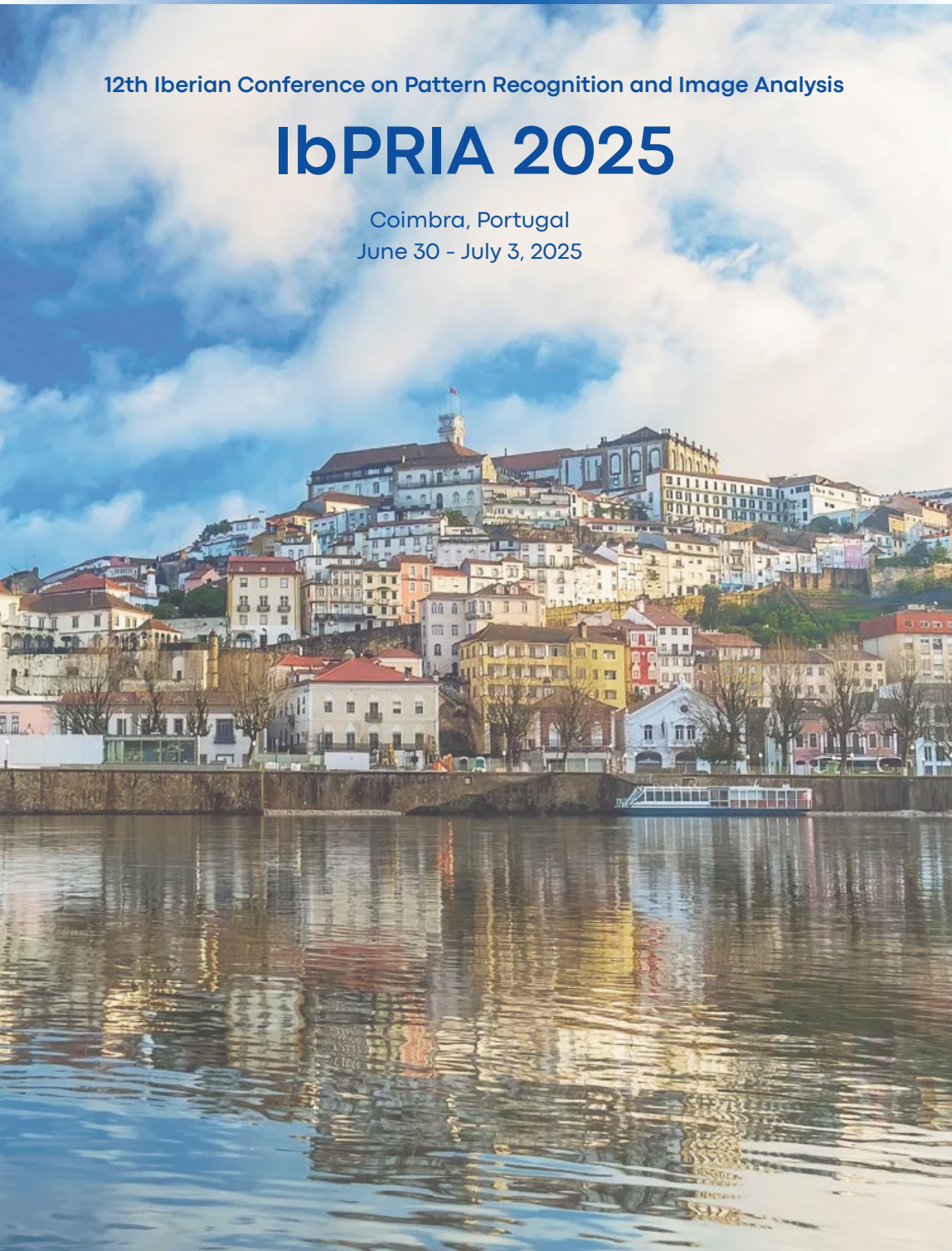
PROGRAM GUIDE

12th Iberian Conference on Pattern Recognition and Image Analysis

IbPRIA 2025

Coimbra, Portugal
June 30 - July 3, 2025



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LNCS LNAI LNBI

Pattern Analysis and Applications
Springer London

Message from the Chairs

The 12th Iberian Conference on Pattern Recognition and Image Analysis (IbPRIA) takes place in Coimbra, Portugal from June 30th to July 3rd, 2025. This twelfth edition is organized by the Institute of Systems and Robotics – University of Coimbra (ISR-UC), with the collaboration of the Center for Informatics and Systems of the University of Coimbra (CISUC), in partnership with the Portuguese APRP and Spanish AERFAI chapters of the IAPR International Association for Pattern Recognition.

The IbPRIA series consists of conferences with high-quality, previously unpublished papers, intended to act as a forum for research groups, engineers and practitioners, to present recent results, improvements and promising future directions in pattern recognition and image analysis.

The present edition received 115 research papers from 23 different countries, being the two major groups from Portugal (48 submitted papers) and Spain (35 submitted papers). This number represented an increase of approximately 34% of the total number of submissions received in the previous edition, demonstrating the increasing interest of our community in IbPRIA.

The Program Technical Committee counted with 130 reviewers, reviewing an average of 2.5 papers where each paper received an average of 3 reviews, which is the result of a rigorous revision process. As for the final Program of the conference, 67 papers were accepted for publication, representing a global acceptance ratio of 59%. From the selected papers, 36 were selected for oral presentation while the 32 remaining were presented as a poster.

As for the keynote speakers, we will be privileged with amazing talks from Prof. Antonio M. López, Autonomous University of Barcelona, "Vision-based Autonomous Driving by Imitation Learning", Prof. Christoph Busch, NTNU-Norway and HAD-Germany, "Challenges for Automated Face Recognition System", Prof. João Filipe Henriques, University of Oxford, "Inner Thoughts: Interpreting Deep Networks with Causality and Tuning Contributions", and from Dr. Luísa Proença, National Deputy Director of Policia Judiciária - Portuguese Investigation Police, "Building Innovative AI-Driven Capabilities for Polícia Judiciária (Law Enforcement): from Research & Development to Regulatory Compliance", with Dr. Filipe Rodrigues.

During the conference first day, there is a Doctoral Consortium and four Tutorials. These Tutorials present very interesting topics such as "Data-Efficient Strategies for Object Detection", "On the Turning Away: Enhancing Stroke Survivors Rehabilitation with Virtual Reality", "pyMDMA: An Open-Source Multimodal Framework for Enhanced Auditing of Real and Synthetic Data", and "Error Estimation in Pattern Recognition".

The venue is the Congress Center of the Hotel Quinta das Lágrimas. This historical place was the stage of one of the most Romantic stories of the Portuguese Monarchy in the XIV century, when Dom Pedro, Infant of Portugal (later King of Portugal) and his beloved Dona Inês de Castro, a noble Dame born in Galicia, Spain, were brutally separated. Today, the echoes of this story endure, while the space is still visited and considered one of the iconic places of the Center of Portugal. We invite you to take a moment to read their mysterious story.

We are eager to share with the global research community in Pattern Recognition and Image Analysis the high-quality papers admitted and to be presented at IbPRIA25.

Saudações Académicas / Academic greetings,
Nuno Gonçalves
Hélder P.Oliveira
Joan Andreu Sánchez

Check the IbPRIA 2025 official website

IbPRIA 2025 website
www.ibpria.org/2025

Access schedules, papers, abstracts, tutorials, committee, past proceedings and more.

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*For **urgent matters only**, may also reach:*
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Secretariat: gustavo.bongiovi@isr.uc.pt | 938 543 921

VENUE ADDRESS
The conference will be held at:

Hotel Quinta das Lágrimas
Rua António Augusto Gonçalves
3041-901 Coimbra, Portugal

VENUE WI-FI
Name: Lagrimas Hotel
Password: lagrimas

REGISTRATION
Attendees when arriving at the conference, should register to receive a badge with your credentials and tickets for lunch and dinner. The ticket is required at the entrance of the Gala Dinner.

NAMES BADGES
Conference attendees are required to wear their badges while in the conference area and during social events in order to facilitate identification of registered participants.

LUNCHES
Lunches are included in the conference fee and will be served at the conference site. For attendees with food restrictions, a special menu option will be available.

GALA DINNER & AWARD CEREMONY
The Gala Dinner is included in the conference fee and will be served at the conference site. For attendees with food restrictions, a special menu option will be available. Make sure to bring your Gala Dinner ticket, to be presented at the entrance. Furthermore, the Award Ceremony of the prizes will be held during the Gala Dinner.

COFFEE-BREAKS
Informal networking moments between sessions, offering coffee (of course), finger food, refreshments and a chance to exchange ideas with fellow attendees.

WELCOME RECEPTION
Social event included in registration, offering attendees an opportunity to network and connect along with cocktails and *canapés*.

DOCTORAL CONSORTIUM
It allows PhD students to present their ongoing work through posters and engage with peers and experts.

TUTORIALS
These sessions provide in-depth insights into specialized topics, featuring at 2h - 2h30 formats.

OPENING SESSION
Marks the official start of the main conference, setting the tone for the event.

KEYNOTE
Features talks by distinguished speakers, sharing cutting-edge R&D insights.

ORAL SESSIONS
Presentations of selected papers, offering authors a platform to discuss their research findings with the audience. Between 4 to 6 papers per session.

POSTER SESSIONS
Presentations of research, with direct interaction between authors and attendees for detailed discussions. Between 15 to 16 papers per session.

VISIT TO ISR-UC LABS
Guided visit through the Institute of Systems and Robotics at the University of Coimbra, showcasing the laboratories and ongoing research projects. **Limited spots**. Must fill the forms sent by email and available at the IbPRIA website.

APRP GENERAL ASSEMBLY
A meeting for the members of APRP to discuss organizational matters.

AERFAI GENERAL ASSEMBLY
A meeting for the members of AERFAI to discuss organizational matters.

CLOSING CEREMONY
Concludes the conference, featuring final remarks, followed by a Lunch.

The city of Coimbra

Coimbra is located at the centre of Portugal by the Mondego river.

Having a rich cultural and historical patrimony, the city has been called the '*city of students*' due to the relevant role of the University of Coimbra. The University is located in three key campuses in Coimbra, named Polo I (old town), Polo II (engineering departments) and Polo III (health campus).

PLACES TO VISIT IN COIMBRA

University of Coimbra:
Explore one of Europe's oldest universities, dating back to 1290, including the remarkable Joanina Library, Royal Palace, and the University Tower with stunning city views.

Botanical Garden:
A tranquil and expansive garden perfect for a relaxing stroll, ideal for nature lovers and those seeking a peaceful escape.

Old Cathedral (Sé Velha):
A Romanesque masterpiece dating back to the 12th century, rich in historical and architectural significance.

Monastery of Santa Clara-a-Velha:
Visit the hauntingly beautiful ruins of this Gothic monastery, partially submerged due to river floods, with an engaging visitor center.

Monastery of Santa Clara-a-Nova:
Home to the tomb of Queen Saint Isabel and panoramic views over Coimbra, offering a quieter, contemplative space.

Museu Nacional de Machado de Castro:
Discover one of Portugal's finest museums, featuring Roman ruins, religious art, and sculptures in a former bishop's palace.

Arco de Almedina and Medieval Streets:
Wander through the atmospheric old city gate and get lost in the historic streets filled with character, artisan shops, and wine bars.

Mondego River:
Take a scenic walk or boat ride along the riverbanks, with beautiful views and cozy cafés nearby for an aperitif or dinner.

TRANSPORTATION IN COIMBRA

Bus:
Coimbra has an accessible public bus system, making it easy to get around the city. Tickets can be purchased on the bus for 2€, or you can buy pre-purchased tickets for more cheap rates, including 24h pass for only 4€.

Check here for the Network Map
bit.ly/bus_network_map

Check here for the Timetable
bit.ly/bus_timetable

Check here for the Tickets Fare
bit.ly/bus_tickets_fare

Alternatives:
Through the city there are taxis, Uber and Bolt available.

Electric bicycles and scooters are also available for renting:

Bird
https://bird.co/#ride-on

Bolt
https://bolt.eu/en-pt/scooters/

Welcome to Quinta das Lágrimas

ABOUT THE HOTEL

Hotel Quinta das Lágrimas ("*Estate of Tears*") is a unique 5-star hotel set in an 18th-century palace and gardens. For centuries it was a royal retreat, and it is most famous for the tragic legend of Prince Pedro and his beloved Inês de Castro. In 1355 King Pedro's father had Inês murdered here in the Quinta's gardens. Local legend says her tears formed the "*Fountain of Tears*", and nearby the "*Fountain of Love*" marks where Pedro secretly sent her love letters. Visitors can still see a neo-Gothic door and window marking the spring where Inês's tears fell. **The hotel embraces this story – "*Quinta das Lágrimas*" itself recalls the lovers' tale.**

The estate gardens surround the hotel. They were expanded in the 1800s into a botanical park with exotic trees, including giant sequoias and a **famous Moreton Bay Fig** (the "*Lovers Banyan Tree*") planted in the 19th century. This centuries-old fig tree won 2nd place in the European **Tree of the Year 2025 contest** for its size and its link to the Pedro-and-Inês legend. Today the Quinta's grounds (about 12 acres in all) include lush lawns, a walled palace courtyard, fountains and ruins, all steeped in history. Quinta das Lágrimas is open to guests and visitors. The **gardens and fountains are open daily 10:00–19:00** (closed on Mondays). (guests staying at the hotel may enter outside these hours).

HOW TO GET THERE

By bus:

The bus service (SMTUC) stops right outside the hotel. The stop is named "Quinta das Lágrimas" – it is only about 30–50 meters (a 2 minute walk) from the hotel entrance. Many local lines serve this stop (for example, routes 6, 10A/10F, 18, 23, 47, etc.). Simply board a SMTUC bus toward Santa Clara–Lages or Santa Clara–Quinta das Lágrimas. If coming from downtown Coimbra, you can take any of these buses and ask the driver to stop at "Quinta das Lágrimas".

By foot:

From Coimbra's city center it's about a 20–40 minute walk east along the riverbank, crossing *Santa Clara* bridge or *Pedro e Inês* footbridge.

By taxi, uber, bolt:

A ride to Quinta das Lágrimas takes about 5-10 minutes from downtown or from Coimbra-B station.

NEARBY EAT & DRINK PLACES

Inside the venue, there are the *Arcadas* and *Pedro & Inês* restaurants. Coimbra has many cafes, restaurants and bars. For quick walking-distance options, the places below are the closest and most convenient:

Galeria Santa Clara (cafe/bar):

5min walk. A trendy cafe and bar with art-decor interiors and views of the old Santa Clara monastery ruins. It's popular for coffee, light meals and evening drinks among students and artists.

Piscinas do Mondego (restaurant):

10min walk. A family-run Portuguese restaurant at Rotunda das Lages (next to the river pools). It is known for grilled meats and river views, and was voted one of Coimbra's best traditional eateries.

Others:

There is many other options close to the venue, such as *Da Vinci l'arte della pizza*, *Prazeres da carne*, *Coimbra Ó Porto*

CHRISTOPH BUSCH

NTNU, Norway & HAD, Germany

Christoph Busch is a professor at NTNU and HDA, and lecturer at DTU, specializing in biometrics. He co-founded the EAB and CAST Forum, leads key EU cybersecurity projects, and has authored 700+ papers. He chairs several biometric standardization bodies globally.

July 1st (Tuesday) 10:00 - 11:00

Challenges for Automated Face Recognition System

The talk will address challenges of face recognition systems. When dealing with operational systems, the quality of captured face images is relevant as it will impact the recognition accuracy. Thus, it is required to measure the utility of a face sample with a quality score but also with complementary measures that can provide actionable feedback. A serious challenge for face recognition systems is the vulnerability to presentation attacks for instance with silicon masks. For reliable recognition in non-supervised environments robust presentation attack detection is required. Further enrolment attacks that morph the face images of two subjects raised concerns. Such attacks merge the content of two parent images into one. This is problematic, as many countries still allow in the passport application analogue images, i.e., a printed photo. Last not least biometric templates must be protected. Acceptability of biometric systems requires fairness of biometric algorithms and artificial neural networks that are used. It is important to determine if face recognition systems are/are not biased towards a specific demographic group.

JOÃO FILIPE HENRIQUES

University of Oxford, England

Dr. João Henriques is an Associated Faculty at the Visual Geometry Group (VGG), University of Oxford. His research focuses on computer vision and deep learning, with the goal of making machines more perceptive and intelligent. He created the KCF and SiameseFC visual object trackers, which won the highly competitive VOT Challenge twice, and are widely deployed in consumer hardware, from social media apps to commercial drones. His research spans many topics: 3D video understanding, robot mapping and navigation, agentic and safe AI; as well as various forms of learning, from self-supervised, causal, and reinforcement learning, including optimisation theory.

July 2nd (Wednesday) 10:00 - 11:00

Inner Thoughts: Interpreting Deep Networks with Causality and Tuning Contributions

Despite their enormous practical success, large deep neural networks are often treated like black boxes, since their high-dimensional internal representations do not lend themselves easily to direct interpretation. In this talk I will discuss two complementary views for understanding these internals.

The first one, focused on visual recognition and inspired by causal learning, analyses how CNNs can be constrained to guarantee that their internal representations will represent real physical variables, such as the positions of objects depicted in images. This makes them directly interpretable. In a somewhat surprising result, we exactly predict how the error of an unsupervised object detector changes with different architectural decisions.

The second one, focused on Large Language Models, inspects how pretraining and fine-tuning have very different influences on LLM responses to individual prompts. This allows us to decide whether a prompt is likely to elicit safe or unsafe responses, lets us steer model behaviour and attitudes by directly changing its internal representation, and allows us to test a hypothesis about how "jailbreaks" disable safety measures. Interpreting representations in terms of "fine-tuned" versus "pre-trained" then turns out to be broadly useful.

ANTÓNIO M. LÓPEZ

Autonomous University of Barcelona

Antonio has a long trajectory carrying research at the intersection of computer vision, simulation, machine learning, driver assistance, and autonomous driving. Antonio has been deeply involved in the creation of the SYNTHIA and UrbanSyn datasets and the CARLA open-source simulator, all created for democratizing autonomous driving research. Antonio's team was pioneer on synth-to-real domain adaptation in the late 2010's. Antonio's team and colleagues also put the focus on vision-based end-to-end autonomous driving powered by deep imitation learning. Antonio is actively working hand-on-hand with industry partners to bring state-of-the-art techniques to the field of autonomous driving.

July 2nd (Wednesday) 14:30 - 15:30

Vision-based Autonomous Driving by Imitation Learning

Developing autonomous vehicles requires training and testing AI drivers with supervised data gathered from a wide variety of driving scenarios. We could say that data is the driver in autonomous driving. This talk highlights the work carried out at CVC/UAB to reduce the need for manual data labeling, focusing on the use of sensorimotor models trained through imitation learning. Antonio's team brings nearly seven years of experience to this field, ranging from simulation with CARLA to deploying real-world vehicles in the Catalan Pyrenees and on the UAB campus. Their research also includes comparative studies of human attention and AI driver attention. In this presentation, we will review the team's research journey on this topic from its beginnings to the present, discussing current achievements and open questions.

LUÍSA PROENÇA and FILIPE RODRIGUES

Portuguese Investigation Police

Luísa Proença is currently Deputy National Director, with a strong background in public administration and digital innovation. With extensive experience in government leadership, she has led initiatives across international relations, management, and modernization of public services.

Filipe Rodrigues leads the coordination of European R&I affairs at Polícia Judiciária, focusing on EU-funded innovation projects in security and law enforcement. He plays a key role in strategy, project implementation, and international collaboration, including his participation in expert groups and boards such as Europol's European Clearing Board.

July 3rd (Thursday) 10:30 - 11:30

Building Innovative AI-Driven Capabilities for Polícia Judiciária (Law Enforcement): from Research & Development to Regulatory Compliance

The Portuguese Criminal Police (Polícia Judiciária, PJ) is a Law Enforcement Agency primarily focused on the investigation of serious and organized forms of crime, including terrorism. The rapid pace of technological evolution in recent years has significantly transformed the modus operandi of criminal organizations, requiring PJ to constantly adapt and strengthen its operational capabilities to effectively respond to these emerging threats. In this context, PJ has been investing in Research & Innovation (R&I) initiatives aimed at creating new operational capabilities through advanced technologies, including the application of Artificial Intelligence (AI) in various investigative domains. This talk will present PJ's strategic approach to technological innovation, highlighting real-world examples of R&I projects and the development of AI-driven tools for operational use. It will also address the legal and regulatory challenges associated with deploying AI in law enforcement, particularly in light of the European Union's AI Act.

Full Technical Program - June 30th

08:30 - 17:00 **Registration**

09:00 - 10:30 **Doctoral Consortium**

1. **Modeling Music: Explorations in Computation, Language and Recognition** *(Aitana Menárguez-Box)*
2. **On the Use of Implicit Representations for Deepfake Detection** *(Miguel Leão)*
3. **Assessing Prototype Generation strategies for Data Reduction in multilabel classification: A comparison between direct and adapted methods** *(Antonio Requena Jiménez)*
4. **Image and Video-Based Automatic Body and Gait Biomarker Computation for Turner Syndrome Diagnosis** *(Maria del Mar Coch-Alcina)*
5. **Remote Sensing and AI-based Land Coverage Analysis for Wildfire Prevention and Planning** *(Matheus Kovaleski)*
6. **Robustness of Deep Learning Based Face Recognition Under Morphing Attacks** *(Iurii Medvedev)*
7. **Automatic defect detection in ornamental rocks** *(Marco Alexandre Tomás Tereso)*
8. **Graph-Imbalanced Regression for Rare Phenotypes** *(Brenda Nogueira)*
9. **A Journey Through Steganography Security Marks: Tracing Innovations from StegaStamp to StampOne** *(Farhad Shadmand)*
10. **Electrocardiogram for Biometric Recognition: Collectability, Stability and Application Challenges** *(Teresa Pereira)*
11. **Effort Reduction through Interactive Machine Translation and Quality Estimation: Innovations and Applications** *(Angel Navarro)*
12. **Towards Power-Efficient Bayesian Causal Spiking Neural Networks** *(Dylan Perdigão)*
13. **Deep Learning in Mild Cognitive Impairment Diagnosis using Eye Movements and Image Content in Visual Memory Tasks** *(Tomás Silva Santos Rocha)*

10:30 - 11:00 Coffee-Break

11:00 - 13:00 **Tutorial 1: Dinis Costa and Joana Costa**
"Data-Efficient Strategies for Object Detection"
Tutorial 2: Bernardo Marques, Sérgio Oliveira and Beatriz Sousa Santos
"On the Turning Away: Enhancing Stroke Survivors Rehabilitation with Virtual Reality"

13:00 - 14:30 Lunch

14:30 - 16:30 **Tutorial 3: Ivo Façoco, Maria Russo, Pedro Matias and Luís Rosado**
"pyMDMA: An Open-Source Multimodal Framework for Enhanced Auditing of Real and Synthetic Data"

14:30 - 17:00 **Tutorial 4: Enrique Vidal and Alejandro H. Toselli**
"Error Estimation in Pattern Recognition"

Full Technical Program - July 1st

08:30 - 17:00 **Registration**

09:45 - 10:15 Opening Session ***Chair: Prof. Nuno Gonçalves***

10:15 - 11:15 **Keynote: Christoph Busch** ***Chair: Prof. Nuno Gonçalves***

11:15 - 11:45 Coffee-Break

11:45 - 13:15 **Oral Session 1 (6 papers): Faces, Body, Fingerprints and Biometrics** ***Chair: Prof. Petia Radeva***

A Geometric and Morphometric Methodology for Evaluating Low-Cost 3D Facial Acquisition and Reconstruction Techniques
Álvaro Heredia-Lidón, Alejandro Moñux-Bernal, Alejandro González, Luis M. Echeverry-Quiceno, Mireia Andreu-Montoriol, Susanna Gallardo, Aroa Casado, María Esther Esteban, Neus Martínez-Abadías, Xavier Sevillano

Abnormal Human Behaviour Detection using Normalising Flows and Attention Mechanisms
Ana Filipa Rodrigues Nogueira, Hélder P. Oliveira, Luís F. Teixeira

Federated Learning for Secure and Privacy-Preserving Facial Recognition: Advances, Challenges, and Research Directions
Ajnas Muhammed, João Marcos, Nuno Gonçalves

Multi-scale Temporal Pose analysis for Gait Recognition
Nicolás Cubero, Francisco M. Castro, Nicolás Guil, Manuel J. Marín-Jiménez

Pseudo-MOS Learning: A Hybrid Full-to-No-Reference FIQA Framework
André Neto, Nuno Gonçalves

Writer Identification using Simplified Handwritten Text Recognition Models
Alejandro H. Toselli, Álvaro Cuéllar, Sònia Boadas, Enrique Vidal, Joan Andreu Sánchez

13:15 - 14:30 Lunch

14:30 - 16:00 **Oral Session 2 (6 papers): Biomedical applications 1** ***Chair: Prof. Inês Domingues***

A Machine Learning Method for Authentication of Human Ancient Mitochondrial DNA
Denis Yamunaque, Armando J. Pinho, Antti Sajantila, Diogo Pratas

A Novel Deep Learning Framework for Predicting Antimicrobial Peptide Activity Using ProtBert and Neural Networks
Maryam Abbasi, Verónica Vasconcelos, Edgar M. C. O. S. Vicente, Ana L. M. Santos, Joel P. Arrais

AI-based system for assistance in minimally invasive renal procedures using Mixed Reality. First steps.
Emilio Delgado, Daniel Caballero, Lucía Salazar-Carrasco, Ignacio Sánchez-Varo, Jesús León-Regalado, Juan A. Sánchez-Margallo, Roberto Rodríguez-Echeverria, Francisco M. Sánchez-Margallo

Exploiting Generative Models for Downstream Classification Tasks on Latent Spaces using 3D Brain MRI Scans: a Down Syndrome Case Study
Jordi Malé, Juan Fortea, Martínez-Abadías, Mateus Rozalem-Aranha, Xavier Sevillano

Multitask Learning Approach for Foveal Avascular Zone Segmentation in OCTA Images
Tânia Melo, Ângela Carneiro, Aurélio Campilho, Ana Maria Mendonça

VesselView: A CNN for Segmentation of Vessels in High-Resolution Retinal Fundus Images
Roi Santos-Mateos, Alexander Velev-Santos, Xosé M. Pardo

16:00 - 17:30 **Poster Session 1** w/ Coffee-Break 17:00 - 17:30

1. **A continuous, differentiable, probability-expressed harm risk estimator for robot actions in dynamic human-centric environments** *(Andrey Solovov, Paulo Menezes)*

2. **An Optimized Multi-class Classification for Industrial Control Systems** *(Ágata Palma, Mário Antunes, Ana Alves)*

3. **Assessing Dimensionality Reduction on Driving Range Estimation** *(João Valido, David Albuquerque, Artur Ferreira, David Coutinho)*

4. **Deformation-Aware Butterfly Tracking in Raw Spatio-Spectral Images** *(Erick Adjé, Arnaud Ahouandjinou, Gilles Delmaire, Probus Kiki, Gilles Roussel)*

5. **ECG-Based Biometric Identification: An Exloratory Study Using Fingertip Signals Acquired With Solid-State Electrodes** *(Teresa M.C. Pereira, Raquel C. Conceição, Vitor Sencadas, Raquel Sebastião)*

6. **Enhancing Medical Image Analysis: A Pipeline Combining Synthetic Image Generation and Super-Resolution** *(Pedro Sousa, Diogo Campas, João Andrade, Pedro Pereira, Tiago Gonçalves, Luís F. Teixeira, Tania Pereira, Hélder P. Oliveira)*

7. **Fine-Grained Visual Classification of Antelope Species** *(Philipp Gruner, Maya Beukes, Vanessa Suessle, Matthias Biber, Martin Jansen, Elke Hergenröther, Andreas Weinmann)*

8. **Image Transformation Sequence Retrieval with General Reinforcement Learning** *(Enrique Mas-Candela, Antonio Ríos-Vila, Jorge Calvo-Zaragoza)*

9. **Mitigating Distribution Bias in Multimodal Datasets via Clustering-Based Curation** *(Mustapha El Aichouni, Lluis Gomez, Lei Kang)*

10. **Optimizing Medical Image Captioning with Conditional Prompt Encoding** *(Rendson F. Fernandes, Hugo S. Oliveira, Pedro P. Ribeiro, Helder P. Oliveira)*

11. **PosePilot: An Edge-AI Solution for Posture Correction in Physical Exercises** *(Rushiraj Gadhvi, Priyansh Desai, Siddharth)*

12. **Quantum Computing in Prenatal Care: Enhancing Fetal Ultrasound Image Classification with Quantum Neural Networks** *(Asmae Zanbouaa, Nabila Zrira, Saad Slimani, Ibtissam Benmiloud, El Houssine Bouyakhf)*

13. **Saliency-guided Emotion Modeling: Predicting Viewer Reactions from Video Stimuli** *(Akhila Yaragoppa, Siddharth)*

14. **Subfield-Based 1-Attempt Parallel Thinning Algorithms on the Hexagonal Grid** *(Kálmán Palágyi)*

15. **Towards a New Categorization of Models for Multivariate Time Series Anomaly Detection** *(Bruna Alves, Armando Pinho, Sónia Gouveia)*

16. **Towards Event-Driven Evaluation of Surveillance Video Understanding using Natural Language** *(João Pereira, Vasco Lopes, João Neves, David Semedo)*

17:30 - 18:30 **Oral Session 3 (4 papers): Machine and Deep Learning 1** ***Chair: Prof. Joan Andreu Sánchez***

A New Subgraph Extraction Algorithm through a Kinship Approach for Link Prediction in Knowledge Graphs
Carla Piñol, Manuel Curado, Jose F. Vicent, Antonio J. Banegas-Luna

Large Language Models for Interactive Machine Translation
Sergio Gómez González, Miguel Domingo, Ángel Navarro, Francisco Casacuberta

Multi-Hop Pooling: Leveraging Transition Matrices for Hierarchical Graph Representation Learning
Ahmed Begga, Francisco Escolano, Miguel Angel Lozano

Node Representation Diversity via Entropy Maximization in Graph Neural Networks
Ahmed Begga, Francisco Escolano, Miguel Angel Lozano

18:30 - 19:30 Welcome Reception

Full Technical Program - July 2nd

08:30 - 17:00 **Registration**

09:00 - 10:00 **Oral Session 4 (4 papers): Machine and Deep Learning 2** ***Chair: Prof. Jorge Batista***

Causal-SHAP: Feature Selection with Explainability and Causal Analysis
Asmae Lamsaf, Pranita Samale, João C. Neves

Impact of label-level noise on multi-label learning: a case study on the k-Nearest Neighbor classifier
Antonio Requena, Antonio Javier Gallego, and Jose J. Valero-Mas

Learning to Detect and Describe a Wireframe
Iván Ferre, Luis Baumela, Iago Suárez

Using LoRA and Reinforcement Learning In Interactive Machine Translation
Ángel Navarro, Francisco Casacuberta

10:00 - 11:00 **Keynote: João Filipe Henriques** ***Chair: Prof. Jorge Batista***

11:00 - 11:30 Coffee-Break

11:30 - 13:00 **Oral Session 5 (6 papers): Applications** ***Chair: Prof. Verónica Romero***

Deciphering the Silent Signals: Unveiling Frequency Importance for Wi-Fi-Based Human Pose Estimation with Explainability
Leonardo Capozzi, Leonardo Ferreira, Tiago Gonçalves, Ana Rebelo, Jaime S. Cardoso, Ana F. Sequeira

Efficient Malicious UAV Detection Using Autoencoder-TSMamba Integration
Azim Akhtarshenas, Ramin Toosi, David López-Pérez, Tohid Alizadeh, Alireza Hosseini

On the Correction of GFS Wind Speed Forecasts in Portugal Using LSTM Networks
Vasco Gomes, David Carvalho, Sónia Gouveia

Statistical Downscaling of Wind Speed in the Iberian Peninsula Using Machine Learning
João Vieitas, José Contente, David Carvalho, Sónia Gouveia

Using gait to monitor health: an experimental baseline
Jorge Zafra-Palma, Nuria Marín-Jiménez, José Castro-Piñero, Magdalena Cuenca-García, Rafael Muñoz-Salinas, Manuel J. Marín-Jimenez

Zipf 's Curves of Plainchant Melodies
Aitana Menárguez-Box, Enrique Vidal, Alejandro H. Toselli

13:00 - 14:30 Lunch

14:30 - 15:30 **Keynote: António M. Lopez** ***Chair: Prof. Manuel Mucientes***

15:30 - 16:30 **Oral Session 6 (4 papers): Biomedical applications 2** ***Chair: Prof. Ana Mendonça***

Continual Deep Active Learning for Medical Imaging: Replay-Base Architecture for Context Adaptation
Rui Daniel, Maria Rita Verdelho, Catarina Barata, Carlos Santiago

Informed decision making strategy for resampling in pain assessment
Miguel Carvalho, Daniela Pais, Raquel Sebastião, Armando Pinho, Susana Brás

MIL vs. Aggregation: Evaluating Patient-Level Survival Prediction Strategies Using Graph-Based Learning
Maria Rita Verdelho, Alexandre Bernadino, Catarina Barata

Prediction of 30-day hospital readmission with clinical notes and EHR information
Tiago Almeida, Plinio Moreno, Catarina Barata

16:30 - 17:00 Coffee-Break

17:00 - 18:30 **Visit to the ISR-UC labs (by bus)**

17:00 - 18:30 APRP General Assembly

17:30 - 18:30 AERFAI General Assembly

20:00 - 23:00 Gala Dinner & Award Ceremony

08:30 - 12:00 **Registration**

09:00 - 10:30 **Oral Session 7 (6 papers): Computer Vision** ***Chair: Prof. Hélder Oliveira***

A Spatial Dense CRF Framework for Post-Processing in Multispectral Image Segmentation
Wilgo Nunes, Gil Gonçalves, Cristiano Premebida

Enhancing Multi-Object Tracking with Segmentation Masks: A Solution for Lost Object Recovery
Manuel Bendaña, Lorenzo Vaquero, Victor M. Brea, Manuel Mucientes

Enriching Unbounded Appearances for Neural Radiance Fields
Ahmad AlMughrabi, Umair Haroon, Ricardo Marques, Petia Radeva

Estimating object physical properties from RGB-D vision and depth robot sensors using deep learning
Ricardo Pedreiras Cardoso, Plinio Moreno

Masking of Gaussian noise in color images: A psychophysical study of just-noticeable differences using synthetic image patches of different luminance value
Luis Miguel Calvo, Pedro Latorre-Carmona, Samuel Morillas, Rafael Huertas, Rafal Mantiuk

MixUDA: From Synthetic to Real Object Detection
Pablo Gil-Pérez, Daniel Cores, Manuel Mucientes

10:30 - 11:30 **Keynote: Luísa Proença and Filipe rodrigues** ***Chair: Prof. Nuno Gonçalves***

11:30 - 13:00 **Poster Session 2** w/ Coffee-Break 11:30 - 12:00

1. **A Semi-automatic Annotation Framework for Neutrophil Ultrastructure from TEM images** *(Zahoor Ahmad, Mahmood Alzubaidi, Wared Nour-Eldine, Samia M. Ltaief, Jens Schneider, Abeer R. Al-Shammari, Marco Agus)*

2. **AGE-US: automated gestational age estimation based on fetal ultrasound images** *(César Díaz-Parga, Marta Nuñez-Garcia, Maria J. Carreira, Gabriel Bernardino, Nicolás Vila-Blanco)*

3. **Analysis of Behavioral Trends in Road Traffic Accidents: A Comparative Study Among Latin America, Australia and the UK** *(Diana Zepeda-Martínez, Angélica Guzmán-Ponce, R. María Valdovinos-Rosas, Carlos Robert Fonseca-Ortiz)*

4. **Assessing Cross-Device Generalization in Remote Sensing Image Super-Resolution** *(Afonso Martins, Ana Dias, Francisco Silva, André Sá, Machiel Bos, João Neves)*

5. **Capturing the Narrative: a Deep Learning Pipeline for Comics Sequences** *(Goncalo Marouvo, Francisco Pereira)*

6. **ECOmpress: a web tool for boosting energy efficiency through data compression** *(Dinis Lei, Denis Yamunaque, Armando J. Pinho, Diogo Pratas)*

7. **Enhancing IoMT security by using Benford's law and distance functions** *(Pedro Fernandes, Séamus Ó Ciardhuáin, Mário Antunes)*

8. **Gender Classification in Play Works Using BERT-based Models** *(Jaime Yefi-Verdugo, Raúl Peña-Ortiz, Verónica Romero)*

9. **How LLMs See People** *(Carlos Roxo, João Marcos, Nuno Gonçalves)*

10. **Lightweight SwinUNETR for Hepatic Segmentation** *(Marcos Fdez-González, Lois Nodar-Corral, Xose R. Fdez Vidal, Enrique Comesaña)*

11. **Mitigating Overfitting in Fully Transformer Architectures for Handwritten Text Recognition** *(Carlos Penarrubia, Jose J. Valero-Mas, Jorge Calvo-Zaragoza)*

12. **Mutual-Training Pseudo-Labeling Framework for Fire Segmentation** *(Antonio Antunovic, Davor Damjanovic, Matej Arlovic, Emmanuel Karlo Nyarko, Franko Hrzic, Josip Balen)*

13. **On the Use of Implicit Representations for Deepfake Detection** *(Miguel Leão, Nuno Gonçalves)*

14. **Spiking Alternatives for the Leaky Integrate-and-Fire Neuron: Applications in Cybersecurity and Financial Threats** *(Dylan Perdigão, Francisco Antunes, Catarina Silva, Bernardete Ribeiro)*

15. **Uplift modeling for treatment effect estimation in the prostate cancer treatment landscape** *(Ana Rodrigues, Nuno Rodrigues, José Guilherme de Almeida, Ana Gaivão, Carlos Bilreiro, Inês Santiago, Joana Ip, Sara Belião, Manolis Tsiknakis, Kostas Marias, Daniele Regge, ProCAncer-I Consortium, Nickolas Papanikolaou, Inês Domingues)*

13:00 - 13:15 Closing Ceremony

13:15 - 14:30 Lunch and Farewell

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