



**5<sup>th</sup>- 7<sup>th</sup> September 2023 – Salamanca (SPAIN)**



# CONFERENCE PROGRAMME

**18<sup>th</sup> International Conference on Hybrid Artificial Intelligence Systems  
HAIS 2023**

<http://2023.haisconference.eu>

**18<sup>th</sup> International Conference on Soft Computing Models in Industrial and  
Environmental Applications  
SOCO 2023**

<http://2023.sococonference.eu>

**16<sup>th</sup> International Conference on Computational Intelligence in  
Security for Information Systems  
CISIS 2023**

<http://2023.cisisconference.eu>

**14<sup>th</sup> International Conference on European Transnational Education  
ICEUTE 2023**

<http://2023.iceuteconference.eu>



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# WELCOME

HAIS, SOCO, CISIS and ICEUTE series of conferences, are unmissable events in scientific community for those of us who focus our professional and research activity in machine learning, computer science, cybersecurity, education and engineering disciplines.

This year all conferences are jointly held in the historical city of Salamanca and in collaboration with the international event Startup Olé. It is an annual meeting point that allows us to discuss ideas, present results and projects related to this discipline. Throughout these three days we will have a total of 29 sessions with 160 scientific papers and 3 plenary talks of international speakers.

We thank all the participants for their invaluable contribution to this event: the authors of the papers presented, the speakers at the plenary sessions and the Scientific Committee.

Particular thanks go as well to the conference's main sponsors, Startup Olé, the CYLHUB project financed with NEXT-GENERATION funds from the European Union, and channelled by Junta de Castilla y León through the Regional Ministry of Industry, Trade and Employment, BISITE research group at the University of Salamanca, CTC research group at the University of A Coruña, and the University of Salamanca. They jointly contributed in an active and constructive manner to the success of this initiative.

Finally, we would like to welcome the attendees and thank them for their interest in the Conferences. The members of the Organizing Committee have put all our effort into offering a program that provides them with an enriching experience not only through new knowledge and professional ties, but we also want them to discover and enjoy our city through the proposed social activities.

# ORGANIZING COMMITTEE

## General Chair

Emilio Corchado

University of Salamanca, Spain

## Conference Chairs

Emilio Corchado

Héctor Quintián

José Luis Calvo Rolle

Francisco Javier Martínez de Pisón

Pablo García Bringas

Hilda Pérez García

Francisco Martínez Álvarez

Alicia Troncoso Lora

Álvaro Herrero

University of Salamanca, Spain

University of A Coruña, Spain

University of A Coruña, Spain

University of La Rioja, Spain

University of Deusto, Spain

University of León, Spain

University Pablo de Olavide Spain

University Pablo de Olavide Spain

University of Burgos, Spain

## Organizing Committee

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Carlos Cambra

Leticia Curel

Beatriz Gil

Raquel Redondo

Esteban Jove

José Luis Casteleiro Roca

Francisco Zayas Gato

Alvaro Michelena

Miriam Timiraos Díaz

Antonio Javier Díaz Longueira

University of Salamanca, Spain

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University of Burgos, Spain

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University of A Coruña, Spain

## PLENARY SPEAKERS

### SCHEDULE

Speaker	Room	Date	Time
Prof. Hujun Yin	Sala Menor	Wednesday, 6	17.00 - 18.00
Prof. Michał Woźniak	Sala Menor	Thursday, 7	11.30 - 12.30
Prof. Oscar Cordón	Sala Menor	Thursday, 7	17.00 - 18.00



### Prof. Hujun Yin

Prof. Hujun Yin is a Professor of Artificial Intelligence at the University of Manchester. He is also the head of Business Engagement in AI and Data for the Faculty of Science and Engineering. His research areas include AI, machine learning, deep learning, signal/image processing, pattern recognition, time series modelling, bio-/neuro-informatics, and interdisciplinary applications. He has supervised over 30 PhD students and published over 200 peer-reviewed articles. Prof. Yin has received over £5 million funding from UK research councils, EPSRC, BBSRC, Innovate UK and industries across 30 projects. Many of his projects involve industries

and local SMEs in developing cutting edge AI solutions to real-world problems, from recycling automation, precision agriculture to medical diagnosis. He has served or has been serving as an Associate Editor for IEEE Transactions on Neural Networks, IEEE Transactions on Cybernetics, IEEE Transactions on Emerging Topics in Computational Intelligence, and the International Journal of Neural Systems. He has also served as the General Chair or Programme Chair for a number of international conferences in AI, machine learning and data analytics. He is a member of the EPSRC Peer Review College, a senior member of the IEEE, and a Turing Fellow of the Alan Turing Institute.





## Prof. Michał Woźniak

Michał Woźniak is a professor of computer science at the Department of Systems and Computer Networks, Wrocław University of Science and Technology, Poland. His research focuses on machine learning, compound classification methods, classifier ensembles, data stream mining, and imbalanced data processing. Prof. Woźniak has been involved in research projects related to the topics mentioned above and has been a consultant for several commercial projects for well-known Polish companies and public administration. He has published over 350 papers and three books. Prof. Woźniak was awarded numerous prestigious awards for his scientific achievements as IBM Smarter Planet Faculty Innovation Award (twice) or IEEE Outstanding Leadership Award, and several best paper awards of the prestigious conferences.



## Prof. Oscar Cerdón

He was the Founding Director of the Virtual Teaching Center (2001-05) and Delegate of the Rector for the Digital University (2015-19) of the University of Granada (UGR). He was one of the founding researchers of the European Center for Soft Computing (2006-11), later being hired as a Distinguished Affiliated Researcher until December 2015. He is currently a University Professor at the UGR. For more than 25 years, it has promoted research and transfer programs in computational intelligence fundamentals and applications with great international recognition. He has published >380 scientific contributions, including a research book on Genetic Fuzzy Systems and 112 JCR-SCI journal articles, directed 19 doctoral theses and coordinated 37 research projects and contracts. He has been included in the 1% most cited researchers in the world (source: Web of Science); with 14687 citations and H-index=58 in Google Scholar. It also has an international patent pending on an intelligent system for forensic identification, marketed in Mexico and South Africa. He has received the UGR Young Researchers Award (2004), the IEEE CIS Outstanding Early Career Award (in its first edition, 2011), the ARITMEL National Informatics Award (2014) by the Spanish Scientific Society, the IEEE Fellow (2018) and the IFSA Fellow (2019). He was a member of the Group of Experts that developed the Spanish Strategy for R+D+I in Artificial Intelligence for the Ministry of Science, Innovation and Universities (2018-19). He is or has been Associate Editor of 19 international journals, being recognized as Outstanding Associate Editor of IEEE



Transactions on Fuzzy Systems (2008) and IEEE Transactions on Evolutionary Computation (2019). Since 2004, he has held various representative positions at EUSFLAT and IEEE Computational Intelligence Society. He is currently researching artificial intelligence for forensic identification (in collaboration with the Physical Anthropology laboratory of the UGR and various forensic laboratories and international security forces) and agent-based modeling and analysis of social networks for marketing (in collaboration with R0D Brand Consultants in projects for CAPSA, Mercedes, Jaguar-Land Rover, El Corte Inglés, Telefónica, Samsung, Coca Cola Europe, Cola Cao, WiZink,...).



## LOCAL INFORMATION



### The City of Salamanca

Salamanca is a municipality and Spanish city, capital of the province of the same name, located in the autonomous community of Castilla y León. It is located in the region of Campo de Salamanca, in the North Plateau, in the northwest quadrant of the Iberian Peninsula.

Salamanca is an ancient university town situated in the west of Spain in the Autonomous Community of Castilla and León. The Carthaginians first conquered the city in the 3rd century B.C. It then became a Roman settlement before being ruled by the Moors until the 11th century. The university, one of the

oldest in Europe, reached its high point during Salamanca's Golden Age. The city's historic center has important Romanesque, Gothic, Moorish, Renaissance, and Baroque monuments. The Plaza Mayor, with its galleries and arcades, is particularly impressive.



Beginning with the Roman Bridge that spans the River Tormes southwest of the city, numerous structures still testify to the two thousand year-old history of antique Salmantica. The remarkable examples include the Old Cathedral and San Marcos (12th century), the Salina and the Monterrey Palaces (16th century), and above all the Plaza Mayor (1729-1755). But the city owes its most essential features to the University. The remarkable group of buildings in Gothic, Renaissance, and Baroque styles, which, from the 15th to 18th centuries, rose to the institution that proclaimed itself “Mother of Virtues, Sciences, and the Arts” makes Salamanca an exceptional example of

an old university town in the Christian world, such as Oxford and Cambridge.

The Cathedral School of Salamanca existed as far back as the late 12th century. The oldest university building in Salamanca, now the Rectorate, is the old Hospital del Estudio, built in 1413, with the final element of the building programme begun in 1533.



Salamanca provides one of the oldest examples of university facilities conceived as such rather than as colleges. However, the city also boasted many colleges, which were generally charitable institutions with close ties to the University.

Most of these buildings are located in the Old Quarter of the city. However, other monuments, located in the surroundings of the protected core area, are also part of the property. All are magnificent examples of religious architecture belonging to different styles: the Romanesque churches of San Marcos, San Juan de

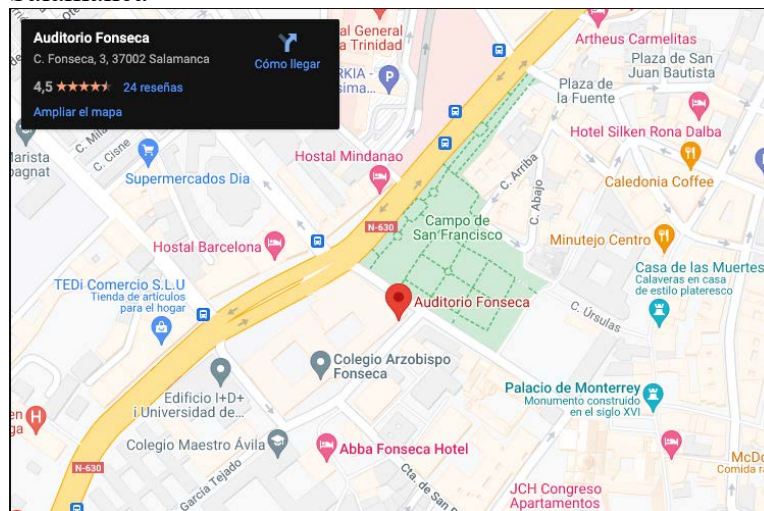
Barbalos, and San Cristóbal, the convents of Las Claras and Santa Teresa, the Gothic-Renaissance church of Sancti Spiritus, and the Colegio de los Irlandeses.

## VENUE

The conference will be held in Auditorium Fonseca.



Auditorio Fonseca  
C. Fonseca, 3, 37002 Salamanca





## VENUE PLANS

B1

Palacio de Congresos.  
**Startup Olé Centre**

B2

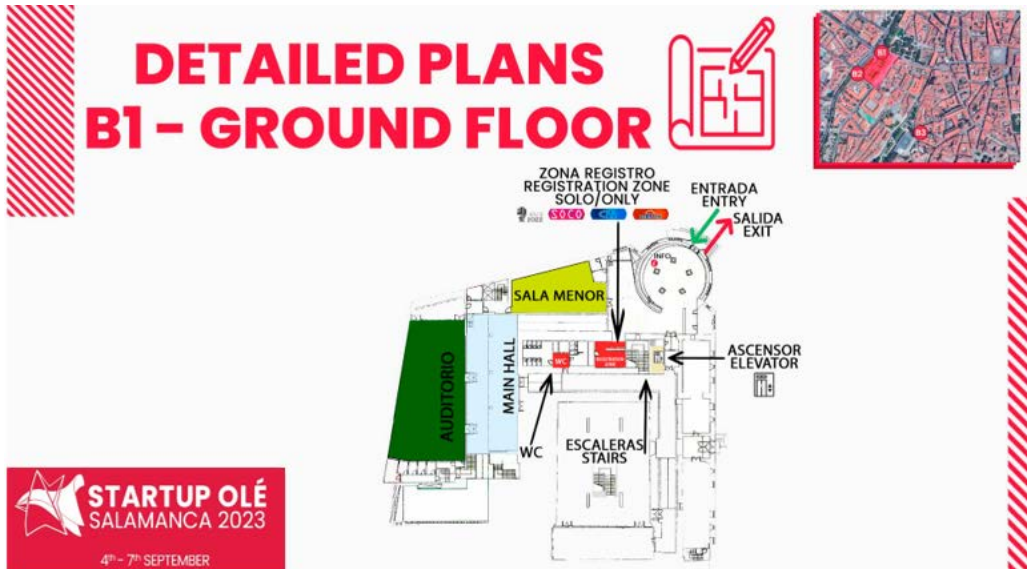
Colegio Arzobispo Fonseca.  
**Lunch/Cocktails**

B3

Hospedería Fonseca.  
**Conference Centre/Coffee**



## Auditorio and Sala Menor



## Aula 1.1 and Aula 1.2



## SOCIAL ACTIVITIES

### STARTUP OLÉ PARTY

SOCIAL PROGRAM

TUESDAY 5<sup>th</sup>

Startup Olé  
Welcome Party

STARTUP OLÉ  
**Party**  
by

CLAUSTRO COLEGIO FONSECA

21:15 hours



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## OPENING STARTUP OLÉ

SOCIAL PROGRAM

WEDNESDAY 6<sup>th</sup>

### Opening Startup Olé

PLENARY TALKS

#Startupole

- Palacio de Congresos: **12:00 hours**



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## STARTUP OLÉ VISIT TO FAIR

SOCIAL PROGRAM

WEDNESDAY 6<sup>th</sup>

### Startup Olé visit to fair

- Palacio de Congresos: **10:30 hours**



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## GALA DINNER

SOCIAL PROGRAM

THURSDAY 7<sup>th</sup>

Lilicook Gastrobar

- C. Espoz y Mina, 22, 37002 Salamanca **21:30 hours**



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# USEFUL INFORMATION

## About the venue

### WIFI

NETWORK: startupole

PASSWORD: salamanca2023

### LUNCH AND COFFEE AREA

- Where: Colegio Fonseca.
- For the lunch: Access controlled by lanyard.



## Useful phone numbers

The international phone number prefix for Spain is +34

Emergency call number (preferred)	112
Police	091
Ambulance	061
Fire brigade	080

Emergency conference contact: **+34 652864324 (Héctor)**

# SCHEDULE

		Sala Menor	Auditorio	Aula 1.1	Aula 1.2			Sala Menor	Auditorio	Aula 1.1	Aula 1.2
5th - TUESDAY		6th - WEDNESDAY				7th - THURSDAY					
		9:00	REGISTRATION (Open all day) Hospedería Fonseca				9:00	REGISTRATION (Open all day) Hospedería Fonseca			
		09:00 - 11:00	H1	H3	S1	S3	09:00 - 11:00	H9		S6	I1
		11:00 - 12:00	H2	H4	S2		11:00 - 11:30	COFFEE BREAK (Coffee Shop Hospedería Fonseca)			
		12:00 - 14:00	STARTUP OLE EVENTS				11:30 - 12:30	PLENARY TALK - Prof. Michał Woźniak (SALA MENOR)			
							12:30 - 14:00	C3	H10	S7	I2
		14:00 - 15:30	NETWORKING COCKTAIL - LUNCH (CLAUSTRO COLEGIO FONSECA)				14:00 - 15:30	LUNCH (SITTING) Fonseca Restaurant			
15:30 - 16:30	C1	H5	S4	H7	15:30 - 17:00	C4	H11	S8	I3		
16:30 - 17:00	OPENING HAIS-SOCO-CISIS-ICEUTE (SALA MENOR)										
17:00 - 19:00	REGISTRATION Hospedería Fonseca	17:00 - 18:00	PLENARY TALK - Prof. Hujun Yin (SALA MENOR)					PLENARY TALK - Prof. Oscar Córdón (SALA MENOR)			
		18:00 - 18:30	COFFEE BREAK (Coffee Shop Hospedería Fonseca)				18:00 - 18:30	COFFEE BREAK (Coffee Shop Hospedería Fonseca)			
		18:30 - 20:30	C2	H6	S5	H8	18:30-20:30	H12		S9	S10
21:15	STARTUP OLÉ PARTY (CONGRESS PARTICIPANTS INVITED) (CLAUSTRO COLEGIO FONSECA)	21:00	COCKTAIL (CLAUSTRO COLEGIO FONSECA)								
							21:30	GALA DINNER Lilicook Gastrobar C. Espoz y Mina, 22, 37002 Salamanca			



## TUESDAY 5<sup>th</sup>

### REGISTRATION

*Date: 5th -TUESDAY, Time: 17:00 - 19:00 Room: Hospedería Fonseca*

### STARTUP OLÉ PARTY

*Date: 5th - TUESDAY, Time: 21:15*

*Room: Colegio Fonseca (Claustro)*



## WEDNESDAY 6<sup>th</sup>

### **HAIS Session: H1 – Anomaly and Fault Detection**

*Date: 6th - WEDNESDAY, Time: 09:00 - 11:00    Room: Sala Menor*

*Chair: Álvaro Michelena*

H1 – Anomaly and Fault Detection		
Id paper	TITLE	Authors
1322	One-Class Reconstruction Methods for Categorizing DoS Attacks on CoAP	Álvaro Michelena Grandío, Antonio Díaz-Longueira, Miriam Timiraos, Esteban Jove, José Aveleira Mata, Isaias Garcia, Maria Teresa Garcia-Ordas, Jose Luis Calvo-Rolle and Hector Alaiz Moreton
2735	Application of anomaly detection models to malware detection in the presence of concept drift	David Escudero García and Noemí Decastro-García
4655	Identification of anomalies in urban sound data with Autoencoders	Laura Melgar-García, Maryam Hosseini and Alicia Troncoso
9123	Revisiting Histogram Based Outlier Scores: Strengths and Weaknesses	Ignacio Aguilera-Martos, Julián Luengo and Francisco Herrera

### **HAIS Session: H3 – Biomedical Applications**

*Date: 6th - WEDNESDAY, Time: 09:00 - 11:00    Room: Auditorio*

*Chair: Enrique Antonio De La Cal*

H3 – Biomedical Applications		
Id paper	TITLE	Authors
5971	Convolutional Neural Networks for Diabetic Retinopathy Grading from iPhone Fundus Images	Samuel Lozano-Juárez, Nuria Velasco-Pérez, Ian Roberts, Jeronimo Bernal, Nuño Basurto, Daniel Urda and Álvaro Herrero
1287	Risk factors and survival after premature hospital readmission in frail subjects with delirium	Guillermo Cano, Manuel Graña and Ariadna Besga
3437	Generalizing an Improved GrowCut Algorithm for Mammography Lesion Detection	Cristiana Moroz-Dubenco, Laura Diosan and Anca Andreica
4326	Coherence of COVID-19 mortality of Spain versus western European countries	Goizalde Badiola, Manuel Graña and Jose Manuel Lopez-Guede
5639	A Feature Selection and Association Rule Approach to Identify Genes Associated with Metastasis and Low Survival in Sarcoma	M. Lourdes Linares-Barrera, María Martínez-Ballesteros, José M. García-Heredia and José. C. Riquelme Santos

5686	Analysis of Frequency Bands in Electroencephalograms for Automatic Detection of Photoparoxysmal Responses	Fernando Moncada Martins, Victor Manuel González Suárez, José Ramón Villar Flecha, Beatriz García López and Ana Isabel Gómez Menéndez
6451	Textural and shape features for lesion classification in mammogram analysis	Adél Bajcsi and Camelia Chira
7785	Intent Recognition using Recurrent Neural Networks on Vital Sign Data: A Machine Learning Approach	Samson Mihirette, Qing Tan and Enrique Antonio De La Cal Marin

### **SOCO Session: S1 – Special Session on Soft Computing Methods in Manufacturing and Management Systems**

*Date: 6th - WEDNESDAY, Time: 09:00 - 11:00 Room: Aula 1.1*

*Chair: Aleksander Gwiazda and Damian Krenczyk*

#### **S1 - Special Session on Soft Computing Methods in Manufacturing and Management Systems**

<b>Id paper</b>	<b>TITLE</b>	<b>Authors</b>
1120	Digital twins of production systems based on discrete simulation and machine learning algorithms	Damian Krenczyk
2543	Edge architecture for the integration of soft models based Industrial AI control into Industry 4.0 Cyber-Physical Systems	Ander Garcia, Telmo Fernandez, Juan Luis Ferrando, Xabier Oregui, and Zelmar Etxegoyen
5776	The use of line simplification and vibration suppression algorithms to improve the quality of determining the indoor location in RTLs	Grzegorz Ćwikła and Tomasz Lorenz
9970	Possibilities of decision support in organizing production processes	Małgorzata Olender-Skóra and Aleksander Gwiazda
833	Application of fuzzy logic to the risk assessment of production machines failures	Dagmara Łapczyńska and Anna Burduk

### **SOCO Session: S3 – Soft Computing Applications**

*Date: 6th - WEDNESDAY, Time: 09:00 - 11:00 Room: Aula 1.2*

*Chair: Dragan Simić*

#### **S3 - Soft Computing Applications**

<b>Id paper</b>	<b>TITLE</b>	<b>Authors</b>
3587	Comparative study of regression models applied to the prediction of energy generated by a micro wind turbine	Antonio Díaz-Longueira, Miriam Timiraos Díaz, Álvaro Michelena Grandío, Francisco Zayas-Gato, José-Luis Casteleiro-Roca,

		Esteban Jove, Héctor Quintián, Dragan Simić and Jose Luis Calvo-Rolle
4270	Comparative study of wastewater treatment plant feature selection for COD prediction	Miriam Timiraos Díaz, Antonio Diaz-Longueira, Álvaro Michelena Grandío, Francisco Zayas-Gato, José-Luis Casteleiro-Roca, Esteban Jove, Héctor Quintián, Oscar Fontenla-Romero and Jose Luis Calvo-Rolle
5404	Machine Learning based system for detecting battery state-of-health	Álvaro Michelena Grandío, Antonio Diaz-Longueira, Miriam Timiraos Díaz, Francisco Zayas-Gato, Héctor Quintián, Natalia Prieto Fernández, Héctor Alaiz-Moretón, Jose Luis Calvo-Rolle, and Maria Teresa García
6749	Leveraging Smart Meter Data for Adaptive Consumer Profiling	Ana González, Ana M. Bernardos, Carlos J. Gallego and José Ramón Casar
8181	Managing Pandemics through agent-based simulation: a Case Study based on COVID-19	César Alberte, David Carramiñana, Ana M. Bernardos and Juan A. Besada
2306	Hyperspectral technology for oil spills detection by using artificial neural network classifier	María Gema Carrasco García, María Inmaculada Rodríguez García, Javier González Enrique, Paloma Rocío Cubillas Fernández, Juan Jesús Ruiz Aguilar and Ignacio José Turias Domínguez
8565	Missing Values Imputation for Visualizing the Air Quality Evolution during the COVID-19 Pandemic in Madrid	Angel Arroyo, Beatriz Gil-Arroyo, Daniel Urda, Carlos Cambra, and Álvaro Herrero
3587	Comparative study of regression models applied to the prediction of energy generated by a micro wind turbine	Antonio Díaz-Longueira, Miriam Timiraos Díaz, Álvaro Michelena Grandío, Francisco Zayas-Gato, José-Luis Casteleiro-Roca, Esteban Jove, Héctor Quintián, Dragan Simić and Jose Luis Calvo-Rolle

## **H AIS Session: H2 – Agents and Multiagents**

*Date: 6th - WEDNESDAY, Time: 11:00 - 11:30      Room: Sala Menor*

*Chair: Álvaro Michelena*

<b>H2 - Agents and Multiagents</b>		
<b>Id paper</b>	<b>TITLE</b>	<b>Authors</b>
318	Monte-Carlo Tree Search for Multi-Agent Pathfinding: Preliminary Results	Yelisey Pitanov, Alexey Skrynnik, Anton Andreychuk, Konstantin Yakovlev and Aleksandr I. Panov
1218	The Problem of Concept Learning and Goals of Reasoning in Large Language Models	Anfisa A. Chuganskaya, Alexey K. Kovalev and Aleksandr I. Panov

1778	Multi-Agent System for Multimodal Machine Learning Object Detection	Eduardo Coelho, Nuno Pimenta, Hugo Peixoto, Dalila Durães, Pedro Melo, Víctor Alves, Lourenço Bandeira, José Machado and Paulo Novais
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### **HAIS Session: H4 – Image and Speech Signal Processing**

*Date: 6th - WEDNESDAY, Time: 11:00 - 11:30 Room: Auditorio*

*Chair: Enrique Antonio De La Cal*

<b>H4 – Image and Speech Signal Processing</b>		
<b>Id paper</b>	<b>TITLE</b>	<b>Authors</b>
286	Adapting YOLOv8 as a vision-based animal detection system to facilitate herding	Virginia Riego Del Castillo, Juan Felipe García Sierra and Lidia Sánchez-González
2668	Image classification understanding with Model Inspector tool	Flávio Santos, Maynara Donato de Souza, Pedro Oliveira, Leonardo Nogueira Matos, Paulo Novais and Cleber Zanchettin
4454	Study on Synthetic Video Generation of Embryo Development	Pedro Celard, Adrián Seara Vieira, José Manuel Sorribes-Fdez, Rubén Romero González, Eva Lorenzo Iglesias and Lourdes Borrajo Diz
9141	Image reconstruction using Cellular Automata and Neural Networks	Mihai-Adrian Loghin and Anca-Mirela Andreica

### **SOCO Session: S2 – Special Session on Technological Foundations and Advanced Applications of Drone Systems**

*Date: 6th - WEDNESDAY, Time: 11:00 - 11:30 Room: Aula 1.1*

*Chair: Juan Pedro Llerena Caña*

<b>S2 - Special Session on Technological Foundations and Advanced Applications of Drone Systems</b>		
<b>Id paper</b>	<b>TITLE</b>	<b>Authors</b>
2434	Level 3 Data Fusion: Course of Action and Scenario Estimation	Alan N. Steinberg
4157	Image classification using Contrastive Language-Image Pre-training: Application to aerial views of power line infrastructures	Adrián Losada, Ana M. Bernardos and Juan Besada
4731	A realistic UAS traffic generation tool to evaluate and optimize U-Space airspace capacity.	Daniel Raposo, David Carramiñana, Juan Besada and Ana Bernardos
7176	UAV airframe classification using acceleration spectrograms	David Sanchez Pedroche, Francisco Fariña Salguero, Daniel Amigo, Jesus Garcia and Jose M. Molina

7656	Tuning process noise in INS/GNSS fusion for drone navigation based on evolutionary algorithms	Juan Pedro Llerena, Jesús García, Jose Manuel Molina and Daniel Arias
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<b><u>STARTUP OLÉ EVENTS</u></b>		
<i>Date: 6th - WEDNESDAY, Time: 12:00 - 14:00</i>		

<b><u>NETWORKING COCKTAIL - LUNCH</u></b>		
<i>Date: 6th - WEDNESDAY, Time: 14:00 - 15:30      Room: Colegio Fonseca (Claustro)</i>		

### **CISIS Session: C1 - CISIS Applications**

*Date: 6th - WEDNESDAY, Time: 15:30 - 16:30      Room: Sala Menor*

*Chair: Amparo Fuster-Sabater*

<b>C1 - CISIS Applications</b>		
<b>Id paper</b>	<b>TITLE</b>	<b>Authors</b>
3272	Accountability & explainability in robotics: a proof of concept for ROS 2- and Nav2-based mobile robots	Laura Fernández-Becerra, Miguel Ángel González-Santamarta, David Sobrín-Hidalgo, Ángel Manuel Guerrero-Higueras, Francisco J. Rodríguez Lera and Vicente Matellán Olivera
3605	Reducing the security margin against a differential attack in the TinyJambu cryptosystem	Amparo Fuster-Sabater and María Eugenia Pazo-Robles
7714	Fuzzing Robotic Software using HPC	Francisco Borja Garnelo Del Rio, Francisco J Rodríguez Lera, Camino Fernández and Vicente Matellan Olivera

### **HAIS Session: H5 – Deep Learning**

*Date: 6th - WEDNESDAY, Time: 15:30 - 16:30      Room: Auditorio*

*Chair: Francisco Martínez-Álvarez*

<b>H5 – Deep Learning</b>		
<b>Id paper</b>	<b>TITLE</b>	<b>Authors</b>
1265	A New Hybrid CNN-LSTM for Wind Power Forecasting in Ethiopia	Ejigu Tefera, María Martínez Ballesteros, Alicia Troncoso and Francisco Martínez-Álvarez
4132	Companion Classification Losses for Regression Problems	Aitor Sánchez-Ferrera and Jose R. Dorronsoro



5900	Analysis of transformer model applications	María Isabel Cabrera Bermejo, María José Del Jesus, Antonio Jesús Rivera, David Elizondo, F. Charte and María Dolores Pérez Godoy
5933	Real-time Workflow Scheduling in Cloud with Recursive Neural Network and List Scheduling	Vahab Samandi, Peter Tino and Rami Bahsoon

### **SOCO Session: S4 – Machine Learning and Computer Vision in Industry 4.0**

*Date: 6th - WEDNESDAY, Time: 15:30 - 16:30 Room: Aula 1.1*

*Chair: Enrique Dominguez, Jose Garcia Rodriguez and Ramon Moreno Jiménez*

#### **S4 – Machine Learning and Computer Vision in Industry 4.0**

<b>Id paper</b>	<b>TITLE</b>	<b>Authors</b>
7861	Accurate Estimation of Parametric Models of the Human Body from 3D Point Clouds	Nahuel E. Garcia-D'Urso, Jorge Azorin-Lopez and Andres Fuster-Guillo
8815	Lightweight Cosmetic Contact Lens Detection System for Iris Recognition at a Distance	Adrián Romero-Garcés, Camilo Ruiz-Beltrán, Rebeca Marfil and Antonio Bandera
9843	Vehicle warning system based on road curvature effect using CNN and LSTM neural networks	Felipe Barreno Herrera, Matilde Santos and Manuel Romana
4798	Defect Detection in Batavia Woven Fabrics by means of Convolutional Neural Networks	Nuria Velasco-Pérez, Samuel Lozano-Juárez, Beatriz Gil-Arroyo, Juan Marcos Sanz, Nuño Basurto, Daniel Urda and Álvaro Herrero

### **HAIS Session: H7 – Evolutionary Computation and Optimization**

*Date: 6th - WEDNESDAY, Time: 15:30 - 16:30 Room: Aula 1.2*

*Chair: Francisco Javier Martinez-de-Pison*

#### **H7 - Evolutionary Computation and Optimization**

<b>Id paper</b>	<b>TITLE</b>	<b>Authors</b>
5564	Enhancing Evolutionary Optimization Performance under Byzantine Fault Conditions	Carlos Cotta
227	A hybrid based genetic algorithm for solving the clustered generalized traveling salesman problem	Ovidiu Cosma, Petrica Pop and Laura Cosma
740	Efficient Simulation of Pollutant Dispersion using Machine Learning	Guido F. M. G. Carvalho, Douglas Corrêa, David A. Pelta, Diego C. Knupp and Antônio J. Silva Neto

#### **OPENING HAIS-SOCO-CISIS-ICEUTE**

*Date: 6th - WEDNESDAY, Time: 16:30 – 17:00 Room: Sala Menor*



Chair: Emilio Corchado



**PLENARY TALK**

Date: 6th - WEDNESDAY, Time: 17:00 – 18:00    Room: Sala Menor

Plenary: Prof. Hujun Yin



**COFFEE BREAK**

Date: 6th - WEDNESDAY, Time: 18:00 - 18:30    Room: Hospedería Fonseca (Coffee shop)

**CISIS Session: C2 - Special Session on New methods and models to study the Spread of Malware and Fake News**

6th - WEDNESDAY, Time: 18:30 - 20:30    Room: Sala Menor

Chair: Ángel Martín del Rey

**C2 - Special Session on New methods and models to study the Spread of Malware and Fake News**

Id paper	TITLE	Authors
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596	Finding and removing infected T-trees in IoT networks	Marcos Severt Silva, Roberto Casado-Vara, Angel Martin Del Rey, Esteban Jove, Héctor Quintián and Jose Luis Calvo-Rolle
3098	Critical analysis of global models for malware propagation on wireless sensor networks	Angel Martin Del Rey, Elisa Frutos Bernal, Raquel Macias Maldonado, and Mercedes Maldonado Cordero
5318	Benchmarking Classifiers for DDoS Attack Detection in Industrial IoT Networks	Marcos Severt Silva, Roberto Casado-Vara, Angel Martin Del Rey, Nuño Basuerto, Daniel Urda and Álvaro Herrero
6133	A Q-learning based method to simulate the propagation of APT malware	Jose Diamantino Hernández Guillén and Ángel Martín del Rey
8321	On the statistical analysis of an individual-based SI model for malware propagation on WSNs	Elisa Frutos-Bernal, Ángel Martín del Rey and Miguel Rodríguez-Rosa
8565	Stability analysis of a stochastic malware diffusion SEIR model	Samir Llamazares-Elías and Ángel Tocino
5910	QuantumSolver Composer: Automatic Quantum Transformation of Classical Circuits	Daniel Escanez-Exposito and Pino Caballero-Gil

## **HAIS Session: H6 - Deep Learning**

*6th - WEDNESDAY, Time: 18:30 - 20:30 Room: Auditorio*

*Chair: Francisco Martínez-Álvarez*

<b>H6 –Deep Learning</b>		
<b>Id paper</b>	<b>TITLE</b>	<b>Authors</b>
6003	Robust Losses in Deep Regression	Adrián Rubio and Jose Dorronsoro
6338	Structure Learning in Deep Multi-Task Models	Carlos Ruiz, Carlos Alaíz and José Dorronsoro
7366	Validating by Deep Learning an Efficient Method for Genomic Sequence Analysis: Genomic Spectrograms	Ana Guerrero-Tamayo, Borja Sanz Urquijo, Concepción Casado, María-Dolores Moragues Tosantos, Isabel Olivares and Iker Pastor-López
7368	Sentiment Analysis for Vietnamese – Based Hybrid Deep Learning Models	Cach N. Dang, María N. Moreno-García, Fernando De la Prieta, Kien V. Nguyen and Vuong M. Ngo
7953	Optimizing LIME explanations using REVEL Metrics	Ivan Sevillano-Garcia, Julian Luengo and Francisco Herrera
8614	Assessing the Impact of Noise on Quantum Neural Networks: An Experimental Analysis	Erik Bernardo Terres Escudero, Danel Arias Alamo, Oier Mentxaka Gómez and Pablo García Bringas
9433	Varroa mite detection using deep learning techniques	Jose Divasón, Francisco Javier Martínez de Pisón Ascacibar, Ana Romero, Pilar Santolaria and Jesús L. Yániz

### **SOCO Session: S5 - Machine Learning and Computer Vision in Industry 4.0**

*6th - WEDNESDAY, Time: 18:30 - 20:30 Room: Aula 1.1*

*Chair: Enrique Dominguez, Jose Garcia Rodriguez and Ramon Moreno Jiménez*

#### **S5 - Machine Learning and Computer Vision in Industry 4.0**

<b>Id paper</b>	<b>TITLE</b>	<b>Authors</b>
861	A Deep Learning Ensemble for Ultrasonic Weld Quality Control	Ramón Moreno, Jose Maria San Juan, Miguel Del Rio, Revanth Muthselvam and Ting Wang
1417	Indoor Scenes Video Captioning	Javier Rodriguez, David Ortiz-Perez, Jose Garcia-Rodriguez, David Tomas and Grzegorz J. Nalepa
1789	A multimodal Dataset to create manufacturing Digital Twins	David Alfaro, Mauricio Zamora, Hanzel Grillo, José García and Jorge Azorín
2097	A Modified Loss Function Approach for Instance Segmentation Improvement and Application in Fish Markets	Alejandro Galán-Cuenca, Nahuel García-d'Urso, Pau Climent-Pérez, Andrés Fuster-Guilló and Jorge Azorín-López
2139	Parallel processing applied to object detection with a Jetson TX2 embedded system	Jesus Benito-Picazo, José David Fernández-Rodríguez, Enrique Dominguez, Esteban José Palomo and Ezequiel López-Rubio
4207	Deep Learning-based emotion detection in Aphasia patients	David Ortiz-Perez, Pablo Ruiz-Ponce, Javier Rodríguez-Juan, David Tomas Diaz, Jose Garcia-Rodriguez and Grzegorz J. Nalepa
5512	An Image Mosaicing-Based Method for Bird Identification on Edge Computing Devices	Dmitrij Teterja, Jose Garcia-Rodriguez, Jorge Azorin Lopez, Esther Sebastian-Gonzalez, Rita Elise van der Walt and MJ Booysen
6431	HoloDemtect: a mixed reality framework for cognitive stimulation through interaction with objects	David Mulero Perez, Manuel Benavent-Lledo, Jose Garcia-Rodriguez, Jorge Azorin Lopez and Flores Vizcaya Moreno

### **HAIS Session: H8 – Evolutionary Computation and Optimization**

*6th - WEDNESDAY, Time: 18:30 - 20:30 Room: Aula 1.2*

*Chair: Francisco Javier Martinez-de-Pison*

#### **H8 – Evolutionary Computation and Optimization**

<b>Id paper</b>	<b>TITLE</b>	<b>Authors</b>
1009	Hybrid Intelligent Parsimony Search in Small High-dimensional Datasets	Jose Divasón, Alpha Pernia-Espinoza, Ana Romero and Francisco Javier Martinez-de-Pison

1954	An integer linear programming model for team formation in the classroom with constraints	Gonzalo Candel, Victor Sanchez-Anguix, Juan M. Alberola, Vicente Julian and Vicent Botti
3156	Improved Evolutionary Approach for Tuning Topic Models with Additive Regularization	Maria Khodorchenko, Nikolay Butakov and Denis Nasonov
4767	Time of Arrival error characterization for precise indoor localization of Autonomous Ground Vehicles	Rubén Álvarez, Rubén Ferrero Guillén, Paula Verde, Alberto Maartinez Gutiérrez, Javier Díez-González and Hilde Perez
5697	Feature Selection based on a Decision Tree Genetic Algorithm	Mihai Suciu and Rodica Ioana Lung
6666	Exact and Heuristic Lexicographic Methods for the Fuzzy Traveling Salesman Problem	Boris Pérez-Cañedo, Pavel Novoa-Hernández, David A. Pelta and José Luis Verdegay
8984	A Novel Genetic Algorithm with Specialized Genetic Operators for Clustering	Hermes Robles-Berumen, Amelia Zafra and Sebastián Ventura
6459	The Analysis of Hybrid Brain Storm Optimisation Approaches in Feature Selection	Dragan Simić, Zorana Banković, José R. Villar, José Luis Calvo-Rolle, Svetislav D. Simić and Svetlana Simić

### COCKTAIL

*Date: 6th - WEDNESDAY, Time: 21:00      Room: Colegio Fonseca (Claustro)*

# THURSDAY 7<sup>th</sup>

## **HAIS Session: H9 – HAIS Applications**

7th -THURSDAY, Time: 09:00 - 11:00      Room: Sala Menor

Chair: Sung-Bae Cho

H9 – HAIS Applications		
Id paper	TITLE	Authors
829	Supporting Emotion Recognition in Human-Robot Interactions: An Experimental Italian Textual Dataset	Antonino Asta, Alfredo Cuzzocrea, Alessia Fantini, Giovanni Pilato and Pablo García Bringas
2119	Hybrid Intelligent Control for Maximum Power Point Tracking of a Floating Wind Turbine	Eduardo Muñoz-Palomeque, J. Enrique Sierra-García and Matilde Santos
2485	Statistical Dialog Tracking and Management for Task-oriented Conversational Systems	David Griol and Zoraida Callejas
3228	A Causally Explainable Deep Learning Model with Modular Bayesian Network for Predicting Electric Energy Demand	Seok-Jun Bu and Sung-Bae Cho
4028	Using Large Language Models for Interpreting Autonomous Robots Behaviors	Miguel Á. González Santamarta, Laura Fernández Becerra, David Sobrín Hidalgo, Ángel Manuel Guerrero-Higueras, Irene González-Fernández and Francisco J Rodríguez Lera
4306	Comparative analysis of intelligent techniques for categorization of the operational status of LiFePo4 batteries	Antonio Díaz-Longueira, Álvaro Michelena Grandío, Miriam Timiraos Díaz, Francisco Zayas-Gato, Héctor Quintián, Carmen Benavides Cuellar, Héctor Alaiz-Moretón, Jose Luis Calvo-Rolle and María Teresa García-Ordás

## **SOCO Session: S6 - Special Session on Time Series Forecasting in Industrial and Environmental Applications**

Date: 7th - THURSDAY, 09:00 - 11:00      Room: Aula 1.1

Chair: José Francisco Torres Maldonado

S6 - Special Session on Time Series Forecasting in Industrial and Environmental Applications		
Id paper	TITLE	Authors
4515	Feature Selection Guided by CVOA Metaheuristic for Deep Neural Networks: Application to Multivariate Time Series Forecasting	Manuel Jesús Jiménez Navarro, Camilo Ernesto Restrepo-Estrada, Laura Melgar-García and David Gutiérrez-Avilés

5744	Neuroevolutionary Transfer Learning for Time Series Forecasting	Aymeric Vellinger, Jose Francisco Torres Maldonado, Federico Divina and Wim Vanhoof
6423	Machine Learning Approaches for Predicting Tree Growth Trends based on Basal Area Increment	Pablo Casas-Gómez, Francisco Martínez-Álvarez, Alicia Troncoso and Juan Carlos Linares-Calderón
6856	Forecasting Greenhouse Temperature using Machine Learning Models: Optimizing Crop Production in Andalucia	Belén Vega-Márquez, Juan Pardo-Martínez, María del Mar Villegas-Oliva and José C. Riquelme
7103	Deep Learning and Metaheuristic for Multivariate Time-Series Forecasting	Francesco Zito, Vincenzo Cutello and Mario Pavone
7123	An Approach to Enhance Time Series Forecasting by Fast Fourier Transform	F. Javier Galán-Sales, Pablo Reina-Jiménez, Manuel Carranza-García and José María Luna-Romera
8364	Comparative study of open source database management systems to enable predictive maintenance of Autonomous Guided Vehicles	Gonzalo Burgos de la Hera, Jesús Enrique Sierra García and Bruno Baruque Zanón
8479	Integrated forecast and optimization for retailer allocation in a two-echelon inventory system	Vittorio Maniezzo and Tingting Zhou

### **ICEUTE Session: I1 – General Track**

*Date: 7th - THURSDAY, 09:00 - 11:00      Room: Aula 1.2*

*Chair: Juan M. Alberola*

<b>I1 – General Track</b>		
<b>Id paper</b>	<b>TITLE</b>	<b>Authors</b>
307	Modelling and simulation of wind energy systems: learning-by-doing in a master's course	Lía García and Matilde Santos
3643	Personalised Recommendations and Profile Based Re-Ranking Improve Distribution of Student Opportunities	Čeněk Žid, Pavel Kordík and Stanislav Kuznetsov
3747	AIM@VET: tackling equality on employment opportunities through a formal and open curriculum about AI	Abraham Prieto García, Sara Guerreiro Santalla and Francisco Bellas Bouza
3753	System identification and emulation of a physical level control plant using a low cost embedded system	Daniel Méndez-Busto, Antonio Díaz-Longueira, Álvaro Michelena, Míriam Timiraos, Francisco Zayas-Gato, Esteban Jove, Elena Arce and Héctor Quintián
7575	A simulation platform for testing negotiation strategies and artificial intelligence in higher education courses	Adrián Heras, Juan M. Alberola, Victor Sanchez-Anguix, Vicente Julian and Vicent Botti



### **COFFEE BREAK**

*Date: 7th - THURSDAY, Time: 11:00 - 11:30*

*Room: Hospedería Fonseca (Coffee shop)*

### **PLENARY TALK**

*Date: 7th - THURSDAY, Time: 11:30 - 12:30*

*Room: Sala Menor*

*Plenary: Prof. Michał Woźniak*



### **CISIS Session: C3 – Intrusion and Fault Detection**

*Date: 7th - THURSDAY, 12:30 - 14:00*

*Room: Sala Menor*

*Chairs: Jose Luis Calvo Rolle*

#### **C3 – Intrusion and Fault Detection**

<b>Id paper</b>	<b>TITLE</b>	<b>Authors</b>
666	Intrusion Detection and Prevention in Industrial Internet of Things: A Study	Nicholas Jeffrey, Qing Tan and José Ramón Villar
3107	A novel method for failure detection based on real-time systems identification	Álvaro Michelena Grandío, Antonio Díaz-Longueira, Miriam Timiraos Díaz, Héctor Quintián, Oscar Fontenla-Romero and Jose Luis Calvo-Rolle
5160	Systematic literature review of methods used for SQL injection detection based on intelligent algorithms	Juan José Navarro-Cáceres, Ignacio Samuel Crespo-Martínez, Adrián Campazas-Vega and Ángel Manuel Guerrero-Higueras
5511	Impact of Keep-Alive Parameter on SQL Injection Attack Detection in Network Flow Data	Ignacio Samuel Crespo Martínez, Adrián Campazas Vega, Angel Manuel Guerrero Higueras, Claudia Álvarez Aparicio and Camino Fernández Llamas
8875	SWAROG Project Approach to Fake News Detection Problem	Rafal Kozik, Joanna Komorniczak, Paweł Ksieniewicz, Aleksandra Pawlicka, Marek Pawlicki and Michał Choraś



## **HAIS Session: H10 – HAIS Applications**

*Date: 7th - THURSDAY, 12:30 - 14:00      Room: Auditorio*

*Chairs: Sung-Bae Cho*

<b>H10 –HAIS Applications</b>		
<b>Id paper</b>	<b>TITLE</b>	<b>Authors</b>
4840	To Enhance Full-Text Biomedical Document Classification through Semantic Enrichment	Carlos Gonçalves, Adrian Seara Vieira, Celia Talma Gonçalves, Lourdes Borrajo, Rui Camacho and Eva Lorenzo Iglesias
4884	Predicting innovative cities using spatio-temporal activity patterns	Ricardo Muñoz, Sebastian Rios and Manuel Graña
5696	Daily accumulative photovoltaic energy prediction using hybrid intelligent model	Antonio Díaz-Longueira, Míriam Timiraos, Juan Albino Méndez Pérez, José Luis Casteleiro-Roca and Esteban Jove
9793	Comparison of geospatial trajectory clustering and feature trajectory clustering for public transportation trip data	Hector Cogollos, Bruno Baruque Zanon, Santiago Porras Alfonso and Petr Dolezel

## **SOCO Session: S7 - Special Session on Genetic and Evolutionary Computation in Real World and Industry**

*Date: 7th - THURSDAY, Time: 12:30 - 14:00      Room: Aula 1.1*

*Chair: Nahuel Costa*

<b>S7 - Special Session on Genetic and Evolutionary Computation in Real World and Industry</b>		
<b>Id paper</b>	<b>TITLE</b>	<b>Authors</b>
217	Enhancing Time Series Anomaly Detection Using Discretization and Word Embeddings	Lucas Pérez, Nahuel Costa and Luciano Sanchez
1324	Multi-objective optimization for Multi-Robot Path Planning on warehouse environments	Enol García González, José Ramón Villar, Camelia Chira, Enrique De La Cal Marín, Luciano Sánchez and Javier Sedano
5471	On the Prediction of Anomalous Contaminant Diffusion	Douglas Corrêa, Guido Carvalho, David Pelta, Cláudio Toledo and Antônio Silva Neto
5680	Keeping safe distance from obstacles for autonomous vehicles by genetic algorithms	Eduardo Bayona, Jesus Enrique Sierra and Matilde Santos
9405	An Approach of Optimisation in Last Mile Delivery	Dragan Simić, José Luis Calvo-Rolle, José R. Villar, Vladimir Ilin, Svetislav D. Simić and Svetlana Simić

## **ICEUTE Session: I2 – Special Session on Using Machine Learning Techniques in Education and Healthcare Settings: a path towards precision intervention**

*Date: 7th - THURSDAY, 12:30 - 14:00      Room: Aula 1.2*

*Chair: María Consuelo, Irene González Díez and Carmen Varela Vázquez*

### **I2 – Special Session on Using Machine Learning Techniques in Education and Healthcare Settings: a path towards precision intervention**

<b>Id paper</b>	<b>TITLE</b>	<b>Authors</b>
5805	Eye-tracking technology applied to the teaching of university students in Health Sciences	Maria Consuelo Saiz-Manzanares, Irene Gonzalez-Diez and Carmen Varela Vázquez Díez
3162	An Online Treatment to Change Lifestyle for People with Overweight and Obesity. A Pilot Study	Carmen Varela Vázquez, Irene Gonzalez Díez, Maria Saiz Manzanares and Carmina Saldaña
3269	Use of Eye-Tracking Methodology for Learning in College Students: Systematic Review of Underlying Cognitive Processes	Irene Gonzalez Díez, Carmen Varela Vázquez and Maria Saiz Manzanares
2941	Using Machine Learning techniques in eEarlyCare precision diagnosis and intervention in 0-6 years old	María Consuelo Saiz Manzanares
3724	A Machine-Learning Based Approach to Validating Learning Materials	Frederick Ako-Nai, Enrique De La Cal Marín and Qing Tan

### **LUNCH (SITTING)**

*Date: 7th - THURSDAY, Time: 14:00 - 15:30      Room: Restaurante Fonseca (Colegio Arzobispo Fonseca)*

## **CISIS Session: C4 – Neural Networks**

*Date: 7th - THURSDAY, Time: 15:30 - 17:00      Room: Sala Menor*

*Chair: Sung-Bae Cho*

### **C4 – Neural Networks**

<b>Id paper</b>	<b>TITLE</b>	<b>Authors</b>
3804	Analysis of extractive text summarization methods as a binary classification problem	Joanna Komorniczak, Szymon Wojciechowski, Jakub Klikowski, Rafał Kozik and Michał Choraś
6184	Bytecode-Based Android Malware Detection applying Convolutional Neural Networks	Alberto Miranda-García, Iker Pastor López, Borja Sanz Urquijo, José Gaviria de la Puerta and Pablo Garcia Bringas
7403	Prediction of water usage for Advanced Metering Infrastructure network with intelligent water meters	Tomasz Andrysiak and Łukasz Saganowski

8036      Phishing URL Detection with Prototypical Neural Network      Seok-Jun Bu and Sung-Bae Cho  
Disentangled by Triplet Sampling

## **HAIS Session: H11 – Data Mining and Decision Support Systems**

*Date: 7th - THURSDAY, Time: 15:30 - 17:00      Room: Auditorio*

*Chair: Luis Paulo Faina Garcia*

### **H11 –Data Mining and Decision Support Systems**

<b>Id paper</b>	<b>TITLE</b>	<b>Authors</b>
253	Model performance prediction: a Meta-Learning approach for concept drift detection	Fernanda Melo, André Carvalho, Ana Lorena and Luís Garcia
1470	Reinforcing Assessment Processes Using Proactive Case-Based Reasoning Mechanisms	Jaime Leite and Orlando Belo
2071	Meta-Learning for hyperparameters tuning in CNNs for Chest Images.	Jesús García Ramirez, Rodrigo Ramos Díaz, Jimena Olveres and Boris Escalante-Ramírez
2467	A Fuzzy Logic Ensemble Approach to Concept Drift Detection	Carlos Del Campo, Borja Sanz, Jon Díaz, Enrique Onieva
2630	Multi-Task Gradient Boosting	Seyedsaman Emami, Carlos Ruiz Pastor and Gonzalo Martinez Muñoz
4810	Exploratory Study of Data Sampling Methods for Imbalanced Legal Text Classification	Daniela Lopes Freire, Alex Marino Gonçalves de Almeida, Márcio de Souza Dias, Adriano Rivolli, Fabíola Souza Fernandes Pereira, Giliard Almeida de Godoi and Andre C. P. L. F. de Carvalho

## **SOCO Session: S8 - Deep Learning, Fuzzy Logic and Evolutionary Computation**

*Date: 7th - THURSDAY, Time: 15:30 - 17:00      Room: Aula 1.1*

*Chair: Giuseppe Psaila*

### **S8 - Deep Learning, Fuzzy Logic and Evolutionary Computation**

<b>Id paper</b>	<b>TITLE</b>	<b>Authors</b>
258	Text Classification for Automatic Distribution of Review Notes in Movie Production	Diego Garces, Matilde Santos and David Fernandez-Llorca
834	Extended Rank-Based Ant Colony Optimization Algorithm for Traveling Salesman Problem	Sara Pérez Carabaza, Akemi Gálvez and Andrés Iglesias
8718	Multi-Scale Neural Model for Tool-Narayanaswamy-Moynihan Model Parameter Extraction	Marek Pakosta, Petr Dolezel, Roman Svoboda and Bruno Baruque
3098	First Approach of an Intelligent Automatic System for Aircraft Flap/Slat Positioning	Elías Plaza, Matilde Santos and J. Enrique Sierra-García

**ICEUTE Session: I3 – Special Session on Innovation in Computer Science Higher Education**

*Date: 7th - THURSDAY, 15:30 - 17:00      Room: Aula 1.2*

*Chair: Laura Melgar García*

### 13 – Special Session on Innovation in Computer Science Higher Education

<b>Id paper</b>	<b>TITLE</b>	<b>Authors</b>
666	Association Rule Analysis of Student Satisfaction Surveys for Teaching Quality Evaluation	Manuel Jesús Jiménez-Navarro, Belén Vega-Márquez, José María Luna-Romera, Manuel Carranza-García and María Martínez-Ballesteros
1871	Robustness analysis of a methodology to detect biases, inconsistencies and discrepancies in the evaluation process	Jose Divasón, Francisco Javier Martínez de Pisón Ascacibar, Ana Romero and Eduardo Saenz-De-Cabezón
2480	Evaluation of the skills' transfer through digital teaching methodologies	Javier Díez-González, Paula Verde, Rubén Ferrero Guillén, Rubén Álvarez, Nerea Juan-González and Alberto Martínez-Gutiérrez
5381	Educational Innovation Project in the field of Informatics	Jose Manuel Lopez-Guede, Javier del Valle, Ekaitz Zulueta, Unai Fernandez-Gamiz, Jose Antonio Ramos-Hernanz, Julian Estevez and Manuel Graña
5426	Explainable artificial intelligence for education: A real case of a university subject switched to Python	Laura Melgar-García, Ángela Troncoso-García, David Gutiérrez-Avilés, José Francisco Torres and Alicia Troncoso

PLENARY TALK	
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*Date: 7th - THURSDAY, Time: 17:00 – 18:00      Room: Sala Menor*

*Plenary: Prof. Oscar Cordón*



### **COFFEE BREAK**

*Date: 7th - THURSDAY, Time: 18:00 - 18:30*

*Room: Hospedería Fonseca (Coffee shop)*

### **HAIS Session: H12 – Data Mining and Decision Support Systems**

*Date: 7th - THURSDAY, Time: 18:30 - 20:30*

*Room: Sala Menor*

*Chair: Luis Paulo Faina Garcia*

#### **H12 –Data Mining and Decision Support Systems**

<b>Id paper</b>	<b>TITLE</b>	<b>Authors</b>
5069	Exploring delay reduction on Edge Computing architectures from a Heuristic approach	Hilal Alawneh, J. David Nuñez-Gonzalez and Manuel Graña
5251	Probability Density Function for Clustering Validation	Pau Figuera, Alfredo Cuzzoocrea and Pablo García Bringas
5598	Comprehensive analysis of different techniques for data augmentation and proposal of new variants of BOSME & GAN	Asier Garmendia-Orbegozo, J. David Nuñez-Gonzalez, Miguel Angel Anton Gonzalez and Manuel Graña
8568	Multidimensional Models Supported by Document-Oriented Databases	Rosa Matias and Maria Beatriz Piedade
8582	Financial Distress Prediction in an Imbalanced Data Stream Environment	Rubens Marques Chaves, André Luis Debiasio Rossi and Luís Paulo Faina Garcia
9069	Improving the Quality of Quantum Services Generation Process: Controlling Errors and Noise	Jaime Alvarado-Valiente, Javier Romero-Álvarez, Danel Arias, Erik B. Terres, Jose García-Alonso, Enrique Moguel, Pablo García Bringas and Juan M. Murillo
675	Comparison of deep reinforcement learning path-following system based on road geometry and an adaptive cruise control for autonomous vehicles	Felipe Barreno Herrera, Matilde Santos and Manuel Romana
484	Feature Ranking for Feature Sorting and Feature Selection with Optimisation	Paola Santana-Morales, Gretel Alonso, Isabela Ortigosa de Araujo, Jessica Coto-Palacio, Raquel Beltran-Barba, Luís Correia and Antonio J. Tallón-Ballesteros

### **SOCO Session: S9 - Special Session on Efficiency and Explainability in Machine Learning and Soft Computing**

*Date: 7th - THURSDAY, Time: 18:30 - 19:30*

*Room: Aula 1.1*

*Chair: Manuel Jesús Jiménez Navarro and Manuel Carranza García*

## S9 - Special Session on Efficiency and Explainability in Machine Learning and Soft Computing

Id paper	TITLE	Authors
5572	Efficient short-term time series forecasting with regression trees	Pablo Reina-Jiménez, Manuel Carranza-García, Jose María Luna-Romera and José C. Riquelme
6511	Generating Synthetic Fetal Cardiotocography Data with Conditional Generative Adversarial Networks	Halal Abdulrahman Ahmed, Juan A. Nepomuceno, Belén Vega-Márquez and Isabel A. Nepomuceno-Chamorro
8314	Olive oil fly population pest forecasting using explainable deep learning	Andrés Manuel Chacón Maldonado, Angela del Robledo Troncoso García, Francisco Martínez-Álvarez, Gualberto Asencio-Cortés, and Alicia Troncoso
9360	Explaining learned patterns in deep learning by association rules mining	Manuel Jesús Jiménez Navarro, María Martínez Ballesteros, Francisco Martínez-Álvarez and Gualberto Asencio-Cortés

## SOCO Session: S9 - Special Session on Soft Computing and Hard Computing for a Data Science Process Model

*Date: 7th - THURSDAY, Time: 19:30 - 20:30      Room: Aula 1.1*

*Chair: Antonio J. Tallón Ballesteros*

## S9 - Special Session on Soft Computing and Hard Computing for a Data Science Process Model

Id paper	TITLE	Authors
6732	A preliminary study of MLSE/ACE-III stages for Primary Progressive Aphasia automatic identification using speech features	Amable J. Valdés Cuervo, Elena Herrera and Enrique De La Cal Marín
7730	Comparison of LSTM, GRU and Transformer Neural Network Architecture for prediction of wind turbine variables	Pablo-Andrés Buestán-Andrade, Matilde Santos, Jesús-Enrique Sierra-García and Juan-Pablo Pazmiño-Piedra
1813	The impact of data normalization on the accuracy of machine learning algorithms: A comparative analysis	Kelsy Cabello-Solorzano, Isabela Ortigosa de Araujo, Marco Antonio Peña Cubillos, Luís Correia and Antonio J. Tallón-Ballesteros
6468	Adaptive optics correction using recurrent neural networks for wavefront prediction	Saul Perez Fernandez, Alejandro Buendía Roca, Carlos González Gutiérrez, Javier Rodríguez Rodríguez, Santiago Iglesias Álvarez, Ronny Anangonó Tutasig, Fernando Sánchez Lasheras and Francisco Javier De Cos Juez



## **SOCO Session: S10 - Machine Learning and Data Mining**

*Date: 7th - THURSDAY, Time: 18:30 - 20:30      Room: Aula 1.2*

*Chair: Lidia Sánchez*

<b>S10 - Machine Learning and Data Mining</b>		
<b>Id paper</b>	<b>TITLE</b>	<b>Authors</b>
1518	Model-based design of the iMO-NMPC strategy: Real-Time implementation	Mikel Larrea, Eloy Irigoyen, Fernando Artaza and Vicente Gómez-Garay
5072	Neuron characterization in complex cultures using a combined YOLO and U-Net segmentation approach	Paula Puerta, Berke Öztürk, Samad Barri, Víctor Gonzalez, José Ramón Villar, Esther Serrano, Antonello Novelli, María Teresa Fernandez, and Ángel del Rio
5439	Effectiveness of quantum computing in image processing for burr detection	Santiago Merino Bajo, Lidia Sánchez-González, Virginia Riego Del Castillo and Vicente Matellán
7125	Categorization of CoAP DoS attack based on one-class boundary methods	Miriam Timiraos, Álvaro Michelena Grandío, Antonio Diaz-Longueira, Esteban Jove, José Aveleira Mata, Isaias Garcia, Martín Bayón-Guitérrez, Hector Alaiz Moreton and Jose Luis Calvo-Rolle
8849	TinyNARM: Simplifying numerical association rule mining for running on microcontrollers	Iztok Fister Jr., Iztok Fister, Akemi Galvez-Tomida and Andres Iglesias Prieto
9259	Fault Detection in Biological Methanation Process using Machine Learning: A Comparative Study of Different Algorithms	Juan Camilo Acosta Pavas, David Griol, Zoraida Callejas, David Camilo Corrales, Carlos Eduardo Robles-Rodríguez, Jérôme Morchain and César Arturo Aceves-Lara

## **GALA DINER**

*Date: 7th - THURSDAY, Time: 21:30*

*Lilicook Gastrobar (C. Espoz y Mina, 22, 37002 Salamanca)*



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