technical Secretariat zone.*

Lunches only days 23, 24 and 25 for registered participants (with lunch ticket). Served at 14:00 h. *in the Auditorium of Galicia (building near the Congress Venue).*

June 23, Tuesday

18:10–19:40 h. Universidade Viva: guided visit *to Universidad de Santiago* heritage.

20:00 h. – Welcome Reception and Cocktail (casual wear) *at Santiago de Compostela Town Hall.*

Monday June 22	
morning	*Free time*
17:00–20:00	*Registration at Technical Secretariat desk*

Tuesday June 23			
09:00–09:30	*Open Ceremony*		
09:30–11:00	Plenary Session I: Homage to Prof. José Mira		
11:00–11:30	*Coffee break*		
11:30–13:30	Room A:	Room B:	Room C:	Room D:
	Prof. José Mira's work	Bioinspired Applications I	Robotics I	Vision I
14:00–	*Lunch*		
16:00–17:30	Room C: FET-open workshop		
18:10–19:40	*Universidade Viva (visit to Univ. Santiago heritage)*		
20:00–	*Welcome reception and cocktail at Town Hall*		

Wednesday June 24			
09:00–10:00	Plenary Session II: Prof. Darío Maravall & Prof. Javier de Lope		
10:00–11:00	Plenary Session III: Prof. Tom Heskes		
11:00–11:30	*Coffee break*		
11:30–13:30	Room A:	Room B:	Room C:	Room D:
	Computational Neuroscience	Evolutionary	Apps. Expert Systems I	Vision II
14:00–	*Lunch*		
16:00–19:00	*Reunión Red Nacional en Biociencia y Computación (for Spanish researchers), Colegio Fonseca*		
20:00–	*Reception and cocktail at Universidade de Santiago de Compostela*		

- Session: Vision III   June, 26. 09:00–11:00 Room: C
  "**Reasoning and cooperating in automatic perceptual systems**"
  Organizer & Chair: Miguel Angel Patricio
  Co-Chair: Luis Usero and Angel Arroyo

  – "Reasoning on the Evaluation of Wildfires Risk using the Receiver Operating Characteristic curve"
  Luis Usero, M. Xose Rodriguez-Lopez

  – "Optimised Particle Filter Approaches to Object Tracking in Video Sequences"
  Artur Loza, Fanglin Wang, Miguel Angel Patricio Guisado, Jesus Garcia Herrero, Jose Manuel Molina Lopez

  – "Towards interoperability in tracking systems: an ontology-based approach"
  Juan Gomez-Romero, Miguel Angel Patricio Guisado, Jesus Garcia Herrero, Jose Manuel Molina Lopez

  – "Multimodal agents in Second Life and the new agents of virtual 3D environments"
  Angel Arroyo, Francisco Serradilla, Oscar Calvo

  – "Application of Artificial Neural Networks to Complex Dielectric Constant Estimation from Free-Space "
  Antonio Jurado, David Escot, David Poyatos, Ignacio Montiel

- Session: **Bioinspired Applications III**   June, 26. 09:00–11:00 Room: A
  Chair: Pedro Salcedo Lagos
  Co-Chair: José Antonio Martín Hernández

  – "Performance of high school students in learning math. A neural network approach."
  Ricardo Contreras, Pedro Salcedo Lagos, María Pinninghoff

  – "A Strategy for Evolutionary Spanning Tree Construction within Constrained Graphs with Application"
  Santiago Vazquez-Rodriguez, Richard Duro

  – "An Evolutionary Approach for Correcting Random Amplified Polymorphism DNA Images"
  María Pinninghoff, Ricardo Contreras, Luis Rueda

  – "The kNN-TD Reinforcement Learning Algorithm"
  José Antonio Martin H., Javier de Lope, Dario Maravall

  – "CIE-9-MC Code Classification with knn and SVM"
  David Lojo, David Losada, Alvaro Barreiro

- Session: Apps. Expert Systems II   June, 26. 09:00–11:00 Room: B
  "**New Perspectives of application of Expert Systems II**"
  Organizer & Chair: Rafael Martínez Tomás
  Co-Chair: Luis Criado

  – "Rule Evolving System for Knee Lesion Prognosis from Medical Isokinetic Curves"
  Jorge Couchet, José María Font, Daniel Manrique

  – "An Architecture Proposal for Adaptive Neuropsychological Assessment"
  Guil-Reyes Francisco, Maria M. Antequera, M. Teresa Daza, Jose M. Juarez, Ginesa López-Crespo

  – "SONAR: A Semantically Empowered Financial Search Engine."
  Juan Miguel Gómez, Francisco Garcia-Sanchez, Rafael Valencia-Garcia, Ioan Toma, Carlos García-Moreno

  – "The problem of constructing general-purpose semantic search engines"
  Luis Criado Fernández, Rafael Martinez Tomas

Thursday June 25		
09:00–10:00	Plenary Session IV: Prof. José del R. Millán		
10:00–11:00	Plenary Session V: Prof. Eduardo Fernández		
11:00–11:30	*Coffee break*		
11:30–13:30	Room A:	Room B:	Room C:
	Robotics II	Bioinspired Applications II	Knowledge Modelling
14:00–	*Lunch*		
16:00–17:00	Room A: Blue Brain presentation (IBM)		
17:00–18:00	Posters Session		
18:45–20:00	*Visit to Santiago de Compostela Cathedral*		
20:00–	*Official Dinner*		

Friday June 26		
09:00–11:00	Room A:	Room B:	Room C:
	Bioinspired Applications III	App. Expert Systems II	Vision III
11:00–	*Closing Ceremony*		
afternoon	*Free time*		

- Session: Plenary I   June, 23. 09:30–11:00 Room: A

  "**Homage to Prof. Jose Mira**"

  Chair: Darío Maravall

  Co-Chair: José Manuel Ferrández

  – "On bridging the gap between human knowledge and computers: A personal tribute in memory of Prof Mira"
  Roque Marin

  – "Personal notes about the figure and legate of Professor Mira"
  Ramon Ruiz Merino

  – "Intelligent patient monitoring: from hardware to learnware"
  Senen Barro Ameneiro

  – "A look toward the past of my work with the professor José Mira"
  Francisco J. Ríos Gómez

- Session: J. Mira' works   June, 23. 11:30–13:30 Room: A

  "**A retrospective on Prof. Jose Mira's scientific work**"

  Chair: Darío Maravall

  Co-Chair: Antonio Bahamonde

  – "Remembering José Mira"
  Isabel Gonzalo

  – "Detection of Speech Dynamics by Neuromorphic Units"
  Pedro Gomez Vilda, Jose Manuel Ferrandez, Victoria Rodellar, Agustin Alvarez, Luis Miguel Mazaira, Rafael Martinez, Cristina Muñoz

  – "Spatio-Temporal Computation with Neural Sensorial Maps"
  Jose Ferrandez, Fco. Javier Toledo Moreo, Jose Manuel Ferrandez

  – "Knowledge-Based Systems: A Tool for Distance Education"
  Pedro Salcedo Lagos, María Pinninghoff Junemann, Ricardo Contreras

  – "Revisiting Algorithmic Lateral Inhibition and Accumulative Computation"
  Antonio Fernandez-Caballero, Maria T. Lopez, Miguel A. Fernández, José M. López-Valles

13. "Breast Cancer Classification applying Artificial Metaplasticity"
Alexis Marcano-Cedeño, Diego Andina, Fulgencio S. Buendía-Buendía

14. "Detection of Microcalcifications using Coordinate Logic Filters and Artificial Neural Networks"
Joel Quintanilla-Domínguez, María Guadalupe Cortina-Januchs, José Miguel Barrón-Adame, Antonio Vega-Corona, Fulgencio S. Buendía-Buendía, Diego Andina

15. "Characterisation of Multiple Patterns of Activity in Networks of Relaxation Oscillators with Inhibit"
Tiaza Bem, John Hallam

16. "SDSM based SdFasArt for Enhanced Maneuver Prediction"
Ana Toledo, Rafael Toledo-Moreo, Jose Manuel Cano-Izquierdo

17. "Scaling power laws in the restoration of perception with increasing stimulus in deficitary natural.."
Isabel Gonzalo, Miguel A. Porras

18. "A Genetic Algorithm for the Open Shop Problem with Uncertain Durations"
Juan Jose Palacios, Jorge Puente, Camino R. Vela, Ines Gonzalez-Rodriguez

19. "Analytical Models for Transient Responses in the Retina"
Gabriel de Blasio, Arminda Moreno Diaz, Roberto Moreno-Díaz

20. "Classification of SPECT images using clustering techniques revisited"
Juan M. Górriz, Javier Ramírez

21. "Using Reconfigurable Supercomputers and C-to-hardware Synthesis for CNN Emulation"
Jose Javier Martinez-Alvarez, Francisco J. Garrigos Guerrero, Fco. Javier Toledo Moreo, Jose Manuel Ferrandez

22. "Mathematical foundations of the center of area method for robot navigation"
Felix de la Paz Lopez, Jose Ramon Alvarez-Sanchez, Jose Ignacio Rosado Sanchez, Jose Manuel Cuadra Troncoso

23. "Reveal the Collaboration in a Open Learning "
Antonio Rodríguez Anaya, Jesús González Boticario

- Session: **Posters** June, 25. 17:00–18:00 Room: P
  Chair: José Manuel Ferrández
  Co-Chair: Roberto Iglesias

  1. "Time estimation in injection molding production for automotive industry based on SVR and RBF"
     Miguel Reboreda Tourón, Manuel Fernández-Delgado, Senén Barro Ameneiro

  2. "Classification of Welding Defects in Radiographic Images Using an ANN with Modified Performance Function"
     Juan Zapata

  3. "Analysis of Brain SPECT Images for the diagnosis of Alzheimer using first and second order moments"
     Diego Salas-Gonzalez, Juan M. Górriz, Javier Ramírez, Miriam López, Ignacio Álvarez, Fermín Segovia, Carlos G. Puntonet

  4. "Prediction and Inheritance of Phenotypes"
     Antonio Bahamonde, Jaime Alonso, Juan Jose del Coz, Jorge Diez, Jose Ramon Quevedo, Oscar Luaces

  5. "On cumulative entropies and lifetime estimations"
     Antonio Di Crescenzo, Maria Longobardi

  6. "Functional Brain Image Classification Techniques for Early Alzheimer Disease Diagnosis"
     Javier Ramírez, Rosa Chavez, Juan M. Górriz, Ignacio Álvarez, Miriam López, Diego Salas-Gonzalez, Fermín Segovia

  7. "Genetic Algorithm combined with Tabu Search for the Job Shop Scheduling Problem with Setup Times"
     Miguel A. González, Camino R. Vela, Ramiro Varela

  8. "Support Vector Machines and Neural Networks for the Alzheimer's Disease Diagnosis Using PCA"
     Miriam López, Javier Ramírez, Juan M. Górriz, Ignacio Álvarez, Diego Salas-Gonzalez, Fermín Segovia, Manuel Gómez-Río

  9. "A memory-based particle filter for visual tracking through occlusions"
     Antonio Montemayor, Juan J. Pantrigo, Javier Hernández

  10. "Comparing Feature Point Tracking with Dense Flow Tracking for Facial Expression Recognition"
      José Ruiz, Ana Belen Moreno Diaz, Juan J. Pantrigo, Angel Sanchez Calle

  11. "Assesment of a Speaker Recognition System based on an Auditory Model and Neural Nets"
      Ernesto Martinez-Rams, Vicente Garceran-Hernandez

  12. "Denoising of Radiotherapy Portal Images using Wavelets"
      Antonio González-López, Juan Morales Sanchez, Consuelo Bastida-Jumilla, Francisco López-Sánchez, Bonifacio Tobarra-González

- Session: Bioinspired Applications I June, 23. 11:30–13:30 Room: B
  "**Processing Languages with bio-molecules**"
  Organizer & Chair: M. Dolores Jimenez-Lopez
  Co-Chair: Gemma Bel-Enguix

  – "Recombination Patterns for Natural Syntax"
    M. Dolores Jimenez-Lopez, Vincenzo Manca

  – "Computing Natural Language with Biomolecules: Overview and Challenges"
    Gemma Bel-Enguix

  – "A Christiansen Grammar for univeral splicing systems "
    Alfonso Ortega, Marina de la Cruz

  – "DNA replication as a model for computational linguistics"
    Veronica Dahl

  – "jNEPView: a graphical trace viewer for the simulations of NEPs"
    Emilio del Rosal, Miguel Cuéllar

- Session: Robotics I June, 23. 11:30–13:30 Room: C
  "**Bio-inspired computation in cooperative multi-robot systems**"
  Organizer & Chair: Javier de Lope
  Co-Chair: Manuel Graña and Richard Duro

  – "Learning to coordinate multi-robot competitive systems by stimuli adaptation"
    José Antonio Martin H., Javier de Lope, Dario Maravall

  – "A behavior based architecture with auction-based task assignment for multi-robot industrial applicat"
    Paula Garcia, Pilar Caamaño, Francisco Bellas, Richard Duro

  – "On the control of a multi-robot system for the manipulation of an elastic hose"
    Zelmar Echegoyen, Alicia d'Anjou, Manuel Graña

  – "An Improved Evolutionary Approach for Egomotion Estimation with a 3D TOF Camera"
    Ivan Villaverde, Manuel Graña

  – "A frame for an urban traffic control architecture"
    Teresa de Pedro, Ricardo Garcia, Carlos González, Javier Alonso, Enrique Onieva, Vicente Milanés, Joshué Pérez

  – "Partial center of area method used for reactive autonomous robot navigation"
    Jose Ramon Alvarez-Sanchez, Felix de la Paz Lopez, Jose Manuel Cuadra Troncoso, Jose Ignacio Rosado Sanchez

- Session: Vision I   June, 23. 11:30–13:30 Room: D
  "**Biomedical and industrial image understanding applications**"
  Organizer & Chair: Jorge Larrey-Ruiz
  Co-Chair: Rafael Verdú-Monedero

  - "Measurements over the Aquiles Tendon through Ecographic Images Processing"
    Consuelo Bastida-Jumilla, Juan Morales Sanchez, Rafael Verdú-Monedero, Jorge Larrey-Ruiz, Jose Luis Sancho-Gomez

  - "A new approach in metal artifact reduction for CT 3D reconstruction"
    Valery Naranjo, Roberto Lloréns, Patricia Paniagua, Mariano Alcañiz, Salvador Albalat

  - "Genetic Approaches for the Automatic Division of Topological Active Volumes"
    Jorge Novo Buján, Noelia Barreira, Manuel Penedo, Jose Santos Reyes

  - "Object Discrimination By Infrared Image Processing"
    Ramon Miralles-Ricos, Ignacio Bosch-Roig, Soledad Gomez-Garcia, Raquel Molina-Minguez

  - "Validation of fuzzy connectedness segmentation for jaw tissues"
    Roberto Lloréns, Valery Naranjo, Miriam Clemente, Mariano Alcañiz, Albalat Salvador

  - "Texture Classification of the Entire Brodatz Database through an Orientational-Invariant Neural Arch"
    Francisco J. Díaz-Pernas, Míriam Antón-Rodríguez, J. Fernando Díez-Higuera, Mario Martínez-Zarzuela, David González-Ortega, Daniel Boto-Giralda

- Session: **Bioinspired Applications II**   June, 25. 11:30–13:30 Room: B
  Chair: Guido Sciavicco
  Co-Chair: Pedro Gómez-Vilda

  - "Quality Checking of Medical Guidelines using Interval Temporal Logics: A Case Study"
    Guido Sciavicco, Jose M. Juarez, Manuel Campos

  - "Results of Adaboost approach on Alzheimer's Disease detection on MRI"
    Alexandre Savio, Maite García-Sebastián, Manuel Graña, Jorge Villanúa

  - "Neurobiological significance of automatic segmentation: application to the early diagnosis of alzhei"
    Ricardo Insausti, Mariano Rincon Zamorano, César González-Moreno, Emilio Artacho-Pérula, Amparo Díez-Peña, Tomás García-Saiz

  - "A Braitenberg Lizard: Continuous Phonotaxis with a Lizard Ear Model"
    Danish Shaikh, John Hallam, Jakob Christensen-Dalsgaard, Lei Zhang

  - "Determining Sound Source Orientation from Source Directivity and Multi-Microphone Recordings"
    Francesco Guarato, John Hallam

  - "A Method to Minimize Distributed PSO Algorithm Execution Time in Grid Computer Environment"
    Fernando Parra Rodriguez, Sebastian Garcia Galan, Antonio J. Yuste Delgado, Rocio Perez Prado, J. E Muñoz Exposito, Sebastian Bruque Camara

- Session: Knowledge Modeling   June, 25. 11:30–13:30 Room: C
  "**The role of knowledge based system on supporting elderly care at home**"
  Organizer & Chair: Juan Antonio Botía Blaya
  Co-Chair: José Tomás Palma Méndez

  - "Ontology Based Approach to the Detection of Domestics Problems for Independent Senior Pepole"
    Juan Botia, José Palma, Ana Villa, David Pérez, Emilio Iborra

  - "A Wireless Sensor Network for Assisted Living at Home of Elderly People"
    Francisco Fernández, Juan Zapata

  - "Ambient Assisted Living system for Telemedicine detection of symptoms"
    Antonio Jara, Miguel A. Zamora-Izquierdo, Antonio F. Gómez-Skarmeta

  - "Applying context-aware computing in dependent environments"
    Juan Agustín Fraile Nieto, Javier Bajo Pérez, Juan Manuel Corchado

  - "A Smart Solution for Elders in Ambient Assisted Living"
    Nayat Sánchez-Pi, Jose Manuel Molina Lopez

  - "Convergence of Emergent Technologies for the Digital Home"
    Celia Gutierrez, Sara Perez

- Session: Plenary IV   June, 25. 09:00–10:00 Room: A
  "**Non-Invasive Brain-Computer Interaction**"
  Jose del R. Millan

- Session: Plenary V   June, 25. 10:00–11:00 Room: A
  "**Neural Prosthetic interfaces with the central nervous system: Current status and future prospects**"
  Eduardo Fernandez

- Session: Robotics II   June, 25. 11:30–13:30 Room: A
  "**Robotics and Neuroscience**"
  Organizer & Chair: Eris Chinellato
  Co-Chair: Emilia Barakova and Angel P. del Pobil

  - "Eye-Hand Coordination for Reaching in Dorsal Stream Area V6A: Computational Lessons"
    Eris Chinellato, Beata J. Grzyb, Nicoletta Marzocchi, Annalisa Bosco, Patrizia Fattori, Angel del Pobil

  - "Toward an Integrated Visuomotor Representation of the Peripersonal Space"
    Eris Chinellato, Beata J. Grzyb, Patrizia Fattori, Angel del Pobil

  - "Evidence for peak-shaped gaze fields in area V6A: implications for sensorimotor transformations..."
    Rossella Breveglieri, Annalisa Bosco, Andrea Canessa, Patrizia Fattori, Silvio P. Sabatini

  - "Segmenting Humans from Mobile Thermal Infrared Imagery"
    Jose Carlos Castillo, Juan Serrano-Cuerda, Antonio Fernandez-Caballero, Maria T. Lopez

  - "My Sparring Partner is a Humanoid Robot –A parallel framework for improving social skills "
    Tino Lourens, Emilia I. Barakova

  - "Brain-Robot Interface for Controlling a Remote Robot Arm"
    Eduardo Iáñez, M. Clara Furió, José M. Azorín, José Alejandro Huizzi, Eduardo Fernandez

- Session: Plenary II   June, 24. 09:00–10:00 Room: A
  "**ANLAGIS: Adaptive Neuron-like Network based on Learning Automata Theory and Granular Inference ...**"
  Dario Maravall, Javier de Lope

- Session: Plenary III   June, 24. 10:00–11:00 Room: A
  "**Bayes, Brains and Machine Learning**"
  Tom Heskes

- Session: **Computational Neuroscience**   June, 24. 11:30–13:30 Room: A
  Chair: José Manuel Ferrández
  Co-Chair: Andreas Schierwagen

  - "Analysis of Retinal Ganglion Cells Population Responses using Information Theory and Artificial Neur"
    Jose Ferrandez, María Paula Bonomini, Eduardo Fernandez, Joaquin Rueda

  - "A network of coupled pyramidal neurons behaves as a coincidence detector"
    Santi Chillemi, Michele Barbi, Angelo Di Garbo

  - "Neuron-less neural-like networks with exponential association capacity at tabula rasa "
    Demian Battaglia

  - "Brain complexity: analysis, models and limits of understanding"
    Andreas Schierwagen

  - "Activity Modulation in Human Neuroblastoma Cultured Cells: Towards a Biological Neuroprocessor"
    Jose Ferrandez, Markus Bongard, Victor Lorente, Jose Manuel Ferrandez, Villa Rosa, Eduardo Fernandez

  - "Solving the Independent Set Problem by Using Tissue-like P Systems with Cell Division"
    Miguel A. Gutiérrez-Naranjo, Daniel Díaz-Pernil, Mario J. Perez Jimenez, Agustín Riscos-Núñez

- Session: **Evolutionary**   June, 24. 11:30–13:30 Room: B
  Chair: Francisco de Asis Fernández
  Co-Chair: Ana María Volker Fischer

  - "How to do Recombination in Evolution Strategies: An Empirical Study"
    Juan Chen, Michael Emmerich, Rui Li, Joost N. Kok, Thomas Baeck

  - "Serial Evolution"
    Volker Fischer, Ana Maria Tomé, Elmar W. Lang

  - "A Sensitivity Clustering Method for Hybrid Evolutionary Algorithms"
    Francisco de Asís Fernández Navarro, Pedro Antonio Gutierrez , Cesar Hervas Martinez, Juan Carlos Fernández

  - "Controlling Particle Trajectories in a Multi-Swarm Approach for Dynamic Optimization Problems"
    Pavel Novoa, David Pelta, Carlos Cruz, Ignacio Garcia del Amo

  - "Clustering Ensembles Using Ants Algorithm"
    Javad Azimi, Paul Cull, Xiaoli Fern

  - "Fuzzy Classification Of Mortality By Infection Of Severe Burnt Patients Using Multiobjective Evoluti"
    F. Jimenez, G. Sanchez, Jose M. Juarez, J. M. Alcaráz, J. F. Sánchez

- Session: Apps. Expert Systems I   June, 24. 11:30–13:30 Room: C
  "**New perspectives of application of expert systems I**"
  Organizer & Chair: María Jesús Taboada Iglesias
  Co-Chair: Rafael Martínez Tomás

  - "Knowledge and event-based system for video-surveillance tasks"
    Angel Rivas Casado, Rafael Martinez Tomas

  - "Computational Agents to Model Knowledge - Theory, and Practice in Visual Surveillance"
    Jose Mira, Ana E. Delgado, Antonio Fernandez-Caballero, Jose M. Gascueña, Maria T. Lopez

  - "ARDIS: Knowledge-based Dynamic Architecture for Real-Time Surface Visual Inspection"
    David Martin Gomez, Mariano Rincon Zamorano, María Carmen García-Alegre Sánchez, Domingo Guinea Díaz

  - "KBS in Context Aware Applications: Commercial Tools"
    Nayat Sánchez-Pi, Javier Carbó, Jose Manuel Molina Lopez

  - "A study of applying knowledge modelling to evidence-based guidelines"
    Maria Taboada, Maria Meizoso, Diego Martínez, Serafín Tellado

  - "Knowledge Based Information Retrieval With An Adaptive Hypermedia System"
    Francisca Grimón Mejias, Josep Maria Monguet, Jordi Ojeda

- Session: Vision II   June, 24. 11:30–13:30 Room: D
  "**Bio-inspired computer vision applications**"
  Organizer & Chair: Mariano Rincón Zamorano
  Co-Chair: Enrique J. Carmona Suárez

  - "A block-based human model for visual surveillance"
    Encarnación Folgado Zúñiga, Mariano Rincon Zamorano, Margarita Bachiller Mayoral, Enrique J. Carmona Suarez

  - "Image Equilibrium: A Global Image Property For Human-Centered Image Analysis"
    Óscar Sánchez, Mariano Rincon Zamorano

  - "Vision-Based Text Segmentation System for Generic Display Units"
    Jose Carlos Castillo, Maria T. Lopez, Antonio Fernandez-Caballero

  - "Blind Navigation along a Sinuous Path by Means of the See ColOr Interface"
    Guido Bologna, Benoit Deville, Thierry Pun

  - "Access control to security areas based on facial classification"
    Aitor Moreno Fdz. de Leceta, Mariano Rincon Zamorano

  - "Classifying a new descriptor based on Marr's visual theory"
    Jose Manuel Perez-Lorenzo, Sebastian Garcia Galan, Antonio Bandera, Ricardo Vazquez-Martin, Rebeca Marfil