



VNIVERSIDAD
D SALAMANCA

CAMPUS DE EXCELENCIA INTERNACIONAL



DR. JUAN MANUEL CORCHADO | PRINCIPAL INVESTIGATOR



VNIVERSIDAD
D SALAMANCA

Facultad D Ciencias

Contents

- 1 BISITE Research Group
- 2 Research Lines
- 3 R&D Projects
- 4 Education
- 5 Symposiums
- 6 Publications

Universidad de Salamanca

(*Universitas Studii Salmanticensis*, latín)

Web page: <http://www.usal.es>

- Located in Salamanca (Spain)
- Founded in **1218**. In 2018, it will celebrates its VIII centenary.
- **8 centuries** creating knowledge.
- **Spain's oldest university.**
- One of the four oldest in Europe.
- Actually, the University has over:
 - 30.000** students
 - 25** Faculties
 - 66** Departments
 - 16** Research institutes
 - 106** research groups



Research Group
Research Lines
R&D Projects
Education
Symposiums
Publications

Research Group: Juan M. Corchado

- **Full professor** - Computer Science and Artificial Intelligence
- **Dean** of The Science School of the University of Salamanca (800 years old, 35.000 Students)
- **Director of The BISITE** research Group (40 researchers, more then 60 ongoing projects, 2.000.000,00 Euros Budget)
- **Associated Director of the Scientific Park** of the University of Salamanca (+ 400 engineers, + 30 enterprises)
- **Responsible of the “Cátedra INDRA-ADECCO”** - professorship/laboratory of accessibility
- **Advisor of the Academic Council Training Centre of the Spanish National Police** (For security and computer science disciplines)
- **Director of the MSc Programs** in E-commerce and Digital Animation of the University of Salamanca
- **Academic Director** of the Institute of Art and Animation Technology

<http://bisite.usal.es/corchado>

BISITE Research Group

Research Group
Research Lines
R&D Projects
Education
Symposiums
Publications

BISITE is a multidisciplinary group interested in Artificial Intelligent distributed models. The group works in areas such as ambient intelligent, technology enhanced learning, bioinformatics, sensors, robotics, multiagents systems, etc.

Members:

- Principal Investigador: **Juan M. Corchado**
- PhD Members: **16**
- PhD Students: **8**
- Engineers: **21**
- Collaborators (Universities, groups or research centres): **11**



Research Lines (1 of 10)

- **Artificial Intelligence and Computer Sciences** (Hybrid Systems, ANN, CBR, Bayesian Networks, PCA, etc.).
- **Distributed AI** (Theoretical and practical concepts on distributed architectures for developing artificial intelligence solutions.).
- **Case-Based Reasoning Systems** (robot navigation, co2 exchange, Oil Spill prediction, etc.).
- **Ambient Intelligence / Ambient Assisted Living / e-Health / e-Inclusion** (Alzheimer patients identification, location and monitoring, guiding facilities in shopping centers, routes planning and monitoring in security environments, etc.).
- **Agents Technology** (New models for smart agents. New architectures for advanced open multi-agent systems. Methodologies, tools and mechanisms for multiagent systems).
- **Mobility and Wireless Sensor Networks** (Advances in computational and artificial intelligence applications for mobile devices. Usability and intelligent interfaces for mobile devices. Sensor networks based on wireless technologies - Bluetooth, RFID, ZigBee, Wi-Fi, UWB and WiMAX).
- **Technology Enhanced Learning** (Computational and Artificial Intelligence techniques in the field of e-learning).
- **Bioinformatics: Analysis and Classification of Microarrays Data** (Advanced models for analysis of microarray data. Innovative techniques for patients classification working with microarray data. Case study in real environments -Leukemia patients classification)
- **Web 3D and Digital Animation** (Artificial Intelligence techniques in the field of Web 3D and Digital Animation - Web 3D, Virtual Worlds, Image processing, Social simulation models in virtual organizations, etc.).
- **Distributed Intelligent Control** (UABs)
- **Intelligent Webs** – SEO – Social Media – Marketing online

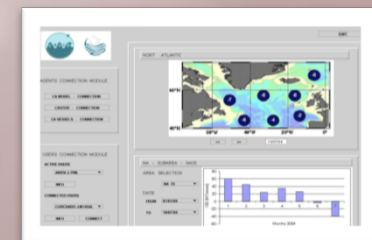
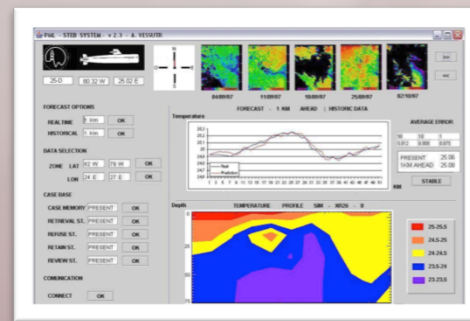
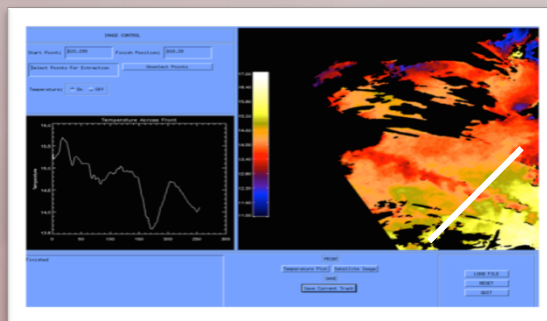
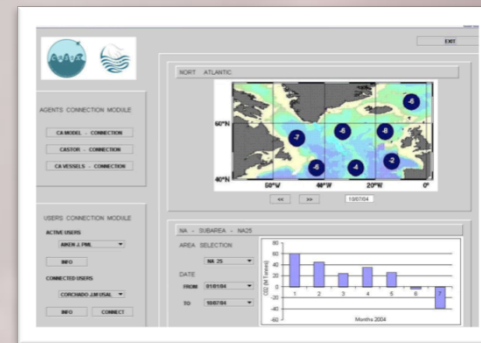
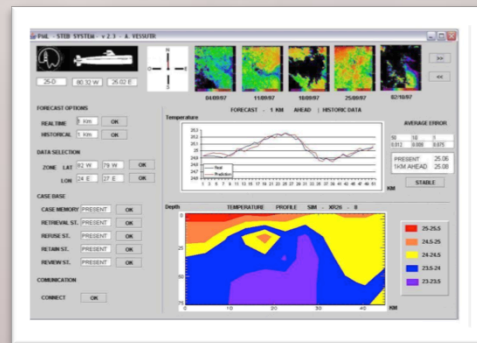
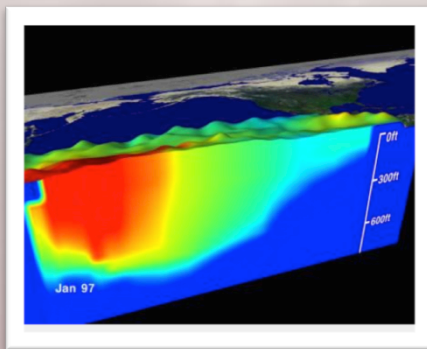
Research Lines (2 of 10)

Research Group
Research Lines
R&D Projects
Education
Symposiums
Publications

Artificial Intelligence and Computer Sciences

(Hybrid Systems, ANN, CBR, Bayesian Networks, PCA, etc.)

Distributed AI (Theoretical and practical concepts on distributed architectures for developing artificial intelligence solutions)



Research Lines (3 of 10)

Artificial Intelligence and Computer Sciences

(Hybrid Systems, ANN, CBR, Bayesian Networks, PCA, etc.)

Case-based Reasoning systems

(robot navigation, co2 exchange, Oil Spill prediction, etc.)

Research Group

Research Lines

R&D Projects

Education

Symposiums

Publications

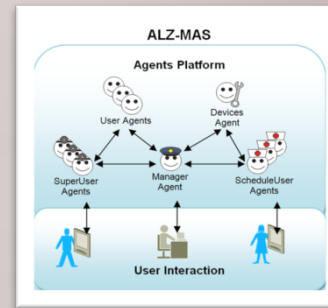
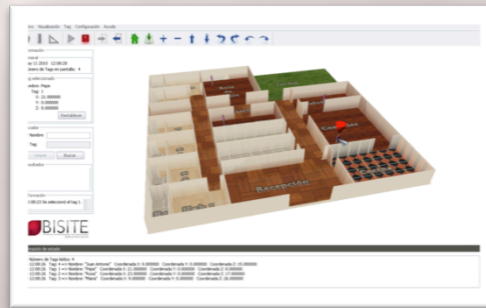
The collage contains several key elements:

- Top Left:** A screenshot of the Junta de Castilla y León website.
- Top Middle:** A bar chart titled 'Porcentaje de Respuestas por Sección' showing data for 'La Información y la comunicación sobre la Igualdad de género' and 'Políticas y procedimientos de Recursos Humanos'.
- Top Right:** A table titled '-Tecnología de la Información-' with columns for Nombre, Objetivo, UI/Nota, Fecha, and Grafica Recomendación. It lists several projects with their respective goals and dates.
- Middle Left:** A flowchart for Case-Based Reasoning (CBR) showing the process from 'Evolution of Facts from Rules' to 'Description of the new case', 'Rules set', and 'Update Rule memory'.
- Middle Right:** A detailed 'FUSION@ Architecture' diagram showing layers from 'Development Language' down to 'Operating System (SO)'. It includes components like Services, Applications, Interface Agent, SOAP, AIDeMias, Traffic Agent, Security Agent, Classifier F1/F2 Agents, Directory Agent, Admin Agent, Supervisor Agent, CommApp Agent, CommSelf Agent, JADE (FIPA ACL), OAA (ICL), and RETSINA (KQML).
- Bottom Right:** A screenshot of a software interface showing a table of data and various control panels.

Research Lines (4 of 10)

Ambient Intelligence / Ambient Assisted Living / e-Health / e-Inclusion

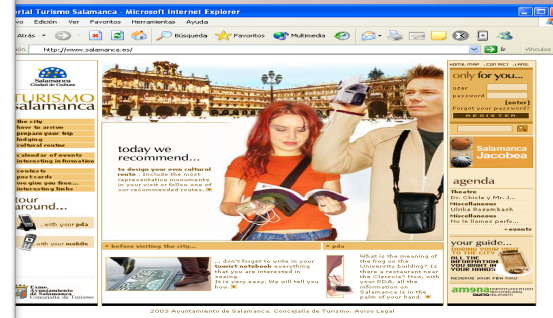
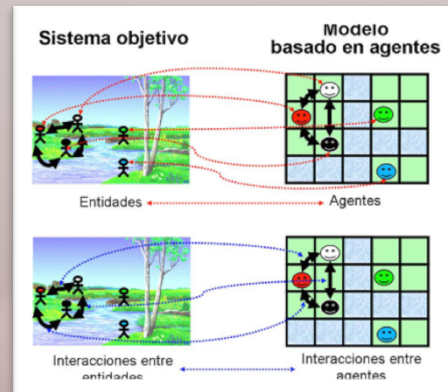
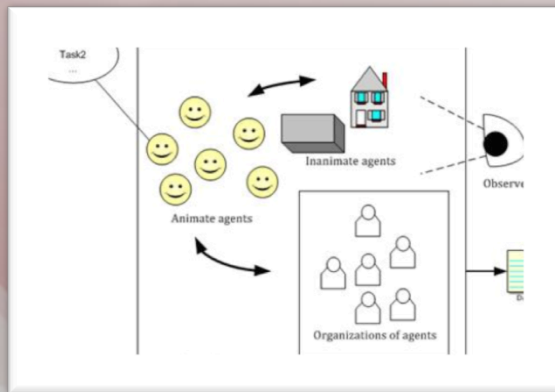
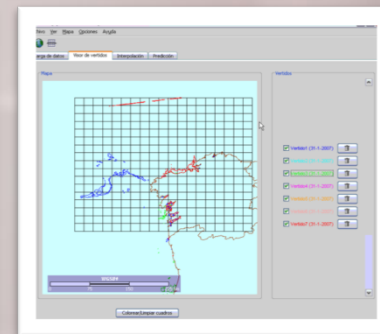
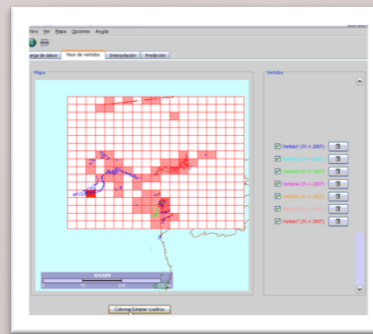
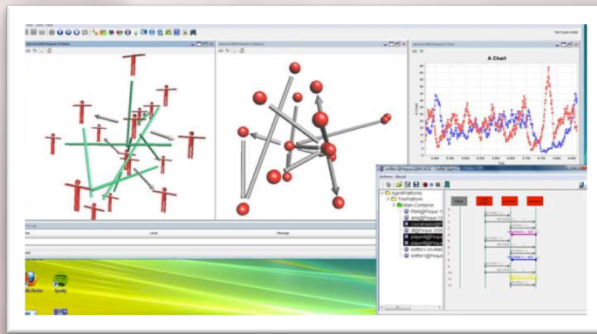
Alzheimer patients identification, location and monitoring, guiding facilities in shopping centers, routes planning and monitoring in security environments, etc.



Research Lines (5 of 10)

Agents Technology and Multi-Agent Systems

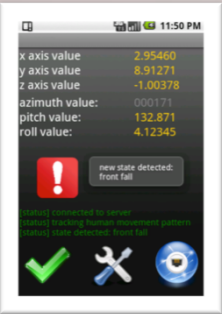
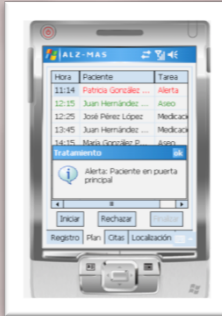
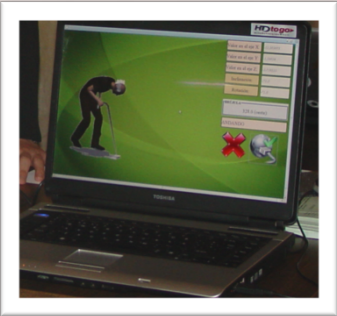
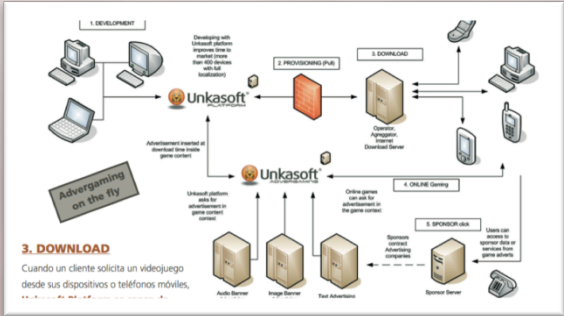
New models for smart agents. New architectures for advanced open multi-agent systems. Methodologies, tools and mechanisms for multi-agent systems



Research Lines (6 of 10)

Mobility and Wireless Sensor Networks

Advances in computational and artificial intelligence applications for mobile devices.
 Usability and intelligent interfaces for mobile devices. Sensor networks based on wireless technologies - Bluetooth, RFID, ZigBee, Wi-Fi, UWB, WiMAX

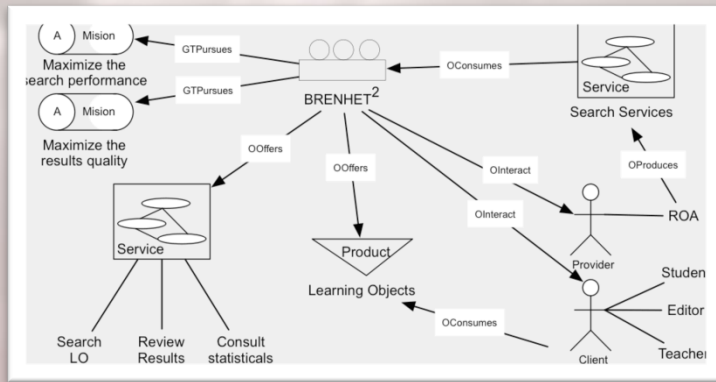


Research Lines (7 of 10)

Research Group
Research Lines
 R&D Projects
 Education
 Symposiums
 Publications

Technology Enhanced Learning

Computational and Artificial Intelligence techniques in the field of e-learning



Carol is 8 year old. She is a smart kid, but utterly alone. Her parents work all day and her reading stories and interacting with Carol. Carol prefers playing with video games that are interests her more than reading paper stories.

Carol knows TERENCE, she has used it in class with her teacher. She opens TERENCE set of fantasy stories. Carol starts reading but some of the sentences are too long and she asks TERENCE for stories written in a simplified language. TERENCE, through its interface, provides her with simplified stories and she starts reading rather fluently.

Scenario 2: Guiding educators in choosing adapt stories for a specific poor comprehender
 Alice teaches in a primary school in Italy. Giorgio is one of her students. He is 10 years old, but seems unable to understand what he reads. The school psychologist administers the Neale Analysis of Reading Ability test (NARA, e.g., see the Revised British Edition, Neale, 1956). The administration of the NARA requires the child to read a set of stories aloud, and to answer questions after each story. Giorgio read all the words correctly, but was found unable to answer the comprehension questions.

Alice knows TERENCE, and thinks it can help her with Giorgio. She is aware of Giorgio's reading level and the NARA test results.

TERENCE Part B: page 7 of 74



- **Repositorios consultas.** Número de registros para realizar la consulta.

En la parte inferior, se muestran todos los elementos, para hacer la consulta más fácil. Cada elemento está enmarcado tal y como aparece en la siguiente figura.

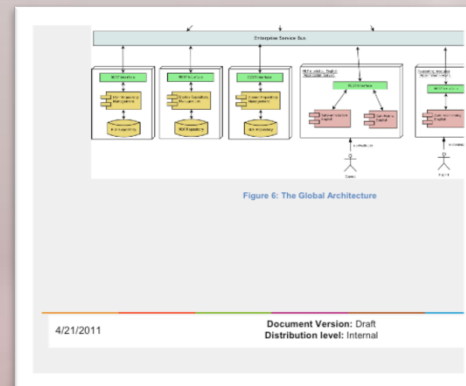
1. Asseriviteit

- Language:
- Type:
- Description: Dit trainingspakket behandelt onderwerpen: (1) feedback ontvangen-toepassen; (2) feedback geven-toepassen; (3) feedback geven-toepassen; (4) feedback geven-toepassen onderst.

http://www.cs.kuleuven.be/~nik/vdab/asseriviteit_050320

Figura 9 - Objeto de aprendizaje

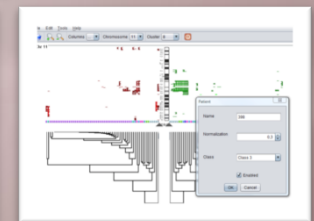
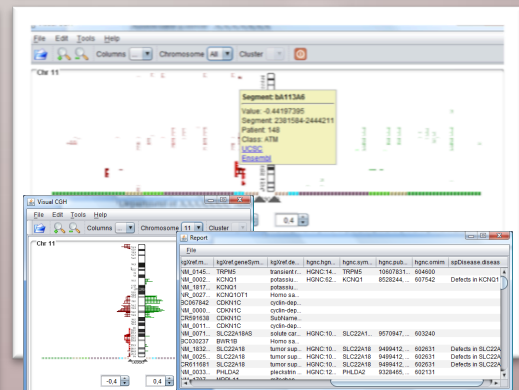
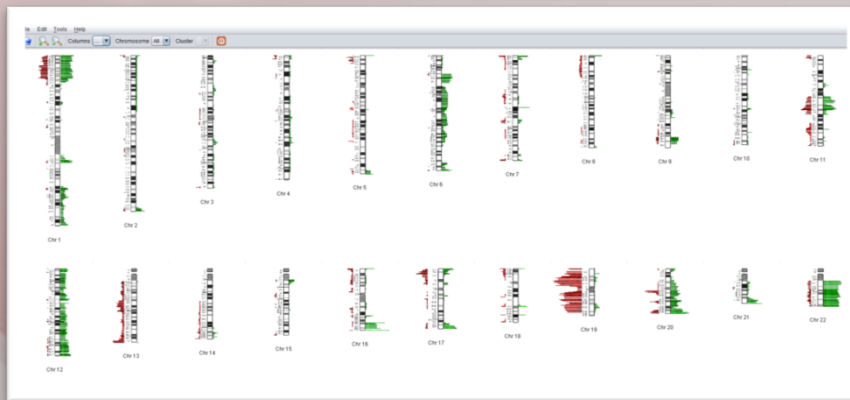
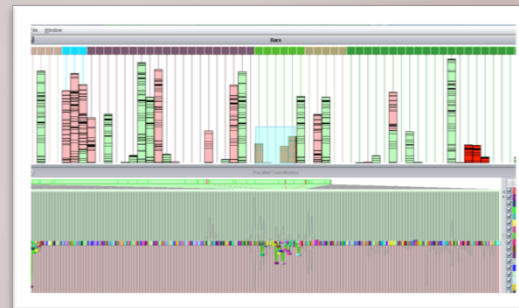
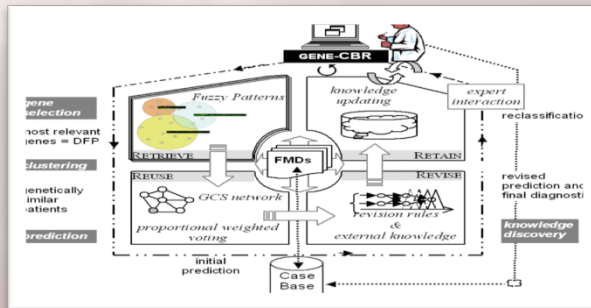
Septiembre, 2009



Research Lines (8 of 10)

Bioinformatics: Analysis and Classification of Microarrays data

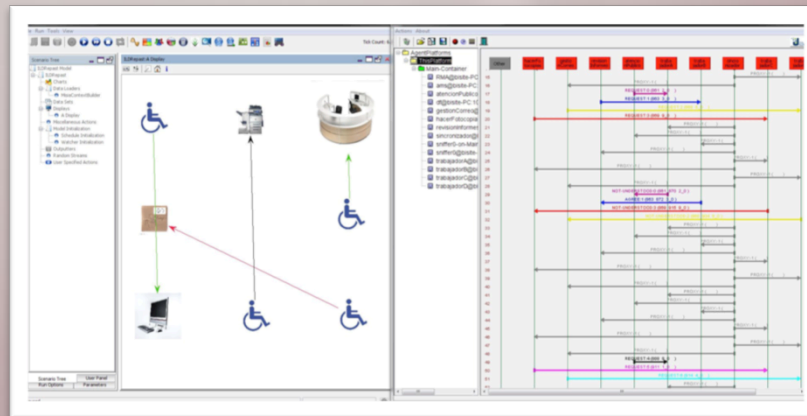
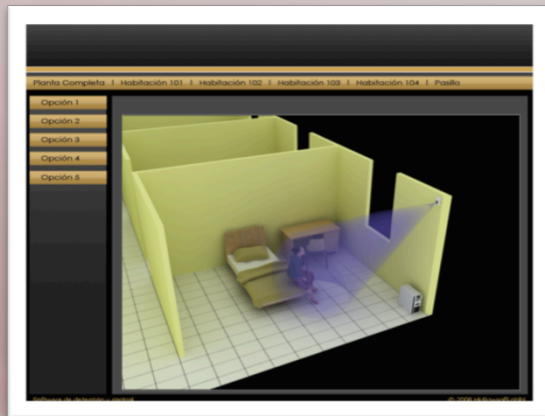
Advanced models for analysis of microarray data. Innovative techniques for patients classification working with microarray data. Case study in real environments - Leukemia patients classification



Research Lines (9 of 10)

Web 3D and Digital Animation

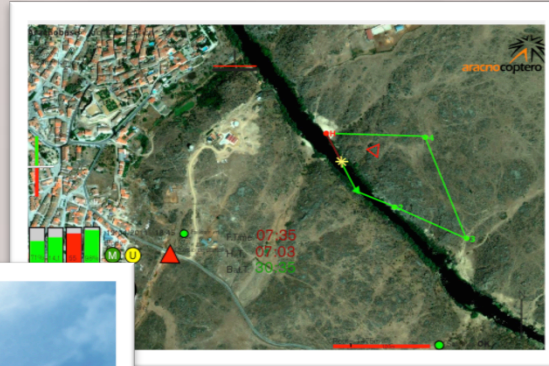
Artificial Intelligence techniques in the field of Web 3D and Digital Animation - Web 3D, Virtual Worlds, Image processing, Social simulation models in virtual organizations, etc.



Research Lines (10 of 10)

Distributed Intelligent Control (UABs)

Research Group
Research Lines
R&D Projects
Education
Symposiums
Publications



R&D Projects (1 of 5)

INTERNATIONAL PROJECTS (some of our latest projects are):

- **TERENCE: An Adaptive Learning System for Reasoning about Stories with Poor Stories Comprehenders and their Educators**

Funded by FP7; From 2010 to 2013; 2 Million Euros

- **Crisis Project**

Funded by European Commission, From 2007 to 2009, 235.000 Euro

- **The Atlantic Meridional Transect**

UK Natural Environment Council; From: 1995 To: 2005; 22 Million Sterling Pound.

- **Simulated Tactical Environmental Bubble (STEB)**

UK Natural Environment Council; From 1996 to: 2001; 2 Million Sterling Pound.

R&D Projects (2 of 5)

PROJECTS (some of our latest projects are):

- **AZTECA (Intelligent Environments with Accessible Technology for Work)**
 - Duration from 2011 to 2013.
 - Budget: 500.000 €
- **GUARDIAN (Electronic system for protecting abused persons or those in high risk situations)**
 - Duration from 2010 to 2012.
 - Budget: 1M €
- **SIMPLY GO!**
 - Duration from 2010 to 2012
 - Budget: 700.000 €
- **OVAMAH (Adaptive Virtual Organizations: Mechanisms, Architectures and Tools)**
 - Duration from 2010 to 2012
 - Budget: 260.000 €

R&D Projects (3 of 5)

PROJECTS (some of our latest projects are):

- **Visualizing heritage**
 - Duration from 2009 to 2011
 - Budget: 328.500 €
- **ABANSA** (Open distributed architecture with agent technology for heavy processing)
 - Duration from 2008 to 2011
 - Budget: 491.000 €
- **The Digital Elderly**
 - Duration from 2011 to 2012
 - Budget: 2.933.821 €
- **THOMAS** (Methods, tools and techniques for open multi-agent systems: reasoning, communication and security)
 - Duration from 2006 to 2009
 - Budget: 128.000 Euro
- **FUSION@** (Flexible User and Services Oriented Multi-Agent Architecture)
 - Duration from 2009 to 2010
 - Budget 181.890 Euro

R&D Projects (4 of 5)

PROJECTS : **PROJECTS UNDER EVALUATION**

- **3DMovRA** (3D Platform oriented to guided people in interior with Augmented Reality)
 - Duration from 2011 to 2012
 - Budget: 1.635.212 Euro
- **ADIME** (Help for Medical Diagnosis in in 3D)
 - Duration from 2011 to 2012
 - Budget: 633.700 Euro (USAL)
- **AVANTEII: Electric Car**
 - Duration from 2011 to 2012
 - Budget: 4.000.000 Euro

R&D Projects (5 of 5)

REGIONAL PROJECTS (some of our latest projects are):

- **Agent-based social simulation for incorporating disabled persons into the workforce.**
 - From 2011 to 2012
 - Budget 30.000 Euro
- **Language teaching and evaluation system for the elderly using mobile devices**
 - From 2011 to 2012
 - Budget 12.000 Euro
- Open distributed architectures with agent technology to develop ambient intelligence environments
 - From 2008 to 2010
 - Budget: 12.600 Euro
- Intelligent platform for the Management and Learning within Dependent and Hospital Environments.
 - From 2008 to 2010
 - Budget 11.700 Euro

Education (1 of 3)

MASTERS

Master in e-commerce

<http://master-ecom.usal.es>

- 10 editions, more than 1.500 students.
- 2-year degree



Master in digital animation

<http://animaciondigital.usal.es>

- 5 editions, more than 400 students.
- 2-year degree



Master in TIC

<http://mac-tic.usal.es>

- 4 editions, more than 500 students.
- 1-year degree



Education (1 of 3)

Research Group
Research Lines
R&D Projects
Education
Symposiums
Publications

EDUCATIONAL PROJECTS IN COLLABORATION WITH COMPANIES AND FUNDED BY SPANISH GOVERNMENT

Master in e-commerce (Master D.S.C.E.) - 35 ECTS Credits

- <http://mastercomercioelectronico.net>
- 300 students



Course in Digital Contents - 25 ECTS Credits

- <http://www.certificacioncontenidosdigitales.net>
- 150 students



OTHER MSc AND PhD PROGRAMS

Master Intelligent Systems (Master D.S.E.) - 60 ECTS Credits

- <http://mastersi.usal.es>
- 25 students (course 2010-11)



Education (3 of 3)

Special Courses

- **Professional Certification in security CERTYRED (6 editions)**
- **Course in Mobile technology (10 editions)**
- **Course in CMMI Methodology (2 editions)**
- **Course in JME and MIDP (6 editions)**
- **Course in iOS Programming Framework (4 editions)**
- **Course in chip technology (1 edition)**
- **Course in Web security (110 editions)**
- **Course in Web technology (3 editions)**
- **Course in Android Programming Framework (3 editions)**
- **Course in Windows Phone 7 Programming Framework (2 editions)**
- **Course in Social Networks (2 editions)**

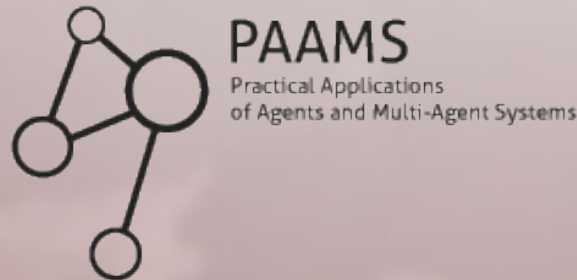
Research Group
Research Lines
R&D Projects
Education
Symposiums
Publications



Symposiums (1 of 2)

Research Group
 Research Lines
 R&D Projects
 Education
Symposiums
 Publications

2012/2013 EVENTS



Symposiums (2 of 2)

LATEST EVENTS

- Prediction and Recognition of Piracy Efforts using Collaborate Human-Centric Information Systems 2011
Organized under the frame of Advance Study Institute (ASI) of the section Science for Peace and Security (SPS) of North Atlantic Treaty Organization (NATO)
- CASON'11 (International Conference on Computational Aspects of Social Networks)
- NaBIC'11 (World Congress on Nature and Biology Inspired Computing)

NEXT EVENTS

- Fusion 2014: 14th International Conference in Infomation Fusion
- Cedi 2016: Congreso Español de Informática

Publications (1 of 2)

Our activities in the last 10 years

JRC	More cited	No JCR	Books	Chapters	LNCS	Conference
69	28 (ISI) 59 (PoP)	42	42	52	114	146

Some reference papers in international journals are:

- **Artificial Intelligence and Computer Sciences**
 - **Distributed AI**
 - Abraham A., Corchado E., Corchado J.M., Hybrid learning machines. Neurocomputing. 2010. Vol. 62, Núm 13-15 Pág: 2729-2730.
 - Bajo J., De Paz J.F., Rodríguez S., González A., Multi-Agent System to Monitor Oceanic Environments. Integrated Computer-Aided Engineering (ICAE) 2010. Vol. 17 , Núm 2 Pág: 131-144.
 - **Case-Based Reasoning Systems Ambient Intelligence / Ambient Assisted Living / e-Health / e-Inclusion**
 - De Paz J.F., Rodríguez S., Bajo J. and Corchado J.M., Mathematical model for dynamic case based planning. International Journal of Computer Mathematics. 2009. Vol 86, núm 10–11, Pág. 1719–1730

Publications (1 of 2)

- **Agents Technology**

- Sara Rodríguez, Vicente Julián, Javier Bajo, Carlos Carrascosa Vicente Botti and Juan M. Corchado, Agent Based Virtual Organization Architecture, Engineering Applications of Artificial Intelligence, Pergamon-Elsevier Science LTD, Vol. 24 (5), pp.895-910 (2011)
- Emilio Corchado, María A. Pellicer, M. L. Borrajo, MOVIH-IDS: A MLHL based method to an Agent-Based Architecture. International Journal of Computer Mathematics, 2009, Vol. 86, Issue 13-15, Pág. 1760-1768,

- **Mobility and Wireless Sensor Networks**

- Dante I. Tapia, Sara Rodríguez & Juan M. Corchado. (2009). A Distributed Ambient Intelligence Based Multi-Agent System for Alzheimer Health Care. Pervasive Computing: Innovations in Intelligent Multimedia and Applications. Aboul-Ella Hassanien, Jemal H.
- Dante I. Tapia, Ricardo S. Alonso, Juan F. De Paz, Carolina Zato and Fernando De la Prieta, A Telemonitoring System for Healthcare Using Heterogeneous Wireless Sensor Networks, International Journal of Artificial Intelligence. 6(S11)

- **Technology Enhanced Learning**

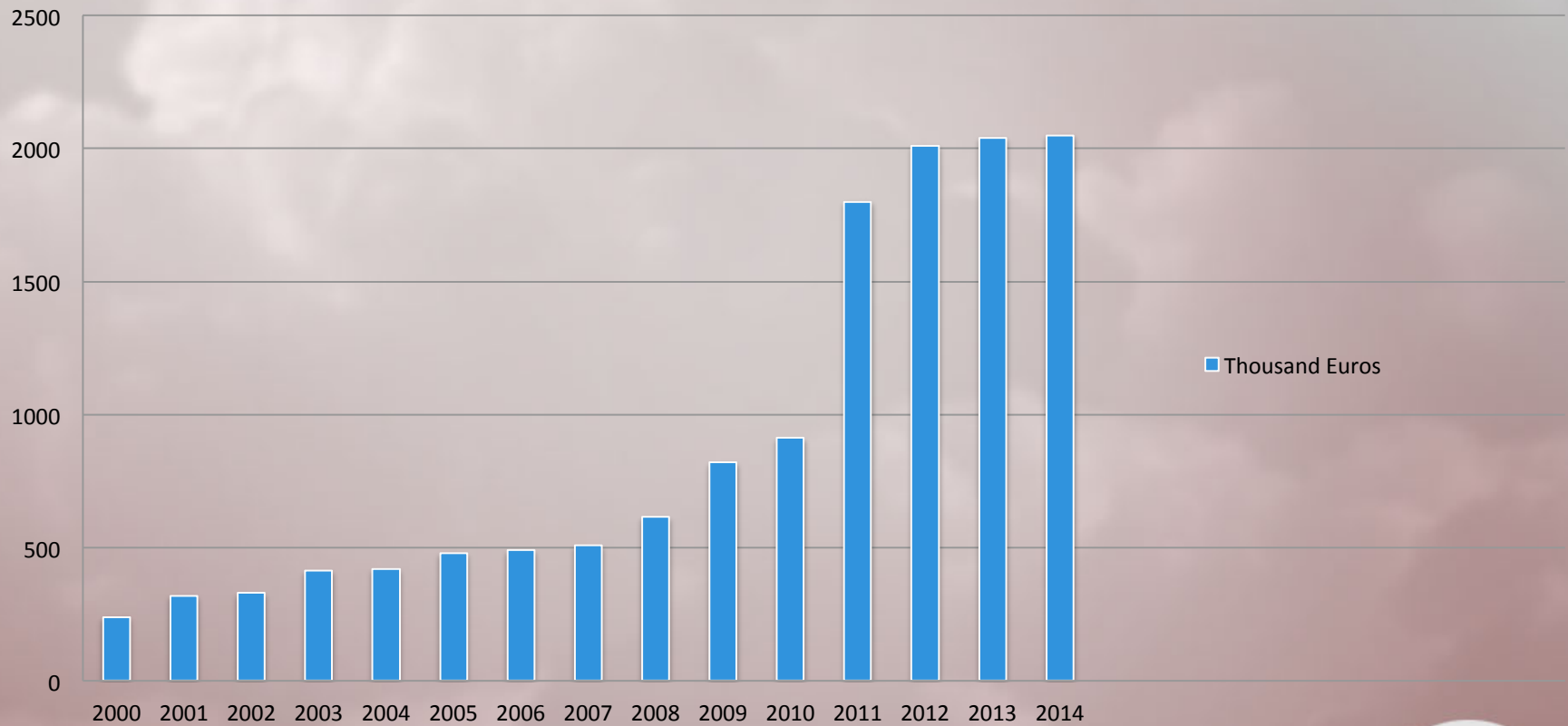
- López V.F., Corchado J., De Paz J.F., Rodríguez S., Bajo J., A SomAgent statistical machine translation, Applied Soft Computing. Vol. 1, Núm 11 Pág: 2925-2933 (2011)

- **Bioinformatics: Analysis and Classification of Microarrays Data**

- Glez-Pena D., Diaz F., Hernandez J.M., Corchado J.M. and Fdez-Riverola F. (2009) geneCBR: a translational tool for multiple-microarray analysis and integrative information retrieval for aiding diagnosis in cancer research. BMC Bioinformatics. 10 (187) In Press. ISSN: 1471-2105.

Dudget

- Research Group
- Research Lines
- R&D Projects
- Education
- Symposiums
- Publications





VNIVERSIDAD
D SALAMANCA

CAMPUS DE EXCELENCIA INTERNACIONAL



DR. JUAN MANUEL CORCHADO | PRINCIPAL INVESTIGATOR



VNIVERSIDAD
D SALAMANCA

Facultad D Ciencias