



HAIS  
2025



**16<sup>th</sup>- 17<sup>th</sup> October 2025 – Salamanca (SPAIN)**



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# CONFERENCE PROGRAMME

**20<sup>th</sup> International Conference on Hybrid Artificial Intelligence Systems  
HAIS 2025**

<http://haisconference.eu>

**20<sup>th</sup> International Conference on Soft Computing Models in Industrial and  
Environmental Applications  
SOCO 2025**

<http://sococonference.eu>

**18<sup>th</sup> International Conference on Computational Intelligence in  
Security for Information Systems  
CISIS 2025**

<http://cisisconference.eu>

**16<sup>th</sup> International Conference on European Transnational Education  
ICEUTE 2025**

<http://iceuteconference.eu>



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## WELCOME

HAIS, SOCO, CISIS, and ICEUTE series of conferences are unmissable events in the scientific community for those of us who focus our professional and research activity on 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. This annual meeting point allows us to discuss ideas, present results, and present projects related to this discipline. Throughout these three days, we will have a total of 23 sessions, 129 scientific papers, and 2 plenary talks by 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 CIBER-OLÉ project (within the National Cybersecurity Industry Promotion Program, framed within the INCIBE Emprende program and financed by INCIBE and the University of Salamanca-USAL), 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 actively and constructively to the success of this initiative.

This activity is carried out in execution of the Strategic Project "Critical infrastructures cybersecure through intelligent modelling of attacks, vulnerabilities and increased security of their IoT devices for the water supply sector" (C061\_/23), the result of a collaboration agreement signed between the National Institute of Cybersecurity (INCIBE) and the University of A Coruña. This initiative is carried out within the framework of the funds of the Recovery, Transformation and Resilience Plan, financed by the European Union (Next Generation), the project of the Government of Spain that outlines the roadmap for the modernization of the Spanish economy, the recovery of economic growth and job creation, for the solid, inclusive and resilient economic reconstruction after the COVID19 crisis, and to respond to the challenges of the next decade. This activity has also been promoted by PID2022-137152NB-I00 funded by MICIU/AEI/10.13039/501100011033 and by ERDF/EU.

Finally, we would like to welcome the attendees and thank them for their interest in the conference. The members of the Organising 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.





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## ORGANIZING COMMITTEE

### General Chair

Emilio Corchado

University of Salamanca, Spain

### Conference Chairs

Emilio Corchado

Héctor Quintián

Alicia Troncoso Lora

Hilde Pérez García

Esteban Jove

José Luis Calvo Rolle

Francisco Javier Martínez de Pisón

Pablo García Bringas

Francisco Martínez Álvarez

Álvaro Herrero Cosío

Paolo Fosci

Sérgio Filipe Ramos

University of Salamanca, Spain

University of A Coruña, Spain

Pablo de Olavide University, Spain

University of León, Spain

University of A Coruña, Spain

University of A Coruña, Spain

University of La Rioja, Spain

University of Deusto, Spain

Pablo de Olavide University, Spain

University of Burgos, Spain

University of Bergamo, Italy

Polytechnic Institute of Porto, Portugal

### Organizing Committee

José Luis Calvo Rolle

Esteban Jove

José Luis Casteleiro Roca

Francisco Zayas Gato

Álvaro Michelena

Míriam Timiraos Díaz

Antonio Javier Díaz Longueira

Paula Patricia Arcano Bea

Manuel Rubiños Trelles

Marta María Álvarez Crespo

Alejandro Vidal Bralo

Agustín García Fisher

Iker Pastor López

University of A Coruña, Spain

University of A Coruña, Spain

University of A Coruña, Spain

University of A Coruña, Spain

University of A Coruña, Spain

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University of A Coruña, Spain

University of A Coruña, Spain

University of A Coruña, Spain

University of A Coruña, Spain

University of A Coruña, Spain

University of Deusto, Spain



## PLENARY SPEAKERS

### SCHEDULE

| Speaker             | Room       | Date         | Time          |
|---------------------|------------|--------------|---------------|
| Prof. Sung-Bae Cho  | Sala Menor | Thursday, 16 | 18.30 - 19.30 |
| Prof. Ajith Abraham | Sala Menor | Friday, 17   | 11.30 - 12.30 |



### Prof. Sung-Bae Cho

Sung-Bae Cho received a PhD degree in computer science from KAIST (Korea Advanced Institute of Science and Technology), Taejeon, Korea. He was an invited researcher of Human Information Processing research laboratories at ATR (Advanced Telecommunications Research) institute, Kyoto, Japan, from 1993 to 1995, and a visiting scholar at the University of New South Wales, Canberra, Australia, in 1998. He was also a visiting professor at the University of British Columbia, Vancouver, Canada, from 2005 to 2006, and at King Mongkut's University of Technology at Thonburi, Bangkok, Thailand, in 2013. Since 1995, he has been a professor in the Department of Computer Science, Yonsei University, an Underwood distinguished professor from 2021, and a Yonsei Fellow from 2023. His research interests include neural networks, pattern recognition, intelligent man-machine interfaces, evolutionary computation, and artificial life. Dr. Cho was the recipient of the Richard E. Merwin prize from IEEE Computer Society in 1993. He received several distinguished investigator awards from the Korea Information Science Society in 2005 and Gaheon Sindoricoh in 2017. He is also a recipient of the service merit medal from the Korean government in 2022. Currently, he is a Fellow of IEEE, AAIA and KAST (Korea Academy of Science and Technology).



## Prof. Ajith Abraham

**Dr. Ajith Abraham** is the Vice Chancellor at Sai University, Chennai. Before joining Sai University, he held the position of Vice Chancellor at prominent institutions and was also the Founding Director of Machine Intelligence Research Labs (MIR Labs), a non-profit scientific network for innovation and research excellence with headquarters in Seattle, USA.

Dr. Abraham has completed research projects valued at over \$110 million as an investigator or co-investigator from the United States, the European Union, Italy, the Czech Republic, France, Malaysia, China, and Australia. He has worked in a multidisciplinary setting for more than 35 years and has authored or co-authored more than 1,500 research publications in artificial intelligence and related applications in the industry. A handful of his publications have been translated into Chinese and Russian, and one of his books has been translated into Japanese. The Scopus database has approximately 1,400 papers indexed, whereas the Thomson Web of Science has over 1,000 publications indexed.

In addition to other esteemed universities, Dr. Abraham has worked with researchers from MIT (USA), the University of Cambridge (UK), Harvard University (USA), and Oxford University (UK). According to Google Scholar, Dr. Abraham possesses over 63,000 scholarly citations with an H-index of over 118. He has delivered over 250 conference plenary talks and tutorials in more than 20 countries. From 2008 to 2021, Dr. Abraham chaired the IEEE Systems Man and Cybernetics Society Technical Committee on Soft Computing, which has more than 200 members. From 2011 to 2013, he represented Europe as a Distinguished Lecturer for the IEEE Computer Society (USA).

Dr. Abraham is continuously listed in the Stanford/Elsevier list, highlighting the top 2% of the most cited scientists across the globe. Based on 2024 data, ScholarGPS listed Dr. Abraham as one of the world's top 0.01% cited scientists in the engineering and computer science fields. From 2016 to 2021, Dr. Abraham worked as the Chief Editor of Engineering Applications of Artificial Intelligence (EAAI) at Elsevier, New York. EAAI is one of the oldest journals (founded in 1988) in the artificial intelligence domain. Additionally, he sat on the editorial boards of more than 15 international journals indexed by Thomson ISI. Dr. Abraham received his PhD degree in artificial intelligence from Monash University, Melbourne, Australia (2001), a Master of Science degree from Nanyang Technological University, Singapore (1998), and a B.Tech (Hons) degree from the University of Calicut in 1990.



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## 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.





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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.



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## VENUE

The conference will be held in Auditorium Fonseca (Hospedería).

B1

Palacio de Congresos.  
**Startup Olé Centre**

B2

Colegio Arzobispo Fonseca.  
**Lunch/Cocktails**

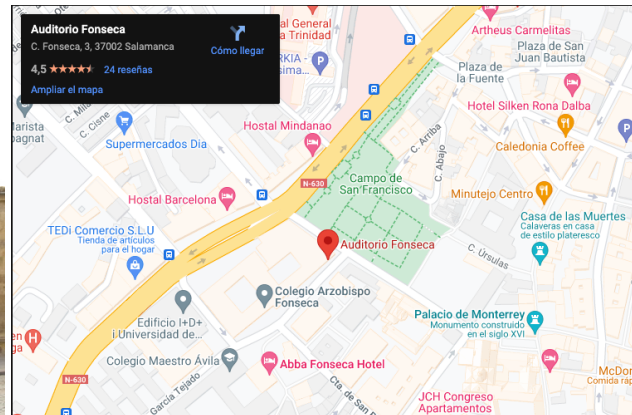
B3

Hospedería Fonseca.  
**Conference Centre/Coffee**



Auditorio Fonseca

C. Fonseca, 3, 37002 Salamanca









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Aula 2.4, Aula 2.5 and Aula 2.6





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## SOCIAL ACTIVITIES

### GUIDED VISIT TO SALAMANCA CITY CENTER

Meeting point: Hospedería Fonseca

Time: 19:00

SOCIAL PROGRAM

WEDNESDAY 15<sup>th</sup>

Guided visit to  
Salamanca city center

Meeting point:  
Hospedería Fonseca

19:00 hours







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## STARTUP OLÉ WELCOME PARTY

SOCIAL PROGRAM

WEDNESDAY 15<sup>th</sup>

Startup Olé  
Welcome Party

STARTUP OLÉ  
**Party**  
by

CLAUSTRO COLEGIO FONSECA

21:15 hours



Financiado por  
la Unión Europea  
NextGenerationEU



GOBIERNO DE ESPAÑA  
MINISTERIO  
DE LA TRANSFORMACIÓN DIGITAL  
Y DE LA FUNCIÓN PÚBLICA



Plan de  
Recuperación,  
Transformación  
y Resiliencia



VNIVERSIDAD  
DSALAMANCA



CIBER-SHUBE  
CIBERSECURITY SPAIN HUB



STARTUP OLÉ  
accelerator





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## VISIT TO FAIR

SOCIAL PROGRAM

**THURSDAY 16<sup>th</sup>**

### Startup Olé visit to fair



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





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## STARTUP OLÉ OPENING

SOCIAL PROGRAM

THURSDAY 16<sup>th</sup>

### Opening Startup Olé

- Palacio de Congresos: **11:00 hours**







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## STARTUP OLÉ PARTY

SOCIAL PROGRAM

THURSDAY 16<sup>th</sup>

### Startup Olé Cocktail & Concert

### Flashback band concert



- CLAUSTRO COLEGIO FONSECA: **21:00 hours**



Financiado por  
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MINISTERIO  
DE LA TRANSFORMACIÓN DIGITAL  
Y DE LA FUNCIÓN PÚBLICA



Plan de  
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## GALA DINNER

SOCIAL PROGRAM

FRIDAY 17<sup>th</sup>

Lilicook Vermuteria

- Plaza Sexmeros, 7, 37001 Salamanca: **21:30 hours**  
<https://maps.app.goo.gl/5m1CdYgSLQ84CLay8>



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GOBIERNO DE CASTILLA Y LEÓN  
MINISTERIO DE TRANSFORMACIÓN DIGITAL Y DE LA FUNCIÓN PÚBLICA



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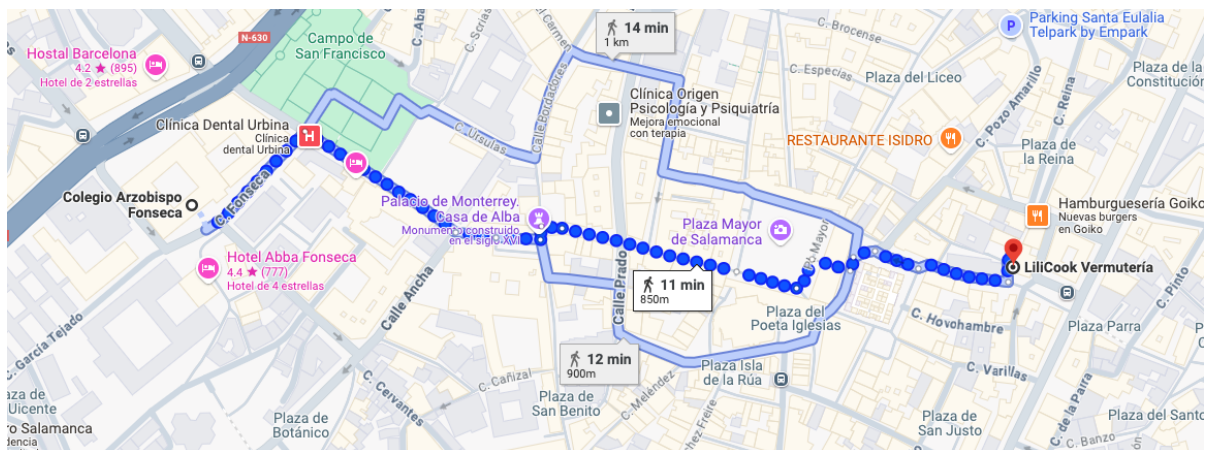
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SALAMANCA



CIBER-SHUBE  
CIBERSEGURITY SPAIN HUB



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## USEFUL INFORMATION

### About the venue

#### WIFI

NETWORK: StartupOLE

PASSWORD: Vah8aeTaez

#### LUNCH AND COFFEE AREA

- Where: Colegio Fonseca.
- For the lunch: Access controlled by your 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)**



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## SCHEDULE

| 15th - WEDNESDAY                                                                    |                                                                                                            | 16th - THURSDAY |                                                                 |          |          | 17th - FRIDAY |               |                                                                          |                                                    |     |    |
|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|-----------------|-----------------------------------------------------------------|----------|----------|---------------|---------------|--------------------------------------------------------------------------|----------------------------------------------------|-----|----|
|                                                                                     |                                                                                                            | Sala Menor      | Aula 2.4                                                        | Aula 2.5 | Aula 2.6 | Sala Menor    | Aula 2.4      | Aula 2.5                                                                 | Aula 2.6                                           |     |    |
| CONFERENCE<br>ATTENDEES WILL<br>HAVE ACCESS TO THE<br>STARTUP OLE                   |                                                                                                            | 9:00            | REGISTRATION (Open all day)<br>Hospedería Fonseca               |          |          |               | 9:00          | REGISTRATION (Open all day)<br>Hospedería Fonseca                        |                                                    |     |    |
|                                                                                     |                                                                                                            | 09:00 - 10:30   | H6                                                              | H7       | S1       | S3            | 09:00 - 11:00 | C3                                                                       | H4                                                 | S8  |    |
|                                                                                     |                                                                                                            | 10:30 - 11:00   | COFFEE BREAK<br>(Coffee Shop Hospedería Fonseca)                |          |          |               | 11:00 - 11:30 | COFFEE BREAK<br>(Coffee Shop Hospedería Fonseca)                         |                                                    |     |    |
|                                                                                     |                                                                                                            | 11:00 - 12:30   | STARTUP OLE OPENING<br>Palacio de Congresos<br>Room: Sala Menor |          |          |               |               | 11:30 - 12:30                                                            | PLENARY TALK - Prof. Ajith Abraham<br>(SALA MENOR) |     |    |
|                                                                                     |                                                                                                            | 12:30 - 14:00   | H1                                                              | H3       | S5       | S9            | 12:30 - 14:00 | C4                                                                       | H2                                                 | S7  | I1 |
|                                                                                     |                                                                                                            | 14:00 - 15:30   | NETWORKING COCKTAIL - LUNCH<br>(CLAUSTRO COLEGIO FONSECA)       |          |          |               | 14:00 - 15:30 | NETWORKING COCKTAIL - LUNCH<br>(CLAUSTRO COLEGIO FONSECA)                |                                                    |     |    |
|                                                                                     |                                                                                                            | 15:30 - 17:30   | C1                                                              | H5       | S2       | S4            | 15:30 - 17:30 | H9                                                                       | H10                                                | S10 |    |
| 17:00 - 19:00                                                                       | REGISTRATION<br>Hospedería Fonseca                                                                         | 17:30 - 18:00   | OPENING HAIS-SOCO-CISIS-ICEUTE<br>(SALA MENOR)                  |          |          |               |               |                                                                          |                                                    |     |    |
|                                                                                     |                                                                                                            | 18:00 - 18:30   | COFFEE BREAK<br>(Coffee Shop Hospedería Fonseca)                |          |          |               |               |                                                                          |                                                    |     |    |
|                                                                                     |                                                                                                            | 18:30 - 19:30   | PLENARY TALK - Prof. Sung-Bae Cho<br>(SALA MENOR)               |          |          |               |               |                                                                          |                                                    |     |    |
|                                                                                     |                                                                                                            | 19:30 - 20:30   | C2                                                              | H8       | S6       |               |               |                                                                          |                                                    |     |    |
| 19:00<br>Guided visit to Salamanca city center<br>Meeting point: Hospedería Fonseca |                                                                                                            | 21:00           | COCKTAIL & CONCERT<br>(CLAUSTRO COLEGIO FONSECA)                |          |          |               | 21:30         | GALA DINNER<br>Lilicook Vermuteria<br>Plaza Sexmeros, 7, 37001 Salamanca |                                                    |     |    |
| 21:15                                                                               | STARTUP OLÉ PARTY<br>Cocktail and concert<br>(CONGRESS PARTICIPANTS INVITED)<br>(CLAUSTRO COLEGIO FONSECA) |                 |                                                                 |          |          |               |               |                                                                          |                                                    |     |    |



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# WEDNESDAY





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### REGISTRATION

*Date: 15th -WEDNESDAY, Time: 17:00 - 19:00    Room: Hospedería Fonseca*



### GUIDED VISIT TO SALAMANCA CITY CENTER

*Date: 15th - WEDNESDAY, Time: 19:00                      Meeting point: Hospedería Fonseca*





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## STARTUP OLÉ WELCOME PARTY

### Cocktail and concert

*Date: 15th - WEDNESDAY, Time: 21:15*

*Room: Colegio Fonseca (Claustro)*





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**THURSDAY**



## **HAIS Session: H6 - HAIS Energy Applications**

*Date: 16th - THURSDAY, Time: 09:00 - 10:30      Room: Sala Menor*

*Chair: Dragan Simić*

| <b>H6 - HAIS Energy Applications</b> |                                                                                                                        |                                                                                                                                       |
|--------------------------------------|------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| <b>Id paper</b>                      | <b>TITLE</b>                                                                                                           | <b>Authors</b>                                                                                                                        |
| 0077                                 | Forecasting Thermal Demand in Citizen Energy Communities Using Machine Learning: Application to the Urberoa Case Study | Raul Saenz Herreros, Alejandro Muro Belloso, Ignacio Guisasola-Iparraguirre, Ignacio Lázaro-Llorente and Jose David Nuñez Gonzalez    |
| 2075                                 | A Hybrid Modelling Approach for Forecasting the Acquired Electrical Power from Photovoltaic Panels                     | Anabel Díaz-Labrador, Ángel Delgado-Rodriguez, Héctor José Pérez Iglesias, Oscar Fontenla-Romero and Jose Luis Calvo-Rolle            |
| 3440                                 | KARMA: KAN meets ARIMA                                                                                                 | Arnau Garcia-Cucó, Javier Palanca Càmara and Vicente Juan Botti                                                                       |
| 9579                                 | IIoT-Driven Time Series Imputation for Sustainable Metalworking Fluid Monitoring                                       | Félix de Miguel Villalba, Nuria Velasco Pérez, Félix Movilla Alonso, Daniel Urda Muñoz, Carlos Cambra Baseca and Álvaro Herrero Cosío |

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

*Date: 16th - THURSDAY, Time: 09:00 - 10:30      Room: Aula 2.4*

*Chair: Sung-Bae Cho*

| <b>H7 - Evolutionary Computation and Optimization</b> |                                                                                                      |                                                       |
|-------------------------------------------------------|------------------------------------------------------------------------------------------------------|-------------------------------------------------------|
| <b>Id paper</b>                                       | <b>TITLE</b>                                                                                         | <b>Authors</b>                                        |
| 2734                                                  | An Adaptive Memetic Algorithm for Solving the Multiple Knapsack Assignment Problem                   | Adrian Petrovan, Petrica Pop and Cosmin Sabo          |
| 4994                                                  | Advanced Decomposition-based Bioinspired Algorithms for Multiobjective Phylogenetics                 | Sergio Santander-Jiménez and Miguel A. Vega-Rodríguez |
| 5032                                                  | An Ant Colony Optimization Approach for Safest Path Pair Computation under Correlated Failures       | Zoltán Tasnádi, Balázs Vass and Noémi Gaskó           |
| 8652                                                  | DRL-Driven Batch-Oriented SDN Migration with Weighted Traffic Matrix Clustering for Dynamic Networks | Kai Yuan Tan, Saw Chin Tan                            |





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### **SOCO Session: S1 - Optimization, Metaheuristics and Applied Math**

*Date: 16th - THURSDAY, Time: 09:00 - 10:30      Room: Aula 2.5*

*Chair: Enol García González*

#### **S1 - Optimization, Metaheuristics and Applied Math**

| <b>Id paper</b> | <b>TITLE</b>                                                                                             | <b>Authors</b>                                                                          |
|-----------------|----------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 0022            | An Analysis of Surrogate Models Based on Machine Learning for the Problem of Static Ambulance Allocation | Esther Ródenas-Moreno, Víctor Sánchez-Anguix, Fulgencia Villa, and Juan M. Alberola     |
| 4229            | Hyperparameter Optimization in Graph Embeddings Using Simulated Annealing and Genetic Algorithms         | Pablo Zubasti, Miguel A. Patricio, José M. Molina and Antonio Berlanga                  |
| 4985            | Multi-Robot Path Planning problem with multiple destinations applied to warehouse environments           | Diego Villa, Enol García González and José Ramón Villar                                 |
| 3128            | Geometric Algebra as a Language for Physics: Application to Rigid Body Dynamics                          | David Muñoz-Hernández, Carmen García-Barceló, Antonio Jimeno-Morenilla and Higinio Mora |

### **SOCO Session: S3 - Anomaly Detection and Predictive Maintenance**

*Date: 16th - THURSDAY, Time: 09:00 - 10:30      Room: Aula 2.6*

*Chair: Paulo Moura Oliveira*

#### **S3 - Anomaly Detection and Predictive Maintenance**

| <b>Id paper</b> | <b>TITLE</b>                                                                         | <b>Authors</b>                                                                                                                                   |
|-----------------|--------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| 3620            | Validating Anomaly Detection of One-Class Classifiers Using Statistical Generators   | Rui Pinto, Andre Pilastrí, Luis Ferreira, Rafael Freitas and Paulo Cortez                                                                        |
| 4282            | Detection of photovoltaic generator underperformance due to inverter operation modes | Leire Hernandez-Lecuona, Ricardo Alonso, Ainhoa Pereda, Sergio Gil, J. David Nuñez-Gonzalez and Manuel Graña                                     |
| 8768            | Denial of Service in 5G Core: AMF and UPF Saturation via Virtual SIMs                | Diego Narciandi-Rodríguez, José Aveleira Mata, Natalia Prieto-Fernandez, Javier Alfonso-Cendón, Héctor Alaiz-Moretón and Isaías García-Rodríguez |
| 9147            | Enhancing Spam Detection with Machine Learning Techniques: A case study              | Martim Martins, Eduardo J. Solteiro Pires and Paulo B. Moura Oliveira                                                                            |

#### **COFFEE BREAK**

*Date: 16th - THURSDAY, Time: 10:30 - 11:00      Room: Hospedería Fonseca (Coffee shop)*

#### **STARTUP OLÉ OPENING**

*Date: 16th - THURSDAY, Time: 11:00 - 12:30*

## **HAIS Session: H1 - Agricultural and Environmental Monitoring**

*Date: 16th - THURSDAY, Time: 12:30 - 14:00      Room: Sala Menor*

*Chair: Oriol de la Pau Chacón Albero*

### **H1 - Agricultural and Environmental Monitoring**

| <b>Id paper</b> | <b>TITLE</b>                                                                                                                    | <b>Authors</b>                                                                                                                                         |
|-----------------|---------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| 3627            | Comparative Analysis of Cattle Behavior Across Intensive Dairy Farms through Dimensional Reduction Techniques                   | Manuel Rubiños, Álvaro Michelena, Agustín García-Fischer, Anabel Díaz-Labrador, Gonzalo Xael Otero-González and José-Luis Casteleiro-Roca              |
| 7107            | Environmental Sound Recognition for Human-Robot Interaction in Social Robots                                                    | Irene González Fernández, David Sobrín-Hidalgo, Juan Diego Peña Narváez, Francisco J Rodríguez Lera, Camino Fernández Llamas and Francisco Martín Rico |
| 7288            | A new Transformer-based hybrid model to forecast olive fruit fly using multimodal data                                          | A. M. Chacón-Maldonado, N. Van der Looven, G. Asencio-Cortés and A. Troncoso                                                                           |
| 7965            | Infrared Driver Monitoring Systems - A Review, New Opportunities and Trends                                                     | Bogusław Cyganek and Mateusz Knapik                                                                                                                    |
| 9012            | Ambient Intelligence Integration in Vocational Education: Evaluating Smart Learning Environments for Digital Skills Development | Patricia Costa and Dalila Duraes                                                                                                                       |
| 9303            | Zero-shot and Few-shot Learning with Vision-Language Models for post-disaster Struc. Damage Assessment                          | Oriol Chacón-Albero, Jaume Jordán, Vicent Botti and Vicente Julian                                                                                     |

## **HAIS Session: H3 - Cybersecurity and Network Protection**

*Date: 16th - THURSDAY, Time: 12:30 - 14:00      Room: Aula 2.4*

*Chair: Javier Díez González*

### **H3 - Cybersecurity and Network Protection**

| <b>Id paper</b> | <b>TITLE</b>                                                                                          | <b>Authors</b>                                                                                                                                             |
|-----------------|-------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1959            | Analyzing DoS Attacks on CoAP Networks Using Low-Dimensional Latent Representations                   | Álvaro Michelena, José Aveleira Mata, Marta-María Álvarez-Crespo, Emilio Lima-Bullones, Agustín García-Fischer, Carmen Benavides and Jose Luis Calvo-Rolle |
| 3570            | An Approach to Anomaly Detection with Dynamic Threshold Definition for Real-World Environments        | Gabriel Marques Marques, Maynara Donato de Souza, Flávio Oliveira, Cleber Zanchettin and Paulo Novais                                                      |
| 6923            | Loss Functions for Time Series Forecasting in Network Security Situation Awareness                    | Richard Staňa, Pavol Sokol and Jakub Nižník                                                                                                                |
| 8069            | A Hybrid Feature Selection Approach Using Filter-Wrapped Evaluation (FWE) for Attack Detection in SDN | Chin Jia Wen, Tan Saw Chin                                                                                                                                 |
| 8878            | RAG embeddings storage optimization through quantization and dimensionality reduction                 | Naamán Huerga-Pérez, Rubén Álvarez, Álvaro Sánchez-Fernández and Javier Díez-González                                                                      |
| 8941            | Exploratory Visualization of IoT Attacks on the NF-CSE-CIC-IDS2018 dataset                            | Álvaro Francisco Villar Val, Diego Granados Lopez, Ángel Arroyo and Álvaro Herrero                                                                         |



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## **SOCO Session: S5 - Special Session: Efficiency and Explainability in Machine Learning and Soft Computing**

*Date: 16th - THURSDAY, Time: 12:30 - 14:00 Room: Aula 2.5*

*Chair: María Martínez-Ballesteros*

### **S5 - Special Session: Efficiency and Explainability in Machine Learning and Soft Computing**

| <b>Id paper</b> | <b>TITLE</b>                                                                                       | <b>Authors</b>                                                                                                                               |
|-----------------|----------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|
| 2220            | Generalized Fuzzy Logical Operators: a Behavioral Study                                            | Paolo Fosci and Giuseppe Psaila                                                                                                              |
| 3097            | Exploring Zero-Shot Learning for Time Series Forecasting Using Large Language Models               | José Ignacio Meseguer-Gómez, Pablo Reina-Jiménez, Manuel Jesús Jiménez Navarro, María Martínez-Ballesteros and José C. Riquelme              |
| 7129            | Explainable Graph Neural Networks for Omics-Based Cancer Classification                            | Javier Hiruelo Pérez, Paula Herrero-Míguez, David Gutiérrez-Avilés and María Martínez-Ballesteros                                            |
| 8092            | Stress detection with a Lightweight and Explainable model for IoMT devices                         | José L. López Ruiz, Carlos Montoya Peña, David Díaz Jiménez, Juan F. Gaitán Guerrero, Pedro A. Palomino Moral and Macarena Espinilla Estévez |
| 8592            | From Black Box to Understanding Deep Learning Hyperparameters: An Explainable Analysis             | M. Olías, A. Chacón-Maldonado, J. F. Torres, G. Asencio-Cortés and A. Troncoso                                                               |
| 9336            | Impact of Expert and Auto-Generated Labels on Deep Learning Models for Neuronal Image Segmentation | Gerard Villarroja-Piqué, Víctor M. González, Esther Serrano-Pertierra, Antonello Novelli, M. Teresa Fernández-Sánchez and Angel Rio-Alvarez  |

## **SOCO Session: S9 - Special Session: Machine Learning and Computer Vision in Industry 4.0 II**

*Date: 16th - THURSDAY, Time: 12:30 - 14:00 Room: Aula 2.6*

*Chair: Jose García and Enrique Dominguez*

### **S9 - Special Session: Machine Learning and Computer Vision in Industry 4.0 II**

| <b>Id paper</b> | <b>TITLE</b>                                                                                                          | <b>Authors</b>                                                                                                                      |
|-----------------|-----------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|
| 3931            | Towards Traffic Optimization Using Reinforcement Learning                                                             | Hicham Affou, Daniel Caballero-Martin, Geovany Satama, Jose Antonio Ramos-Hernanz, Koldo Portal-Porras and Jose Manuel Lopez-Guede  |
| 4003            | Exploring Temporal Action Segmentation Techniques for Enhanced Bird Behavior Recognition                              | Bruno Sancho-Deltell, Javier Rodriguez-Juan, Manuel Benavent-Lledo, David Mulero-Perez, David Ortiz-Perez and Jose Garcia-Rodriguez |
| 5197            | Advanced multistep prediction and dynamic thresholding for early detection of crowd anomalies in surveillance systems | Rafael Rodrigo Guillen, Higinio Mora Mora and Jorge Azorín-López                                                                    |
| 6091            | Thickness Estimation of Plastic Polymers in SWIR Imaging Using Deep Learning Methods                                  | Dominik Stursa and Vitek Rais                                                                                                       |
| 7060            | Content-Based Image Retrieval in Echocardiography Using Textures and Convolutional Neural Networks                    | Jesús Benito-Picazo, David Elizondo, Juan-José Torres-Palomo and Miguel A. Molina-Cabello                                           |

7291      Photovoltaic power estimation based on      Anibal Mantilla-Guerra, Christian Mejia-Escobar, Jorge Azorin-Lopez and Jose Garcia-Rodriguez

### **NETWORKING COCKTAIL - LUNCH**

*Date: 16th - THURSDAY, Time: 14:00 - 15:30      Room: Colegio Fonseca (Claustro)*



### **CISIS Session: C1 - Malware & Intrusion Detection**

*Date: 16th - THURSDAY, Time: 15:30-17:30      Room: Sala Menor*

*Chair: Ciprian Pungila*

#### **C1 - Malware & Intrusion Detection**

| <b>Id paper</b> | <b>TITLE</b>                                                                                                | <b>Authors</b>                                                                                                                  |
|-----------------|-------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|
| 0285            | A Fast Metric for Preliminary Risk Assessment of Portable Executables Using Static Analysis                 | Emanuel Albu and Ciprian Pungila                                                                                                |
| 0756            | Unsupervised Online Learning for Network Flow Anomaly Detection: A Comparative Evaluation                   | Alberto Miguel-Diez, Claudia Álvarez-Aparicio, Adrián Campazas-Vega, Vicente Matellán-Olivera and Ángel Manuel Guerrero-Higuera |
| 6048            | Enhancing Malware Detection In Portable Executables with Random Forest and Variance-Based Feature Selection | Alexandru Todea, Ciprian Pungilă and Adrian Spătaru                                                                             |
| 9163            | Relational Matrix of Cyberattacks: A Model for Threat Classification and Connection in Digital Environments | Mikel Ferrer Oliva, Jose Amelio Medina Merodio, José Javier Martínez Herraiz and Alberto Larena Luego                           |





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## **HAIS Session: H5 - Deep Learning and Representation Learning**

*Date: 16th - THURSDAY, Time: 15:30-17:30*

*Room: Aula 2.4*

*Chair: Diego Narciandi Rodriguez*

### **H5 - Deep Learning and Representation Learning**

| <b>Id paper</b> | <b>TITLE</b>                                                                                                             | <b>Authors</b>                                                                                     |
|-----------------|--------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|
| 0694            | Knowledge Distillation of Class Activation Maps from Two Teachers for Continual Learning                                 | Minkai Sheng, Hyung-Jun Moon and Sung-Bae Cho                                                      |
| 0964            | RAPID: Robust Adaptive Probabilistic Inference with DINO Features                                                        | Vladimir Frolov, Vitaliy Vorobyov, Leonid Ugadiarov and Aleksandr Panov                            |
| 2102            | MapFM: Foundation Model-Driven HD Mapping with Multi-Task Contextual Learning                                            | Leonid Ivanov, Vasily Yuryev and Dmitry Yudin                                                      |
| 2444            | Revisiting Automatic Essay Assessment: A Relative Approach                                                               | Anda Leseanu, Ibrahim Hallac, Burcin Ogul and Hasan Ogul                                           |
| 2661            | Evaluating the Usefulness of Large Language Models for Human Activity Recognition Data Augmentation via Few-shot Samples | Maynara Souza, Flávio Arthur Oliveira Santos, Paulo Novais and Cleber Zanchettin                   |
| 2732            | Determination of galaxy photometric redshifts using Conditional Generative Adversarial Networks (CGANs)                  | Manuel Garcia-Fernandez                                                                            |
| 3305            | Hybrid Vision System for Minor Pre-Assembly Identification in a Robotic Welding Cell                                     | Paula Arcano Bea, Francisco Zayas-Gato, Héctor Quintián, Santiago José Tutor Roca and Adolfo Lamas |
| 9805            | An energy efficient model based on the feature pseudo-embedding                                                          | Lingfeng Chen and Iker Pastor López                                                                |

## **SOCO Session: S2 - Deep Learning for Environmental, Energy and Bio-Vision Applications**

*Date: 16th - THURSDAY, Time: 15:30-17:30*

*Room: Aula 2.5*

*Chair: José Francisco Vicent*

### **S2 - Deep Learning for Environmental, Energy and Bio-Vision Applications**

| <b>Id paper</b> | <b>TITLE</b>                                                                                           | <b>Authors</b>                                                                                                                    |
|-----------------|--------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|
| 4146            | From Data to Decisions: A Novel AI-Based Framework to Energy Purchase Optimization in Volatile Markets | Guillermo Dominguez Pesquera, Pablo Garcia Bringas and Iker Pastor Lopez                                                          |
| 5948            | Anomaly Detection and Predictive Maintenance of H2 Compressors using Machine Learning                  | Beatriz Gil-Arroyo, David García, Carolina Gutiérrez, Eduardo García, Luis Ángel Ramos, Daniel Urda and Álvaro Herrero            |
| 7059            | Analysis of honey bee drone sperm using deep learning                                                  | Miguel Santiago Gómez, Víctor Manuel López, Jose Divasón, Francisco Javier Martinez-de-Pison, Pilar Santolaria and Jesús L. Yániz |



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|      |                                                                                                                    |                                                                                               |
|------|--------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|
| 7236 | Analyzing the Efficacy of Urban Low Emission Zones: A Machine Learning Approach to Air Quality in Madrid (Spain)   | Gilberto J. Brito, Manuel Curado, Stefan Rada and Jose F. Vicent                              |
| 9784 | Fusion of Drone Images for 3D Road Defect Analysis: A Context-Enhanced Method for Depth and Shape Estimation       | Paula López Álvarez, Pablo Zubasti Recalde, Jesús García Herrero and José Manuel Molina López |
| 9652 | On the Limitations of Neural Collapse for the Detection of Out-of-Distribution Observations: Can we do any better? | Erik B. Terres-Escudero, Javier Del Ser, and Pablo Garcia-Bringas                             |

### **SOCO Session: S4 - Special Session: Time Series Forecasting in Industrial and Environmental Applications**

*Date: 16th - THURSDAY, Time: 15:30-17:30      Room: Aula 2.6*

*Chair: Andrés Manuel Chacón Maldonado*

#### **S4 - Special Session: Time Series Forecasting in Industrial and Environmental Applications**

| <b>Id paper</b> | <b>TITLE</b>                                                                                         | <b>Authors</b>                                                                                |
|-----------------|------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|
| 0223            | Personalized Multi-Horizon Glucose Forecasting in Type 1 Diabetes via Deep Learning                  | Alessandro Santopaolo, Ilaria Basile, Alessandro Giuseppi and Giovanna Sannino                |
| 2855            | Counterfactual Simulation for estimating Performance Loss in PV Systems: A Machine Learning approach | Jose E. Sanchez-Lopez, Jose Maria Luna-Romera, Daniel Mateos-García and F. Javier Galán-Sales |
| 5310            | Multi-Horizon Forecasting of Air Pollutants Using an Explainable Multi-Task Attention-Based LSTM     | Naeem Ullah, Ivanoe De Falco and Giovanna Sannino                                             |
| 0401            | Deep Learning for Robust Soil Moisture Forecasting Using LSTM and Transformer                        | Raúl Aguilar, Miguel A. Patricio, José M. Molina, Antonio Berlanga and Sergio Zubelzu         |

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

*Date: 16th - THURSDAY, Time: 17:30 – 18:00      Room: Sala Menor*

*Chair: Emilio Corchado*





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### **COFFEE BREAK**

*Date: 16th - THURSDAY, Time: 18:00 - 18:30*

*Room: Hospedería Fonseca (Coffee shop)*

### **PLENARY TALK**

*Date: 16th - THURSDAY, Time: 18:30 – 19:30*

*Room: Sala Menor*

*Plenary: Prof. Sung-Bae Cho*



### **CISIS Session: C2 - Cryptography & Blockchain Security**

*Date: 16th - THURSDAY, Time: 19:30-20:30*

*Room: Sala Menor*

*Chair: Ciprian Pungila*

#### **C2 - Cryptography & Blockchain Security**

| <b>Id paper</b> | <b>TITLE</b>                                                            | <b>Authors</b>                                                                              |
|-----------------|-------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|
| 2035            | Securing On-Chain Voting Using zk-SNARK                                 | Madalin Pahomi, Darius Galis and Ciprian Pungila                                            |
| 2085            | Study and comparison of lattice sieving algorithms                      | Miguel Ángel González de la Torre, Luis Hernandez Encinas and Diego Rojas Rodríguez         |
| 2373            | Hierarchical Threshold Structure Preserving Signatures                  | Emircan Çelik, Ahmet Ramazan Ağırtaş and Oğuz Yayla                                         |
| 8851            | A Comparative Study of LWE and LIP-Based Post-Quantum Signature Schemes | Édgar Pérez-Ramos, Cristian Nina-Orellana, Candelaria Hernández Goya and Pino Caballero-Gil |

## **HAIS Session: H8 - Reinforcement Learning and AI Planning**

*Date: 16th - THURSDAY, Time: 19:30-20:30*

*Room: Aula 2.4*

*Chair: Sung-Bae Cho*

### **H8 - Reinforcement Learning and AI Planning**

| <b>Id paper</b> | <b>TITLE</b>                                                                               | <b>Authors</b>                                                                                         |
|-----------------|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|
| 5835            | Emotional Value-aware Agents: a Viewpoint paper                                            | Carmengelys Cordova García, Elena del Val Noguera, Joaquin Taverner Aparicio and Vicente Botti Navarro |
| 8238            | Neuro-Symbolic Reasoning with Multiple Large Language Models Combined by First-Order Logic | Jieun Kim and Sung-Bae Cho                                                                             |
| 8293            | SimplyQRL: A Modular Benchmarking Library for Hybrid Quantum Reinforcement Learning        | Javier Lázaro, Juan-Ignacio Vazquez and Pablo García Bringas                                           |
| 9625            | Enhancing World Models with Specialized Prediction Networks for Reinforcement Learning     | Álvaro Mellado-Ibáñez, Nestor Arana-Arexolaleiba and Juan-Ignacio Vazquez                              |

## **SOCO Session: S6 - Special Session: Intelligent Techniques Applied to Modelling and Control in Engineering, focused on marine energy systems and robotics**

*Date: 16th - THURSDAY, Time: 19:30-20:30*

*Room: Aula 2.5*

*Chair: Eduardo Gabriel Muñoz Palomeque*

### **S6 - Special Session: Intelligent Techniques Applied to Modelling and Control in Engineering focused on marine energy systems and robotics**

| <b>Id paper</b> | <b>TITLE</b>                                                                                                                                     | <b>Authors</b>                                                                                                 |
|-----------------|--------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|
| 0143            | Detecting Yaw Anomalies in Offshore Wind Turbines using Wind Multiple Features                                                                   | Bassel Weiss, Segundo Esteban and Matilde Santos                                                               |
| 6222            | Neuro Fuzzy Control System for Angular Generator Speed in Floating Offshore Wind Turbines                                                        | Eduardo Muñoz-Palomeque, Matilde Santos and J. Enrique Sierra-García                                           |
| 8070            | Comparative Study of Machine Learning Techniques for Inverse Kinematics in Robotics: XGBoost versus MLP Neural Networks                          | Mario Peñacoba Yagüe, Jesús Enrique Sierra García and Matilde Santos Peñas                                     |
| 8125            | Low Resource Edge-Based Vision for Quadruped Robots: A Comparative Evaluation of Classical HSV and YOLOv5s under Varying Illumination Conditions | Anabel Díaz-Labrador, Ángel Delgado, Héctor J. Pérez Iglesias, Oscar Fontenla-Romero and Jose Luis Calvo-Rolle |





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COCKTAIL AND CONCERT

*Date: 16th - THURSDAY, Time: 21:00*

*Room: Colegio Fonseca (Claustro)*





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**FRIDAY**



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### **CISIS Session: C3 - AI Safety, Privacy & Trustworthy Systems**

*Date: 17th - FRIDAY, Time: 09:00 - 11:00*

*Room: Sala Menor*

*Chairs: Ciprian Pungila*

#### **C3 - AI Safety, Privacy & Trustworthy Systems**

| <b>Id paper</b> | <b>TITLE</b>                                                                                                 | <b>Authors</b>                                                                                         |
|-----------------|--------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|
| 0944            | The effectiveness of personal data detection in LLM-based Conversational Agents                              | Diego Paracuellos, Jose Such, Elena Del Val and Ana Garcia-Fornes                                      |
| 1866            | Adaptive Identity Token from User Attributes for Authentication through Controlled Execution Environment     | Shashank Tripathi, Kai Hendrik Wöhnert and Volker Skwarek                                              |
| 2278            | Comparative Analysis of Jailbreaking Techniques for Large Language Models: A Systematic Evaluation Framework | Pablo Vellosillo Montalt, Elena Del Val Noguera, José Miguel Such Aparicio and Ana María García Fornes |
| 4562            | Hybrid Email Phishing Detection Using Large Language Models and Bayes Classifiers                            | Ciprian Chiosa and Ciprian Pungila                                                                     |

### **HAIS Session: H4 - Data Mining and Decision Support Systems**

*Date: 17th - FRIDAY, Time: 09:00 - 11:00*

*Room: Aula 2.4*

*Chair: Dragan Simić*

#### **H4 - Data Mining and Decision Support Systems**

| <b>Id paper</b> | <b>TITLE</b>                                                                                                 | <b>Authors</b>                                                                                              |
|-----------------|--------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|
| 0293            | A Microservice System Architecture for Receiving ETL System Patterns                                         | Rui Monteiro, Bruno Oliveira and Orlando Belo                                                               |
| 0381            | A Novel General Hybrid System for Data Feature Selection                                                     | Dragan Simić, Zorana Banković, José R. Villar, José Luis Calvo-Rolle, Svetislav D. Simić and Svetlana Simić |
| 0589            | Profiling Public Instagram Accounts with a Multimodal Vector for Hate Exposure Analysis                      | Asier Gonzalez-Santocildes, Iker Pastor Lopez, Marta Gorraiz-Bengoechea and Pablo Garcia Bringas            |
| 0895            | Symbolic Regressor: a interpretability tool for Non-Intrusive Load Monitoring                                | Danel Rey-Arnal, Pablo G. Bringas and Ibai Laña                                                             |
| 1168            | IoT Device Fingerprinting: Optimized with Data Diversity and Feature Selection for Computational Efficiency  | Chan Yeng Hui and Tan Saw Chin                                                                              |
| 3835            | Improvement of Multi-Label Self-Adjusting Memory kNN Classifier for Sparse and Class-Imbalanced Data Streams | Thinzar Tun and Goto Yuichi                                                                                 |
| 4864            | HYBPARSIMONY-IDT: Hybrid Parsimonious Search for Interpretable Decision Trees                                | Francisco Javier Martinez-de-Pison, Alpha Pernia-Espinoza and Jose Divasón                                  |
| 7652            | Analysis of Kernel Thinning for Scalable Support Vector Machines                                             | Blanca Cano Camarero, Ángela Fernández Pascual and José Ramón Dorronsoro Ibero                              |

## **SOCO Session: S8 - Special Session: Machine Learning and Computer Vision in Industry 4.0 I**

*Date: 17th - FRIDAY, Time: 09:00 - 11:00*

*Room: Aula 2.5*

*Chair: Jose García and Enrique Dominguez*

### **S8 - Special Session: Machine Learning and Computer Vision in Industry 4.0 I**

| <b>Id paper</b> | <b>TITLE</b>                                                                                                   | <b>Authors</b>                                                                                                                      |
|-----------------|----------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|
| 0353            | VR Escape Room to Prevent Cognitive Decline in Older Adults                                                    | David Mulero-Pérez, Lucila Vázquez-Soriano, Manuel Benavent-Lledo, David Ortiz-Perez and Jose Garcia-Rodriguez                      |
| 0966            | Multimodal Egocentric Action Recognition via Object-Aware Representations                                      | Hugo Hernandez-Lopez, Manuel Benavent-Lledo, David Mulero-Pérez, David Ortiz-Perez, Javier Rodriguez-Juan and Jose Garcia Rodriguez |
| 1242            | Impact of Data Augmentation on Woven Fabrics Defect Detection by means of Deep Learning                        | Beatriz Gil-Arroyo, Nuria Velasco-Pérez, Juan Marcos Sanz, Ángel Arroyo, Daniel Urda and Álvaro Herrero                             |
| 2075            | Diffuse Radiation Forecasting Using a Hybrid Neural Network Architecture Integrating CNN, LSTM, and MLP Models | Gonzalo Surribas-Sayago, Jose David Fernández-Rodríguez and Enrique Domínguez                                                       |
| 2508            | Rotation-Invariant Deep Learning for 2D Detection: A Step Towards 3D LiDAR Object Recognition                  | Geovanny Satama Bermeo, Julian Estevez, Manuel Graña, Iñigo Aramendia and Jose Manuel Lopez-Guede                                   |
| 3093            | Automated Detection of Fibromyalgia Using 3D Residual Networks on Structural Brain Imaging                     | Rebeca Piñol-Galera, David Ortiz-Perez, Manuel Benavent-Lledo, David Mulero-Perez, Javier Rodriguez-Juan and Jose Garcia-Rodriguez  |
| 3336            | Characterization of Photovoltaic Power with SOM and Clustering: An Approach Based on Meteorological Data       | Anibal Mantilla-Guerra, Christian Mejia-Escobar, Jorge Azorin-Lopez and Jose Garcia-Rodriguez                                       |
| 3659            | Enhanced Skin Lesion Segmentation and Classification Using U-Net and Ensemble Deep Learning Models             | Aboubakr Aakaou, Karl Thurnhofer-Hemsi and Enrique Dominguez                                                                        |

### **COFFEE BREAK**

*Date: 17th - FRIDAY, Time: 11:00 - 11:30*

*Room: Hospedería Fonseca (Coffee shop)*





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### PLENARY TALK

17th - FRIDAY, Time: 11:30 - 12:30 Room: Sala Menor

Plenary: Prof. Ajith Abraham



### CISIS Session: C4 - Special Session: Artificial Intelligence for Protecting the Internet of Things

Date: 17th - FRIDAY, Time: 12:30 - 14:00

Room: Sala Menor

Chairs: Daniel Urda Muñoz

#### **C4 - Special Session: Artificial Intelligence for Protecting the Internet of Things**

| <b>Id paper</b> | <b>TITLE</b>                                                                                                                     | <b>Authors</b>                                                                                                       |
|-----------------|----------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|
| 1992            | Influence of Noise on the Stability of a Stochastic SIR Model with Demography                                                    | Rafael Rodríguez García, Marta-María Álvarez-Crespo, Antonio Díaz-Longueira, Carlos Cambra and Roberto Casado-Vara   |
| 3196            | An optimal control problem for a SIR model with two mitigation strategies for malware spread                                     | Roberto Casado-Vara, Rafael Rodríguez García, Carlos Cambra, Agustín García-Fischer, Esteban Jove and Álvaro Herrero |
| 3874            | Cybersecurity Taxonomies: Comparative Analysis of Leading IoT Datasets for AI-Driven Security                                    | Virginia Martínez-Fuentes, Ángel Arroyo, Diego Granados-Lopez and Álvaro Herrero                                     |
| 7848            | Privacy Enhancing Federated Learning-Based IDS for IoT Networks Using Post-Quantum Secure Channels and Verifiable Secret Sharing | Lamine Syne, Candelaria Hernandez-Goya and Pino Caballero-Gil                                                        |
| 9704            | Federated Learning for the Detection of Attacks on IoT environment                                                               | Alejandro Díez Bermejo, Daniel Urda Muñoz and Jaime Andres Rincon Arango                                             |

## **HAIS Session: H2 - Biomedical Applications**

*Date: 17th - FRIDAY, Time: 12:30 - 14:00*

*Room: Aula 2.4*

*Chairs: Fernando Moncada Martins*

| <b>H2 - Biomedical Applications</b> |                                                                                                                               |                                                                                                                                                                                     |
|-------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Id paper</b>                     | <b>TITLE</b>                                                                                                                  | <b>Authors</b>                                                                                                                                                                      |
| 0023                                | Analyzing the Impact of Data Augmentation on Tumor Detection and Classification in Mammograms                                 | Madalina Dicu, Enol García González, Camelia Chira and José Ramón Villar                                                                                                            |
| 5865                                | An Enhanced Hybrid Machine Learning Model for Plant Disease Detection and Classification                                      | Mara Macelaru, Petrica C. Pop, Rares Chiuzbaian and Norbert Kovacs                                                                                                                  |
| 6864                                | Interpretable ML for Stress Detection from Vital Signs Using SHAP                                                             | Samson Mihirette, Enrique Antonio De Lacal Martin and Qing Tan                                                                                                                      |
| 7762                                | Learning from Normal Brain Activity for Automatic Detection of Photoparoxysmal Responses as Electroencephalographic Anomalies | Fernando Moncada Martins, Víctor M. Gonzalez, José R. Villar, María Antonia Gutiérrez, Pablo Calvo Calleja, Sara Urdiales Sánchez, Ricardo Díaz Pérez and Alinne Dalla-Porta Acosta |
| 8078                                | Subsymbolic and Symbolic Pipeline for an Explainable EEG Authentication System                                                | Marcos Rodriguez-Vega and Pino Caballero-Gil                                                                                                                                        |

## **SOCO Session: S7 - Special Session: Quantum Computing**

*Date: 17th - FRIDAY, Time: 12:30 - 14:00*

*Room: Aula 2.5*

*Chair: Francisco Martínez Álvarez*

| <b>S7 - Special Session: Quantum Computing</b> |                                                                                           |                                                                                                                     |
|------------------------------------------------|-------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|
| <b>Id paper</b>                                | <b>TITLE</b>                                                                              | <b>Authors</b>                                                                                                      |
| 1720                                           | Task Allocation on a Quantum Computer for a Two-Machine Manufacturing Cell                | Wojciech Bozejko, Sergii Trotskyi, Mariusz Uchronski and Mieczyslaw Wodecki                                         |
| 3484                                           | Solving capacitated vehicle routing problem with equal demand on a D-Wave quantum machine | Jan Gromiec, Michał Kapica, Michał Nowicki, Mariusz Uchronski and Mateusz Wasilewski                                |
| 5652                                           | A Comparative Study of Hybrid Classical-Quantum Transfer Learning                         | Daniel Martín-Pérez, Francesc Rodríguez-Díaz, Alicia Troncoso and Francisco Martínez-Álvarez                        |
| 6028                                           | A Practical Implementation of Quantum LSTM Using Qiskit and PyTorch                       | Isaac Rojas-García, Francesc Rodríguez-Díaz, David Gutiérrez-Avilés, Alicia Troncoso and Francisco Martínez-Álvarez |
| 7185                                           | QUBO Optimization: Methods and Implementation using QAOA and Quantum Annealing            | Wojciech Bozejko, Sergii Trotskyi, Mariusz Uchronski and Mieczyslaw Wodecki                                         |



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

*Date: 17th - FRIDAY, Time: 12:30 - 14:00*

*Room: Aula 2.6*

*Chair: Bruno Baruque*

### **I1 – General Track**

| <b>Id paper</b> | <b>TITLE</b>                                                                                                                   | <b>Authors</b>                                                                                                                                             |
|-----------------|--------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 0847            | Enhancing Programming Education Through a Blended Methodology with ProgTutor                                                   | Javier Ortega-Morla, Antonio Leis, Alma María Mallo Casdelo, Laura Morán-Fernández and Noelia Sánchez-Maróño                                               |
| 1732            | Generative AI Use Scale Indicators in Higher Education                                                                         | Elena Del Val and Joaquin Taverner                                                                                                                         |
| 2056            | Semantic Systematic Review of Artificial Intelligence-Based Maturity Models for Teaching Feedback in Higher Education          | Cristian Valdés, Ángel Arroyo and José Manuel Galán                                                                                                        |
| 2419            | From Didactic Proposal to Practical Implementation: Results of an Industrial Robotics Training Course within the EAGLE Project | Mario Peñacoba, Eduardo Bayona, Jesus Enrique Sierra-Garcia and Bruno Baruque                                                                              |
| 3606            | WhoSQLWho: A Gamified Web Application for Learning SQL                                                                         | Bernat Costa, Juan M. Alberola and Víctor Sanchez-Anguix                                                                                                   |
| 7827            | Mixed Reality training in University courses                                                                                   | Alberto Martinez Gutierrez, Pablo Alonso-Díez, Rubén Ferrero-Guillén, Iván Sánchez-Calleja, Jesús Pérez-González, Madalena Araújo and Javier Díez-González |

### **NETWORKING COCKTAIL - LUNCH**

*Date: 17th - FRIDAY, Time: 14:00 - 15:30 Room: Restaurante Fonseca (Colegio Arzobispo Fonseca)*





## **HAIS Session: H9 - Smart Mobility and Transportation Optimization**

*Date: 17th - FRIDAY, Time: 15:30 - 17:30*

*Room: Sala Menor*

*Chair: Bruno Baruque*

### **H9 - Smart Mobility and Transportation Optimization**

| <b>Id paper</b> | <b>TITLE</b>                                                                             | <b>Authors</b>                                                                                        |
|-----------------|------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|
| 1880            | Clustering-Based Route Optimization for Mixed Ride-Sharing under Time Constraints        | Mercedes Ccesa-Quincho, Jenny Fajardo Calderín, Xabier Cantero, Antonio D. Masegosa and Leire Serrano |
| 6578            | Origin-Destination Frequency Tensors and Their Application in Machine Learning Modelling | Dani Marchuet, Javier Palanca and Vicent Botti                                                        |
| 7300            | Fast-TRACCLUS: An Optimized Trajectory Clustering Algorithm for Large-Scale Datasets     | Álvaro González Delgado, Santiago Porras, Bruno Baruque and Hector Cogollos Adrian                    |
| 9897            | Action Space Size Effects in Reinforcement Learning for the Vehicle Routing Problem      | Jon Díaz-Aparicio, Gabriel Duflo, Jenny Fajardo-Calderín and Enrique Onieva Caracuel                  |

## **HAIS Session: H10 - Time Series and Forecasting Methods**

*Date: 17th - FRIDAY, Time: 15:30 - 17:30*

*Room: Aula 2.4*

*Chair: Fernando Moncada Martins*

### **H10 - Time Series and Forecasting Methods**

| <b>Id paper</b> | <b>TITLE</b>                                                                                                              | <b>Authors</b>                                                                                                                                                        |
|-----------------|---------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 0319            | Perplexity, Uncertainty, and the Limits of Active Learning                                                                | Pablo Turon and Montse Cuadros                                                                                                                                        |
| 2500            | Channel selection and creation algorithms for Electroencephalography classification with HIVE-COTE                        | Aiden Rushbrooke, Matthew Middlehurst, Saber Sami and Anthony Bagnall                                                                                                 |
| 4855            | Multivariate Regime Identification and Prediction in Financial Markets via Gaussian Mixture and Gradient Boosting Methods | Álvaro Sánchez-Fernández, Javier Díez-González, Naamán Huerga-Pérez and Hilde Perez                                                                                   |
| 7021            | On-Edge Task Planning with Large Language Models for Service Robotics                                                     | Alejandro González-Cantón, Miguel A. González-Santamarta, Francisco J. Rodríguez-Lera, Angel M. Guerrero-Higueras, Irene González-Fernández and Francisco Martín-Rico |



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## **SOCO Session: S10 - Special Session: Machine Learning and Computer Vision in Industry 4.0 III**

*Date: 17th - FRIDAY, Time: 15:30 - 17:30*

*Room: Aula 2.5*

*Chair: Jose García and Enrique Dominguez*

### **S10 - Special Session: Machine Learning and Computer Vision in Industry 4.0 III**

| <b>Id paper</b> | <b>TITLE</b>                                                                                              | <b>Authors</b>                                                                                                                                                                     |
|-----------------|-----------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 7462            | Ensemble Learning for Polymer Injection Molding Quality Prediction                                        | Iván Sánchez-Calleja, Jesús Pérez-González, Andrea Fernández-Gorgojo, Rubén Ferrero-Guillén, Alberto Martínez-Gutiérrez, Javier Díez-González and Hilde Perez                      |
| 8119            | Personalised visualisation of home monitoring and treatment adherence with AI2EPD                         | David Díaz-Jiménez, José Luis López-Ruiz, Jesus González-Lama, Juan F. Gaitán Guerrero and Macarena Espinilla                                                                      |
| 8430            | Comparative Evaluation of Feature Graphical Descriptors and Classifiers for Pavement Condition Assessment | María Inmaculada Rodríguez-García, María Gema Carrasco-García, Adriana Pabón Noguera, Pedro J.S. Cardoso and Ignacio J. Turias                                                     |
| 8921            | Automated Multi-UAV Scenarios Generation for Cooperative Aerial Missions                                  | Daniel Caballero-Martin, Julian Estevez, Manuel Graña, Daniel Teso-Fz-Betoño and Jose Manuel Lopez-Guede                                                                           |
| 9026            | X-RAPT: A Virtual Reality Platform for Adaptive Training in Robotic Programming                           | David Mulero-Pérez, Beatriz Zambrano-Serrano, Enrique Ruiz Zúñiga, Michael Fernandez-Vega and Jose Garcia-Rodriguez                                                                |
| 9039            | Sentinel-1 potential to identify landslides in mountainous regions                                        | Tannia M. Mayorga Torres, Jose Garcia-Rodriguez and Juan M. Lopez Sanchez                                                                                                          |
| 9766            | A Hybrid CNN-LSTM Model for Hyperspectral Image-Based Detection of Hydrocarbon and Clean Water            | María Gema Carrasco-García, María Inmaculada Rodríguez-García, Javier González Enrique, Juan Jesús Ruíz-Aguilar, Paloma Rocío Cubillas-Fernández and Ignacio José Turias Domínguez |





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### GALA DINER

*Date: 17th - FRIDAY, Time: 21:30*

*Lilicook Vermuteria (Plaza Sexmeros, 7, 37001 Salamanca)*





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