IbPRIA 2023

11th IBERIAN CONFERENCE ON PATTERN RECOGNITION AND IMAGE ANALYSIS
JUNE 27-30, 2023
UNIVERSITY OF ALICANTE, SPAIN

> PROGRAM AT A GLANCE

Tuesday (June 27) - Tutorials	
08:30-09:00	Registration
09:00-10:30	**Doctoral consortium** *(chair: Francisco J. Castellanos, University of Alicante, Spain)*
10:30-11:00	Coffee Break
11:00-13:00	**Tutorial 1: Mikel Artetxe** - *A brief history of unsupervised machine translation: from a crazy idea to the future of MT?* *(chair: Juan Antonio Pérez, University of Alicante, Spain)*
13:00-14:30	Lunch (Poniente restaurant)
14:30-16:30	**Tutorial 2: Sergio Orts** - *Machine Learning for Computational Photography* *(chair: Marcelo Saval-Calvo, University of Alicante, Spain)*
16:30-17:00	Coffee Break
17:00-19:00	**Tutorial 3: Karteek Alahari** - *Continual Visual Learning: Where are we?* *(chair: Jose Javier Valero, Universitat Pompeu Fabra, Spain)*
19:30-21:30	Reception (Santa Bárbara Castle)

Wednesday (June 28)	
08:30-08:50	Registration
08:50-09:00	Opening Session *(chair: Antonio Pertusa, University of Alicante, Spain)*
09:00-10:30	**Oral Session 1 (4 papers): Machine learning** *(chair: Rubén Tolosana, Autonomous University of Madrid, Spain)*
10:30-11:00	Coffee Break
11:00-12:00	**Oral Session 2 (3 papers): Document Analysis** *(chair: Joan Andreu Sánchez, Technical University of Valencia, Spain)*
12:00-13:00	**Keynote: Timothy Hospedales** *(chair: Petia Radeva, University of Barcelona, Spain)* ***Distribution Shift: The Key Bottleneck for Pattern Recognition in Practice?***
13:00-14:30	Lunch (Hospes Amérigo)
14:30-16:00	**Poster Session 1** (with coffee) *(chair: Antonio Javier Gallego, University of Alicante, Spain)*
16:00-17:30	**Oral Session 3 (4 papers): Computer Vision** *(chair: Jorge Calvo, University of Alicante, Spain)*
17:30-18:30	AERFAI Assembly
19:00-20:30	Social Program (MARQ museum)

Thursday (June 29)	
08:30-09:00	Registration
09:00-10:30	**Oral Session 4 (4 papers): 3D Computer Vision** *(chair: Marcelo Saval-Calvo, University of Alicante, Spain)*
10:30-11:00	Coffee Break
11:00-12:00	**Oral Session 5 (3 papers): Computer Vision Applications** *(chair: Filiberto Pla, University Jaume I, Spain)*
12:00-13:00	**Keynote: Nuria Oliver** - *Data Science against COVID-19* *(chair: Antonio Pertusa, University of Alicante, Spain)*
13:00-14:30	Lunch (Poniente restaurant)
14:30-16:00	**Poster Session 2** (with coffee) *(chair: María Alfaro-Contreras, University of Alicante, Spain)*
16:00-17:30	**Oral Session 6 (4 papers): Medical Imaging** *(chair: Manuel Marín, University of Córdoba, Spain)*
20:30-23:00	Conference Dinner (Dársena Restaurant) *Includes awards ceremony and announcement of next IbPRIA*

Friday (June 30)	
08:30-09:00	Registration
09:00-10:30	**Oral Session 7 (4 papers): Machine Learning Applications** *(chair: Jose Javier Valero, Universitat Pompeu Fabra, Spain)*
10:30-12:00	**Poster Session 3** (with coffee) *(chair: Antonio Ríos, University of Alicante, Spain)*
12:00-13:00	**Keynote: Gustau Camps-Valls** - *AI for Sustainable Earth Sciences* *(chair: Jorge Calvo, University of Alicante, Spain)*
13:00-13:10	Closing Ceremony *(chair: Antonio Pertusa, University of Alicante, Spain)*
13:10-14:30	Lunch (Sede San Fernando)

> GENERAL INFORMATION

✉ Email	📞 Phones
ibpria23@dlsi.ua.es. Organizing committee.	**+34 965 90 98 90.** Conference venue. **+34 965903400 x 8824.** Local chair.

Wi-Fi

Eduroam. You can connect to the conference's Wi-Fi network using your Eduroam credentials. If you do not have an Eduroam account and did not fill out the survey, please send an email to ibpria23@dlsi.ua.es. You can also ask the committee members and volunteers identified with the **red** color in the badge.

Oral Sessions

- **15-minute** slot for **presentation**, plus **5 minutes** for **questions.**
- Presenters can use their own laptop with HDMI connection. Please, go to the room where the session takes place and test your computer in advance (you can use, for example, the Coffee Break slots to do this, or the Registration period, between 8:30 and 9:00). **A laptop will be available in the room. If you want to use it, please send to ibpria23@dlsi.ua.es your presentation in advance, identified with the paper ID number.** Even if you plan to use your laptop but want to have a backup solution, you can send us the presentation document and we will put it in the local laptop.

Poster Sessions

- Posters should be **A0 format**, with vertical (**portrait**) orientation (841 mm width x 1189 mm height).
- Each poster is assigned to a poster session. You should plan to **mount your poster during the morning of your assigned day**. Push pins will be available for mounting posters.
- One of the authors must be present at the poster to interact with attendees during the assigned session. Of course, to allow poster presenters to have a chance to see the other posters, it is reasonable to leave the poster for short periods of time.

Name 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.

Lunch

Lunch is included in the conference fee and will be served at **Poniente Restaurant on June 27 and June 29, at Hospes Amérigo on June 28, and at the conference site on June 30**. Refer to **page 7 for directions**. Please, **wear your badge** since **tickets are included inside**. For attendees with allergies, a special menu option will be available. Please look for the color of your badge sticker: dark green for vegan options, regular green for vegetarian options, and red for allergies. The waiters will provide information on specific allergens present in the dishes.

> CHAIRS' WELCOME

It is our pleasure to welcome you to the 11th Iberian Conference on Pattern Recognition and Image Analysis, IbPRIA 2023, a biennial conference organized by the national IAPR associations for pattern recognition in Spain (AERFAI) and Portugal (APRP) since 2003.

This year's IbPRIA is held during June 27–30, 2023, in Alicante, Spain, and hosted by the University of Alicante, with the support of the University Institute for Computing Research (IUII) and Generalitat Valenciana.

After 20 years, in its 11th edition, IbPRIA has become a key research event in pattern recognition and image analysis on the Iberian Peninsula. Therefore, most of the research in this edition comes from Spanish and Portuguese authors. Of the 198 authors whose works were accepted, 57% are from Spain, and 15% are from Portugal. The rest are from another 16 countries: Belgium, Sweden, the USA, Norway, Mexico, Ukraine, France, Germany, New Zealand, Czech Republic, Italy, India, Bangladesh, Cuba, Switzerland, and Estonia.

IbPRIA 2023 has received 86 submissions. The review process was diligent and required careful consideration by more than 100 reviewers who spent significant time and effort reviewing the papers, with an average of 2.9 reviews per paper and an average number of papers per reviewer of 2.2. In the end, 56 papers were accepted, an acceptance rate of 65%, lowering the rate from previous editions. For the final program, 26 papers were selected for oral presentations (30% acceptance rate) and 30 as poster presentations.

It is a great pleasure to receive all attendants in the beautiful city of Alicante for what we believe will be an enriching event. We want to thank all who made this possible, including authors, reviewers, chairs, and members of the conference committees. Special thanks to the invited speakers, Timothy Hospedales, Nuria Oliver, and Gustau Camps-Valls, and tutorial presenters Sergio Orts-Escolano, Mikel Artetxe, and Karteek Alahari. And, of course, a final word to the outstanding local committee members.

We hope you will enjoy the conference, and we look forward to meeting you again at the next edition of IbPRIA, in Portugal, in 2025.

Thanks!

Joan Andreu Sánchez
General Chair
Polytechnic University of Valencia, Spain

Inês Domingues
General Chair
Instituto Superior de Engenharia de Coimbra, Portugal

Antonio Pertusa
Local Chair
University of Alicante, Spain

Antonio Javier Gallego
Program Chair
University of Alicante, Spain

Manuel J. Marín
Program Chair
Universidad de Córdoba, Spain

Raquel Justo
Program Chair
Universidad del País Vasco, Spain

Hélder Oliveira
Program Chair
INESC TEC, University of Porto, Portugal

> COMMITTEES

General Chairs

- **Joan Andreu Sánchez.** Polytechnic University of Valencia, Spain.
- **Inês Domingues.** Instituto Superior de Engenharia de Coimbra, Portugal.

Local Chair

- **Antonio Pertusa.** University of Alicante, Spain.

Program Chairs

- **Antonio Javier Gallego.** University of Alicante, Spain.
- **Manuel J. Marín.** Universidad de Córdoba, Spain.
- **Raquel Justo.** Universidad del País Vasco, Spain.
- **Hélder Oliveira.** INESC TEC, University of Porto, Portugal.

Tutorial Chairs

- **Jose Javier Valero.** University of Alicante, Spain.
- **Verónica Vasconcelos.** Instituto Superior de Engenharia de Coimbra, Portugal.

Local Committee

- **Luisa Micó.** University of Alicante, Spain.
- **Francisco J. Castellanos.** University of Alicante, Spain.
- **Marcelo Saval.** University of Alicante, Spain.
- **Antonio Ríos.** University of Alicante, Spain.
- **María Alfaro.** University of Alicante, Spain.

Program Committee

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Antonio Jesús Banegas Luna	Alicia Fornés	João Carlos Neves	Antonio-José
Zuria Bauer	Giorgio Fumera	Lawrence O'Gorman	Sánchez-Salmerón
Jose Miguel Benedi	Vicente Garcia	Joel P. Arrais	Alberto Sanchis
Emmanouil Benetos	Petia Georgieva	Kalman Palagyi	Emilio Sanchis
Larbi Boubchir	Francisco Gomez-Donoso	Cristina Palmero	Carlo Sansone
Susana Brás	Teresa Goncalves	Roberto Paredes	Marcelo Saval-Calvo
Jorge Calvo-Zaragoza	Sónia Gouveia	Billy Peralta	Raquel Sebastião
Pedro J. S. Cardoso	Miguel Angel Guevara Lopez	Carlos Pereira	Ana F. Sequeira
Jaime Cardoso	Jose M. Iñesta	Alicia Pérez	Samuel Silva
Gonçalo Carnaz	Alfons Juan	Petra Perner	Catarina Silva
Jesus Ariel Carrasco-Ochoa	Martin Kampel	Armando Pinho	Jose Silvestre Silva
Francisco Casacuberta	Vitaly Kober	Filiberto Pla	Luis Teixeira
Francisco J. Castellanos	Pedro Latorre Carmona	Nicolaie Popescu-Bodorin	César Teixeira
Francisco Manuel Castro	Marcos A. Levano	Diogo Pratas	Ruben Tolosana
Miguel Coimbra	Fernando Lopes	Luis Rato	M. Inés Torres
Diego Sebastián Comas	Damián López	Pedro Real Jurado	Alejandro Toselli
Paulo Correia	Juan Valentín Lorenzo-Ginori	Arsénio Reis	V. Javier Traver
Paulo Costa	Miguel Angel Lozano	Francesco Renna	Jose J. Valero-Mas
Hanz Cuevas-Velasquez	F.J. Madrid-Cuevas	Bernardete Ribeiro	Verónica Vasconcelos
António Cunha	Andre R. S. Marcal	João M.F. Rodrigues	Enrique Vidal
Manuel Curado Navarro	Carlos David Martinez Hinarejos	Luis Javier Rodriguez-Fuentes	Jordi Vitria
Inês Domingues	Rafael Medina-Carnicer	Antonio Rodriguez-Sanchez	

> SOCIAL EVENTS

Welcome Reception

Tuesday, June 27, 20:00h

At the top of Mount Benacantil, which stands at 166 meters, sits the Castillo de Santa Bárbara. This castle was designed to be one of the largest medieval fortresses in Spain, offering visitors breathtaking 360º views of the city of Alicante. The Castillo de Santa Bárbara has been recognized as a Cultural-Interest Site since 1961.

We will enjoy a welcome reception at the castle, featuring a guided tour and a cocktail service with live music.

For transportation to the castle, **there will be a bus available** exclusively for IbPRIA attendees. The bus will **depart from Puerta del Mar** (refer to the map on page 7) **every 15 minutes, from 19:15 to 19:45**. Please note that **access to the castle after 20:00 will require attendees to present their badges**.

When it comes to the **return** journey, **the first bus will depart at 22:30, followed by a second bus at 23:00**. Additionally, **at midnight, a spectacular fireworks display will take place, which you can enjoy from the castle itself**. **If you** choose to stay and **watch the fireworks, please take into account that you should descend on foot.** This beautiful walk will be done through Ereta park and Santa Cruz quarter and takes around **20 minutes. A member of our organizing team will** be available to **accompany you** during the descent.

MARQ Museum

Wednesday, June 28, 19:00h

MARQ is a project that strives to be the first archaeological museum of the 21st century. Alongside the permanent exhibition that showcases archaeological findings and the history of Alicante, there is a temporary exhibition featuring the Xi'An warriors from the Chinese Qin and Han dynasties.

There will be a **bus for IbPRIA attendees departing from Puerta del Mar** (refer to the map on page 7) **at 18:15 and 18:45**. If you have any **University identification card** (either student or professor/lecturer), please bring it with you.

Conference Dinner

Thursday, June 29, 20:30h

The conference dinner will be held at the restaurant "Dársena" (refer to the map on page 7). The restaurant is located within a 10-minute walking distance from the conference venue.

> VENUE

Edificio San Fernando

The tutorials and the conference will be held at Edificio San Fernando (Sede Universidad de Alicante), c/ San Fernando 40, Alicante. Please note that access to the building for this event is through the right side entrance (Velarde street), which is situated between the main building and the post office building.

> INVITED SPEAKERS

Keynote 1: Timothy Hospedales

Timothy Hospedales is a Full Professor of Artificial Intelligence at the University of Edinburgh, where he heads the Machine Intelligence Research group, and Programme Director for Machine Learning and Data Intelligence at Samsung AI Centre Cambridge. He has worked extensively on learning with limited data, with applications in computer vision, pattern recognition, and beyond; and received funding from the European Commission and UK Research Councils. He has published numerous papers in top venues such as CVPR, NeurIPS, ICML, ICLR, AAAI, and PAMI, several of which have won best paper prizes and nominations; and recently co-authored a book on deep domain adaptation in computer vision. He is/was an Associate Editor of IEEE Transaction on Pattern Analysis and Machine Intelligence, Program Chair of BMVC, Associate Program Chair of AAAI, ELLIS fellow, and Alan Turing Institute fellow.

Distribution Shift: The Key Bottleneck for Pattern Recognition in Practice?

AI has made rapid progress as measured by benchmark dataset performance. In this talk, I will argue that distribution shift between training and deployment is very difficult to avoid in practice, and that its detrimental impact is often an underlying cause of practical system failures. As such distribution shift is one of the key reasons why real-world pattern recognition impact has lagged benchmark performance. I will introduce a variety of paradigms and tools that the community is developing to tackle this challenge and discuss where they having success, where they are failing, where they are insufficiently imaginative, and what we can do better as a community to facilitate progress towards more robust AI.

Keynote 2: Nuria Oliver

Nuria Oliver is a computer scientist. She is the director of the ELLIS unit Alicante Foundation, Chief Scientific Adviser at the Vodafone Institute, and Chief Data Scientist at DataPopAlliance. She is also cofounder and vice-president of ELLIS, The European Laboratory for Learning and Intelligent Systems. She holds a PhD from the Media Lab at MIT and is an IEEE fellow, ACM Distinguished Scientist and Fellow, EurAI Fellow and elected permanent member of the Royal Academy of Engineering in Spain. She is one of the most cited female computer scientists in Spain, with her research having been cited by more than 23,000 publications. She is well known for her work in computational models of human behavior, human computer-interaction, mobile computing and big data for social good.

Data Science against COVID-19

Data Science against COVID-19 is the work of a multi-disciplinary team of 20+ volunteer scientists between March of 2020 and April of 2022, working very closely with the Presidency of the Valencian Government to support their decision-making during the COVID-19 pandemic in Spain. In my talk, I will describe our work and share the lessons learned in this very special initiative of collaboration between the civil society at large (through a citizen survey), the scientific community (through this taskforce) and a public administration (through our collaboration with the Presidency of the Valencian Government).

Gustau Camps-Valls is a Physicist and Full Professor in Electrical Engineering in the Universitat de València, Spain, where lectures on machine learning, remote sensing and signal processing. He is the head of the Image and Signal Processing (ISP) group, an interdisciplinary group of 40 researchers working at the intersection of AI for Earth and Climate sciences. He has published over 250+ peer-reviewed international journal papers, 350+ international conference papers, 25 book chapters, and 5 international books on remote sensing, image processing and machine learning. He coordinated/participated in 60+ research projects, involving industry and academia at national and European levels. He coordinates the 'Machine Learning for Earth and Climate Sciences' research program of ELLIS. Prof. Camps-Valls is the only researcher receiving two European Research Council (ERC) grants in two different areas: an ERC Consolidator (2015, Computer Science) and ERC Synergy (2019, Physical Sciences) grants to advance AI for Earth and Climate Sciences.

AI for Sustainable Earth Sciences

AI has tremendous potential to achieve sustainable development goals in the Earth sciences. In this talk, I will discuss how AI can improve environmental data collection and analysis, reduce waste and pollution, improve weather and climate forecasting, and develop more efficient renewable energy sources. Additionally, I will show how AI can positively impact climate science and natural resource management, from monitoring crops, forests, and oceans to detecting, characterizing and interpreting extreme events, such as droughts and heatwaves, in massive Earth data. A full AI agenda will be introduced based on hybrid machine learning modeling, explainability, and causal inference. Finally, I will discuss the challenges and ethical considerations associated with AI for sustainability, where interdisciplinary education and diversity will be key. This talk will provide an overview of the potential of AI for achieving a more sustainable future and provide insight into the innovative possibilities of AI for sustainability in the Earth sciences.

> TUTORIALS (JUNE 27)

Tutorial 1: Mikel Artetxe
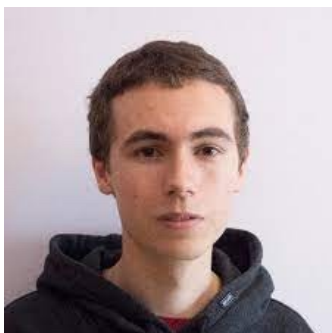
Mikel Artetxe is a co-founder of Reka. Prior to that, he was a Research Scientist at FAIR (Meta AI), and he did his PhD at the University of the Basque Country, advised by Eneko Agirre and Gorka Labaka, and interned at DeepMind, FAIR, and Google. Mikel's general research area is in Natural Language Processing and Machine Learning. His background is mostly on multilinguality, focusing on low-resource scenarios and, in particular, unsupervised machine translation and cross-lingual representation learning. More recently, he has also been working on natural language generation, few-shot learning and large-scale language models.

A brief history of unsupervised machine translation: from a crazy idea to the future of MT?

Machine Translation (MT) has traditionally relied on millions of examples of existing translations. In 2011, Ravi and Knight attempted the impossible—training MT systems without parallel data—but their statistical decipherment approach was only shown to work in very limited settings. Barely a decade later, we have seen the first serious claims of state-of-the-art MT results without using any explicit parallel data. Interestingly, this progress has come from increasingly simpler ideas combined with scale, an illustrative example of the broader trend in AI. In this talk, I will present the journey that has led to this progress, and reflect on what it means to be a researcher in the era of large language models.

Tutorial 2: Sergio Orts-Escolano

Sergio Orts-Escolano is a Staff Research Scientist at Google. His research interests include human-centric 3D computer vision and machine learning, with a special focus on topics such as depth sensing, segmentation and matting, image relighting, neural rendering, generative models, volumetric reconstruction, and immersive 3D telepresence. Before joining Google, he was an assistant professor in the department of Computer Science and Artificial Intelligence at the University of Alicante, Spain. Previously, he was a Senior Scientist at PerceptiveIO and a researcher at Microsoft Research where he was one of the leading members of the Holoportation project (3D virtual human teleportation in real-time). He has authored more than 50 publications in top journals and conferences like CVPR, ECCV, SIGGRAPH, 3DV, BMVC, IROS, and TPAMI.

Machine Learning for Computational Photography

In this tutorial, we will explore the use of deep learning techniques in the field of computational photography. In recent years, we have seen how deep learning techniques have enabled the creation of high quality pictures and videos captured using smartphones that look like they were taken with a professional DSLR camera. In particular, deep learning techniques have shown great potential to improve image quality and to perform post-capture image edits, e.g. creative retouching, improving low-light photography, creating depth of field effect, etc. Throughout the talk, we will present multiple research works and show how deep learning techniques can be applied to real-world computational photography applications: rendering a natural camera bokeh effect, relighting human portraits, realistic background replacement, etc. We will also discuss the challenges and limitations of using deep learning in this field, as well as future directions for research and development.

Tutorial 3: Karteek Alahari

Karteek Alahari is a senior researcher (known as chargé de recherche in France, which is equivalent to a tenured associate professor) at Inria. He is based in the Thoth research team at the Inria Grenoble - Rhône-Alpes center. He was previously a postdoctoral fellow in the Inria WILLOW team at the Department of Computer Science in ENS (École Normale Supérieure), after completing his PhD in 2010 in the UK. His current research focuses on addressing the visual understanding problem in the context of large-scale datasets. In particular, he works on learning robust and effective visual representations, when only partially-supervised data is available. This includes frameworks such as incremental learning, weakly-supervised learning, adversarial training, etc. Dr. Alahari's research has been funded by a Google research award, the French national research agency, and other industrial grants, including Facebook, NaverLabs Europe, Valeo.

Continual Visual Learning: Where are we?

Several methods are being developed to tackle the problem of incremental learning in the context of deep learning-based models, i.e., adapting a model, originally trained on a set of classes, to additionally handle new classes, in the absence of training data of the original classes. They aim to mitigate "catastrophic forgetting"—an abrupt degradation of performance on the original set of classes, when the training objective is adapted to the new classes. In this tutorial, we plan to provide a comprehensive description of the main categories of incremental learning methods, e.g., based on distillation loss, growing the capacity of the network, introducing regularization constraints, or using autoencoders to capture knowledge from the initial training set, and analyze the state of affairs. We will then study the new challenges of learning incrementally in frameworks that are not fully supervised, such as semi or self supervised learning.

> DOCTORAL CONSORTIUM (JUNE 27)

A **Doctoral Consortium (DC)** is organized for IbPRIA attendants on the tutorials day, June 27th at 9:00. The DC provides a unique opportunity for PhD students to present their ongoing work and to interact with other students and experienced researchers. It doesn't matter if the work has been previously presented at another conference, is intended to be presented elsewhere, or is still in progress. The DC is open to PhD students at any stage of their doctoral studies.

There is a 300€ award for the best DC poster supported by the *Spanish Association for Pattern Recognition and Image Analysis* (AERFAI). The award will be announced at the conference dinner.

Instructions

DC posters can be either **A0 or A1 format**, with vertical (**portrait**) orientation. The student must be present at the poster to interact with attendees during the DC session.

Book of Abstracts: It contains the names of poster presenters, their presentation titles, and brief summaries of their work. Please click here to access it.

The main objective of this book is to promote knowledge sharing and encourage attendees to preview the topics that will be presented. By sharing this document prior to the conference, participants can familiarize themselves with the research and plan their attendance accordingly, ensuring they do not miss presentations that align with their interests.

> FULL TECHNICAL PROGRAM

Tuesday (June 27) - Tutorials

08:30-09:00   Registration

09:00-10:30   **Doctoral consortium**
(chair: Francisco J. Castellanos, University of Alicante, Spain)

10:30-11:00   Coffee Break

11:00-13:00   **Tutorial 1: Mikel Artetxe**
A brief history of unsupervised machine translation: from a crazy idea to the future of MT?
(chair: Juan Antonio Pérez, University of Alicante, Spain)

13:00-14:30   Lunch (Poniente restaurant)

14:30-16:30   **Tutorial 2: Sergio Orts**
Machine Learning for Computational Photography
(chair: Marcelo Saval-Calvo, University of Alicante, Spain)

16:30-17:00   Coffee Break

17:00-19:00   **Tutorial 3: Karteek Alahari**
Continual Visual Learning: Where are we?
(chair: Jose Javier Valero, Universitat Pompeu Fabra, Spain)

19:30-21:30   Reception (Santa Bárbara Castle)

Wednesday (June 28)

08:30-08:50   Registration

08:50-09:00   Opening Session
(chair: Antonio Pertusa, University of Alicante, Spain)

09:00-10:30   **Oral Session 1: Machine learning**
(chair: Rubén Tolosana, Autonomous University of Madrid, Spain)

        CCLM: Class-conditional Label Noise Modelling
         Albert Catalan Tatjer, Bhalaji Nagarajan, Ricardo Jorge Rodrigues Sepúlveda Marques and Petia Radeva

        Addressing class imbalance in Multilabel Prototype Generation for k-Nearest Neighbor classification
         Carlos Penarrubia, Jose J. Valero-Mas, Antonio Javier Gallego and Jorge Calvo-Zaragoza

        Time series imputation in faulty systems
         Ana Almeida, Susana Brás, Susana Sargento and Filipe Cabral Pinto

        DARTS with degeneracy correction
         Guillaume Lacharme, Hubert Cardot, Christophe Lente and Nicolas Monmarche

10:30-11:00   Coffee Break

11:00-12:00   **Oral Session 2: Document Analysis**
(chair: Joan Andreu Sánchez, Technical University of Valencia, Spain)

        Segmentation of Large Historical Manuscript Bundles into Multi-page Deeds
         José Ramón Prieto Fontcuberta, David Becerra, Alejandro Hector Toselli, Carlos Alonso and Enrique Vidal

        A Study of Augmentation Methods for Handwritten Stenography Recognition
         Raphaela Heil and Eva Breznik

        Lifelong Learning for Document Image Binarization: A Experimental Study
         Pedro González-Barrachina, María Alfaro-Contreras, Mario Nieto-Hidalgo and Jorge Calvo-Zaragoza

12:00-13:00   **Keynote: Timothy Hospedales**
Distribution Shift: The Key Bottleneck for Pattern Recognition in Practice?
(chair: Petia Radeva, University of Barcelona, Spain)

13:00-14:30   Lunch (Hospes Amérigo)

14:30-16:00   **Poster Session 1** (with coffee)
(chair: Antonio Javier Gallego, University of Alicante, Spain)

        A fuzzy logic inference system for display characterization
         Khleef Almutairi, Samuel Morillas, Pedro Latorre-Carmona and Makan Dansoko

        Learning Semantic-Visual Embeddings with a Priority Queue
         Rodrigo Valério and Joao Magalhaes

Optimizing Object Detection Models via Active Learning
Dinis Costa, Catarina Silva, Joana Costa and Bernardete Ribeiro

Test-Time Augmentation for Document Image Binarization
Adrian Rosello, Francisco J. Castellanos, Juan P. Martinez-Esteso, Antonio Javier Gallego and Jorge Calvo-Zaragoza

Optimal Wavelength Selection for Deep Learning from Hyperspectral Images
Sam Dehaeck, Remi Van Belleghem, Niels Wouters, Bart De Ketelaere and Wenzhi Liao

Can representation learning for multimodal image registration be improved by supervision of intermediate layers?
Elisabeth Wetzer, Joakim Lindblad and Nataša Sladoje

Interpretability-Guided Human Feedback During Neural Network Training
Pedro Serrano E Silva, Ricardo Cruz, Tiago Gonçalves and Asm Shihavuddin

Py4MER: a CTC-based Mathematical Expression Recognition System
Dan Anitei, Joan Andreu Sánchez and José Miguel Benedí

An ensemble-based phenotype classifier to diagnose Crohn's disease from 16s rRNA gene sequences
Lara Vázquez-González, Carlos Peña-Reyes, Carlos Balsa-Castro, Inmaculada Tomás and María J. Carreira

Detecting Loose Wheel Bolts of a Vehicle using Accelerometers in the Chassis
Jonas Schmidt, Kai-Uwe Kühnberger, Dennis Pape and Tobias Pobandt

16:00-17:30 **Oral Session 3: Computer Vision**
(chair: Jorge Calvo, University of Alicante, Spain)

DeepArUco: Marker detection and classification in challenging lightning conditions
Rafael Berral-Soler, Rafael Muñoz-Salinas, Rafael Medina-Carnicer and Manuel Jesús Marín-Jiménez

Automated Detection and Identification of Olive Fruit Fly using YOLOv7 Algorithm
Margarida Victoriano, Lino Oliveira and Hélder P. Oliveira

Learning to search for and detect objects in foveal images using deep learning
Beatriz Paula and Plinio Moreno

Relation networks for few-shot video object detection
Daniel Cores Costa, Lorenzo Seidenari, Alberto Del Bimbo, Victor Brea and Manuel Mucientes

17:30-18:30 AERFAI Assembly

19:00-20:30 Social Program (MARQ museum)

Thursday (June 29)

08:30-09:00   Registration

09:00-10:30   **Oral Session 4: 3D Computer Vision**
(chair: Marcelo Saval-Calvo, University of Alicante, Spain)

        Guided depth completion using active infrared images in Time of Flight system
          Amina Achaibou, Nofre Sanmartín-Vich, Filiberto Pla and Javier Calpe

        StOCaMo: Online Calibration Monitoring for Stereo Cameras
          Jaroslav Moravec and Radim Šára

        Smart-Tree: Neural Medial Axis Approximation of Point Clouds for 3D Tree Skeletonization
          Harry Dobbs, Oliver Batchelor, Richard Green and James Atlas

        A Measure of Tortuosity for 3D Curves: Identifying 3D beating patterns of sperm flagella
          Andrés Bribiesca Sánchez, Adolfo Guzmán, Alberto Darszon, Gabriel Corkidi and Ernesto Bribiesca

10:30-11:00   Coffee Break

11:00-12:00   **Oral Session 5: Computer Vision Applications**
(chair: Filiberto Pla, University Jaume I, Spain)

        Multimodal Human Pose feature fusion for Gait recognition
          Nicolás Cubero, Francisco Manuel Castro, Julián Ramos, Nicolás Guil and Manuel J. Marin-Jimenez

        Proxemics-Net: automatic proxemics recognition in images
          Isabel Jimenez-Velasco, Rafael Muñoz-Salinas and Manuel J. Marin-Jimenez

        Lightweight Vision Transformers for Face Verification in the Wild
          Daniel Parres Montoya and Roberto Paredes Palacios

12:00-13:00   **Keynote: Nuria Oliver**
Data Science against COVID-19
(chair: Antonio Pertusa, University of Alicante, Spain)

13:00-14:30   Lunch (Poniente restaurant)

14:30-16:00   **Poster Session 2** (with coffee)
(chair: María Alfaro-Contreras, University of Alicante, Spain)

        Continual vocabularies to tackle the catastrophic forgetting problem in Machine Translation
          Salvador Carrión and Francisco Casacuberta Nollá

        A Weakly-Supervised Approach for Layout Analysis in Music Score Images
          Eric Ayllon, Francisco J. Castellanos and Jorge Calvo-Zaragoza

        ResPho(SC)Net: A Zero-Shot Learning Framework for Norwegian Handwritten Word Image Recognition
          Aniket Gurav, Joakim Jensen, Narayanan Krishnan and Sukalpa Chanda

        Hierarchical Line Extremity Segmentation U-Net for the SoccerNet 2022 Calibration Challenge - Pitch

Localization
Miguel Santos Marques, Ricardo Gomes Faria and José Henrique Brito

Object Localization with Multiplanar Fiducial Markers: Accurate Pose Estimation
Pablo Garcia-Ruiz, Rafael Muñoz-Salinas, Rafael Medina-Carnicer and Manuel J. Marin-Jimenez

Real-time unsupervised object localization on the edge for airport video surveillance
Paula Ruiz-Barroso, Francisco M. Castro and Nicolás Guil

Synthetic spermatozoa video sequences generation using Adversarial Imitation Learning
Sergio Hernández-García, Alfredo Cuesta-Infante and Antonio S. Montemayor

A Deep Approach for Volumetric Tractography Segmentation
Pablo Rocamora-García, Marcelo Saval-Calvo, Víctor Villena-Martinez and Antonio Javier Gallego

MicrogliaJ: an Automatic Tool for Microglial Cell Detection and Segmentation
Ángela Casado García, Jónathan Heras, Cesar Dominguez, Eloy Javier Mata, Vico Pascual, Estefanía Carlos, María Izco and Lydia Álvarez-Erviti

Clustering ECG time series for the quantification of physiological reactions to emotional stimuli
Beatriz Henriques, Susana Brás and Sónia Gouveia

16:00-17:30   **Oral Session 6: Medical Imaging**
(chair: Manuel Marín, University of Córdoba, Spain)

Inter vs. Intra Domain Study of COVID Chest X-Ray Classification with Imbalanced Datasets
Alejandro Galán-Cuenca, Miguel Mirón, Antonio Javier Gallego, Marcelo Saval-Calvo and Antonio Pertusa

Automatic Eye-Tracking-Assisted Chest Radiography Pathology Screening
Rui Santos, João Pedrosa, Ana Maria Mendonça and Aurélio Campilho

Deep Neural Networks to distinguish between Crohn's disease and Ulcerative colitis
José Maurício and Inês Domingues

Few-shot image classification for automatic COVID-19 diagnosis
Daniel Cores, Nicolás Vila-Blanco, Manuel Mucientes and María J. Carreira

20:30-23:00   Conference Dinner (Dársena Restaurant)
Includes awards ceremony and announcement of next IbPRIA

Friday (June 30)

08:30-09:00   Registration

09:00-10:30   **Oral Session 7: Machine Learning Applications**
               (chair: Jose Javier Valero, Universitat Pompeu Fabra, Spain)

      Enhancing Transferability of Adversarial Audio in Speaker Recognition Systems
         Umang Patel, Shruti Bhilare and Avik Hati

      Fishing Gear Classification from Vessel Trajectories and Velocity Profiles: Database and Benchmark
         Pietro Melzi, Juan Manuel Rodriguez-Albala, Aythami Morales, Ruben Tolosana, Julian Fierrez and Ruben Vera-Rodriguez

      Predicting the Subjective Responses' Emotion in Dialogues with Multi-Task Learning
         Hassan Hayat, Carles Ventura and Agata Lapedriza

      Study and automatic translation of Toki Pona
         Pablo Baggetto, Damián López Rodríguez and Antonio M. Larriba

10:30-12:00   **Poster Session 3** (with coffee)
               (chair: Antonio Ríos, University of Alicante, Spain)

      Evaluating Domain Generalization in Kitchen Utensils Classification
         Carlos Garrido-Munoz, María Alfaro-Contreras and Jorge Calvo-Zaragoza

      Calibration of Non-Central Conical Catadioptric Systems from Parallel Lines
         James Bermúdez Vargas, Jesús Bermúdez Cameo and José Guerrero Campo

      S^2-LOR: Supervised Stream Learning for Object Recognition
         César D. Parga, Gabriel Vilariño, Xosé M. Pardo and Carlos V. Regueiro

      Evaluation of Regularization Techniques for Transformers-Based Models
         Hugo Oliveira, Pedro Ribeiro and Helder Oliveira

      The ETS2 Dataset, synthetic data from video games for monocular depth estimation
         David María Arribas, Alfredo Cuesta Infante and Juan José Pantrigo Fernández

      Identifying Thermokarst Lakes Using Discrete Wavelet Transform–Based Deep Learning Framework
         Andrew Li, Jiahe Liu, Olivia Liu and Xiaodi Wang

      Object Detection for Rescue Operations by High-altitude Infrared Thermal Imaging Collected by Unmanned Aerial Vehicles
         Andrii Polukhin, Yuri Gordienko, Gert Jervan and Sergii Stirenko

      Automated Orientation Detection of 3D Head Reconstructions from sMRI using Multiview Orthographic Projections: An Image Classification-Based Approach
         Álvaro Heredia-Lidón, Alejandro González, Carlos Guerrero-Mosquera, Rubèn Gonzàlez-Colom, Luis Miguel Echeverry, Noemí Hostalet, Raymond Salvador, Edith Pomarol-Clotet, Juan Fortea, Neus Martínez-Abadías, Mar Fatjó-Vilas and Xavier Sevillano

      Multi-view Infant Cry Classification

Yadisbel Martinez-Cañete, Abel Díaz Berenguer and Hichem Sahli

Few-shot learning for prediction of electricity consumption patterns
Javier García-Sigüenza, José F. Vicent Frances, Faraón Llorens-Largo and José Vicente Berná Martínez

12:00-13:00 **Keynote: Gustau Camps-Valls**
AI for Sustainable Earth Sciences
(chair: Jorge Calvo, University of Alicante, Spain)

13:00-13:10 Closing Ceremony
(chair: Antonio Pertusa, University of Alicante, Spain)

13:10-14:30 Lunch (Sede San Fernando)

IBPRIN 2023

11th IBERIAN CONFERENCE ON PATTERN RECOGNITION AND IMAGE ANALYSIS
JUNE 27-30, 2023
UNIVERSITY OF ALICANTE, SPAIN