



BISITE

Bioinformatic, Intelligent Systems and Educational Technology
RESEARCH GROUP

DR. JUAN MANUEL CORCHADO

PRINCIPAL INVESTIGATOR



**UNIVERSIDAD
D SALAMANCA**

Facultad D Ciencias
**UNIVERSIDAD
D SALAMANCA**



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

Members:

- Principal Investigador: **Juan M. Corchado**
- PhD Members: **14**
- PhD Students: **10**
- Engineers: **21**
- Collaborators (Universities, groups or research centres): **11**

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



BIOINFORMATIC, INTELLIGENT SYSTEMS AND EDUCATIONAL TECHNOLOGY: **PRESENT AND FUTURE**

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)

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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.)

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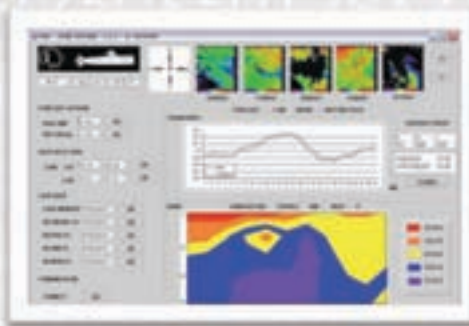
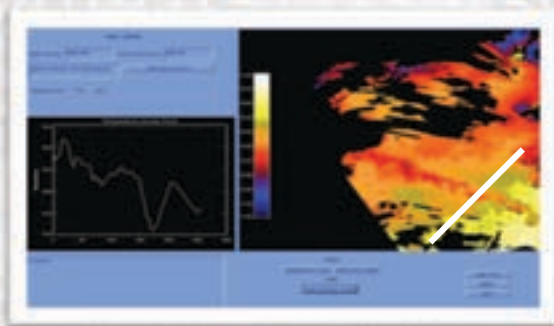
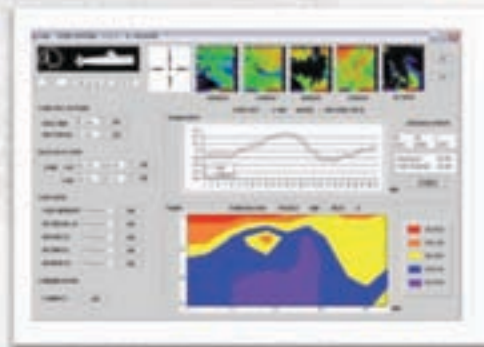
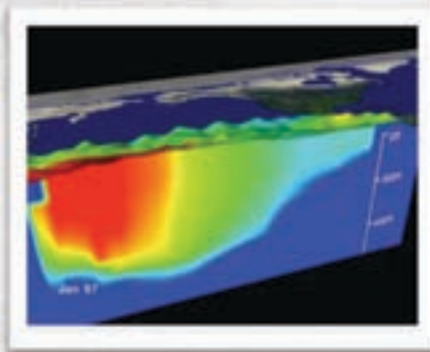
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Research Lines (3 of 10)

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.)

The collage features several key elements: a social media profile for 'BISITE', a pie chart showing data distribution, a software interface with the title 'Tecnología de la Información', a large architectural diagram of an agent-based system with layers for Development Language, Services, Applications, Core Agents, and Programming Language, a line graph showing trends, and a screenshot of a data management application.

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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.).

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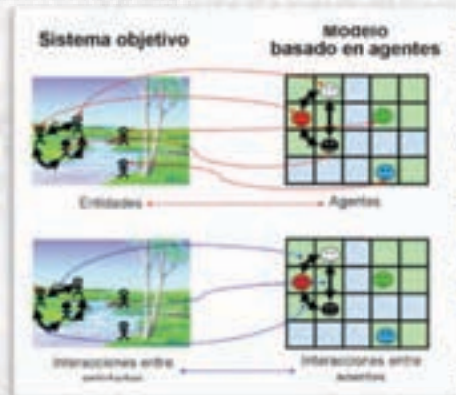
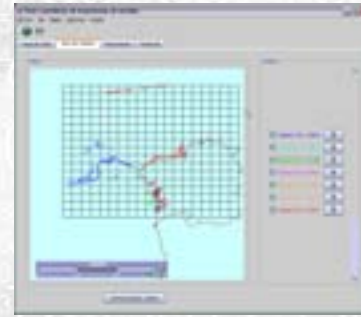
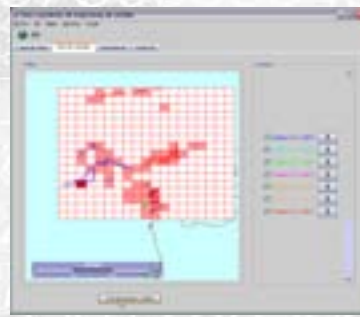
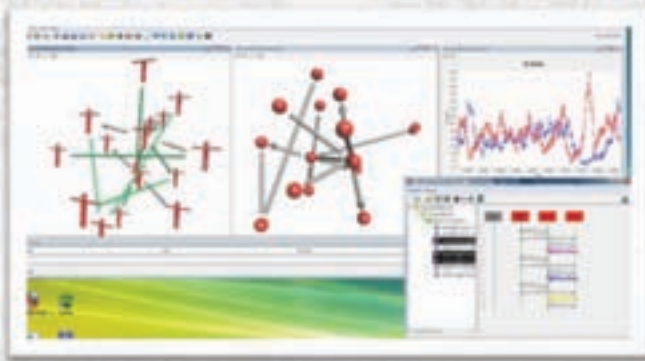
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Agents Technology and Multi-Agent Systems (New models for smart agents. New architectures for advanced open multi-agent systems. Methodologies, tools and mechanisms for multi-agent systems)



BIOINFORMATIC, INTELLIGENT SYSTEMS AND EDUCATIONAL TECHNOLOGY: PRESENT AND FUTURE

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)



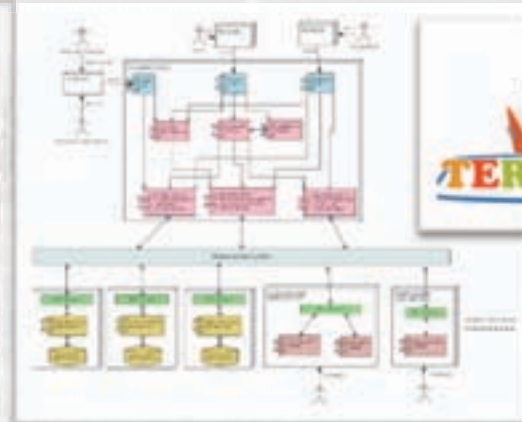
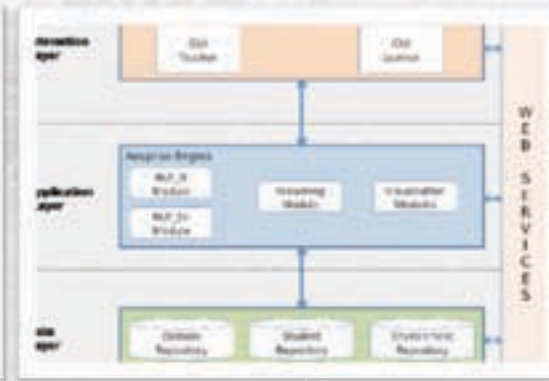
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Technology Enhanced Learning

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



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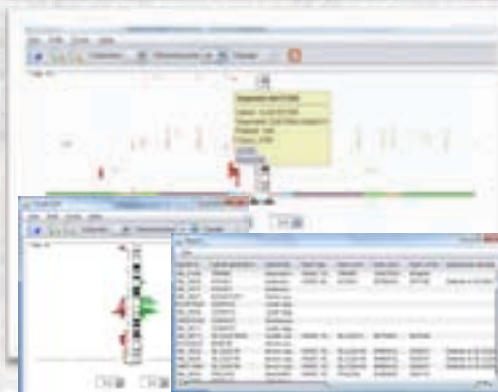
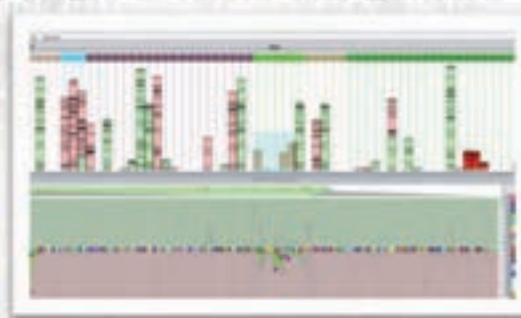
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Bioinformatics: Analysis and Classification of Microarrays data

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

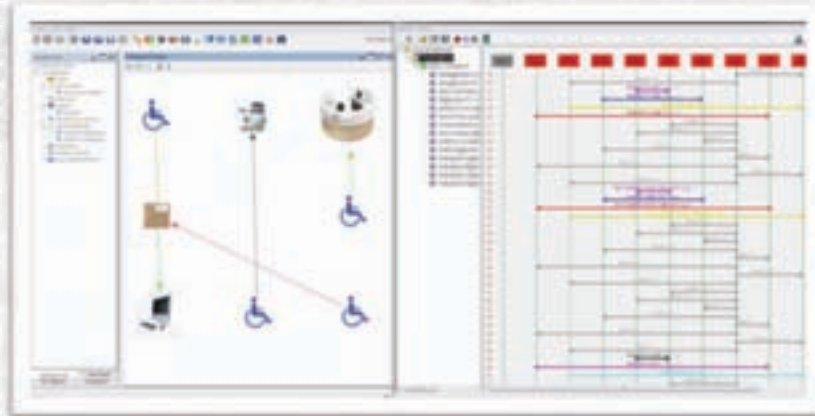
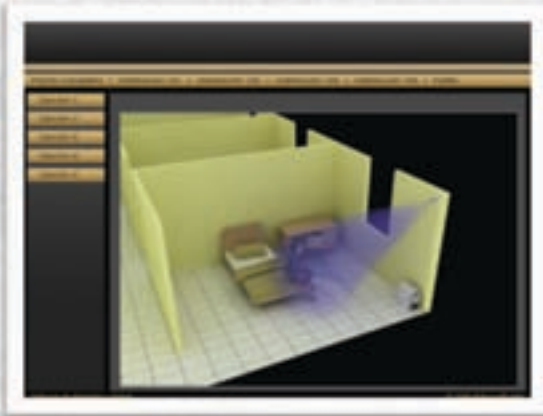


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Research Lines (9 of 10)

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.)



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Distributed Intelligent Control (UABs)



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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.

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R&D Projects (2 of 5)

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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 €

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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

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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

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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

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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



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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)



BIOINFORMATIC, INTELLIGENT SYSTEMS AND EDUCATIONAL TECHNOLOGY: PRESENT AND FUTURE

Education (3 of 3)

Special Courses



Professional Certification in security CERTYRED (5 editions)

Course in Mobile technology (9 editions)

Course in CMMI Methodology (2 editions)

Course in JME and MIDP (6 editions)

Course in iOS Programming Framework (3 editions)

Course in chip technology (1 edition)

Course in Web security (10 editions)

Course in Web technology (2 editions)

Course in Android Programming Framework (2 editions)

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<http://dcai.usal.es>



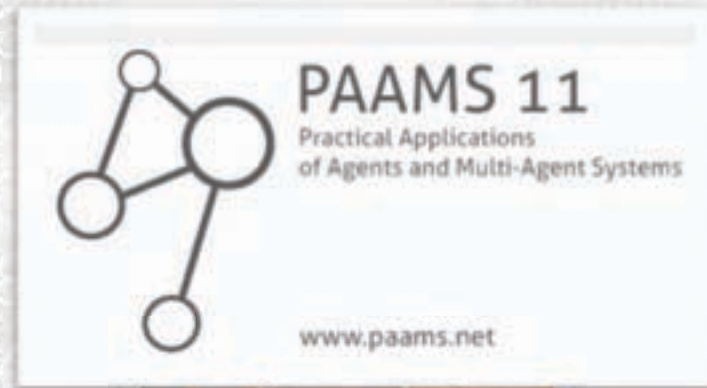
<http://iwpacbb.usal.es>



<http://soco.usal.es>



<http://isami.usal.es>



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Next Events

Prediction and Recognition of Piracy Efforts using Collaborate Human-Centric Information Systems

- Organized under the frame of Advance Study Institute (ASI) of the section Science for Peace and Security (SPS) of North Atlantic Treaty Organization (NATO)
- <http://nato.usal.es>
- September 19-30th, 2011



CASON'11 (International Conference on Computational Aspects of Social Networks)

NaBIC'11 (World Congress on Nature and Biology Inspired Computing)

NWESP'11 (International Conference on Next Generation Web Services Practices)

19-21th October, 2011.

Salamanca (Spain)

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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 (ICAIE) 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

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- **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.

BIOINFORMATIC, INTELLIGENT SYSTEMS AND EDUCATIONAL TECHNOLOGY: PRESENT AND FUTURE



Bioinformatic, Intelligent Systems and Educational Technology
RESEARCH GROUP

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