9th IBERIAN CONFERENCE ON **PATTERN RECOGNITION** AND **IMAGE ANALYSIS**

JULY 1-4, 2019
UNIVERSIDAD AUTONOMA DE MADRID
SPAIN

General Schedule

IbPRIA 2019: Final Program		***SESSION TOPIC***
Monday, July 1		
8:00-8:30	Registration	
8:30-12:00	Tutorial 1: Gaël Varoquaux	***Machine Learning with scikit-learn***
12:00-13:00	Lunch	
13:00-16:30	Tutorial 2: Agata Lapedriza	***Computer Vision for Affective Computing***
16:30-17:00	Coffee Break	
17:00-19:00	Tutorial 3: Daniel Hernandez	***Bayesian Optimization***
19:30-22:00	Welcome Reception	
Tuesday, July 2		
8:15-8:45	Registration	
8:45-9:00	Opening Session	
9:00-10:00	Oral Session 1: 3 papers	***Best Ranked Papers: Machine Learning***
10:00-10:45	**Keynote: Andrew Fitzgibbon**	***Building Computer Vision Systems that Really Work***
10:45-11:15	Panel Discussion (with Coffee)	
11:15-13:00	Oral Session 2: 5 papers	***Machine Learning***
13:00-14:00	Lunch	
14:00-15:30	Poster Session 1 (with coffee)	
15:30-16:15	**Keynote: Matti Pietikäinen**	***Face Analysis for Multimodal Emotional Interfaces***
16:15-16:45	Panel Discussion (with Coffee)	
16:45- 18:30	Oral Session 3: 5 papers	***Image Representation***

Wednesday, July 3		
8:30-9:00	Registration	
9:00-10:00	Oral Session 4: 3 papers	***Best Ranked Papers: Image Classification***
10:00-10:45	**Keynote: Nuria Oliver**	***Human Behavior Modeling and Prediction from (Mobile) Data***
10:45-11:15	Panel Discussion (with Coffee)	
11:15-13:00	Oral Session 5: 5 papers	***Biometrics***
13:00-14:00	Lunch	
14:00-15:15	Poster Session 2 (with coffee)	
15:15-16:00	**Keynote: Vittorio Ferrari**	***Fun with Human-Machine Collaboration for Computer Vision***
16:00-16:30	Panel Discussion (with Coffee)	
16:30- 17:30	Oral Session 6: 3 papers	***Document Analysis***
17:30-19:00	AERFAI General Assembly	
21:00-23:00	Banquet	

Thursday, July 4		
8:30-9:00	Registration	
9:00-11:00	Oral Session 7: 6 papers	***Image Processing and Representation***
11:00-12:15	Poster Session 3 (with Coffee)	
12:15-12:45	***Invited: UAM Office for Int.l Projects***	***HORIZON 2020: EU Research and Innovation***
12:45-13:00	Closing Ceremony	
13:00-14:00	Lunch	

Content

It is my pleasure to welcome you all to IbPRIA 2019 in Madrid.

Now in its 9th edition, IbPRIA has become a key research event in pattern recognition and image analysis in the Iberian Peninsula organized by the national IAPR associations for pattern recognition in Spain (AERFAI) and Portugal (APRP).

Most of the research reported here is therefore coming from authors from Spain and Portugal. Out of the 401 authors who have published in IbPRIA 2019, 29% are from Spain and 20% are from Portugal. More than 50% of the authors are from another 32 countries from all around the world, with high representation from countries like: Argelia, Brazil, Colombia, India, Italy, or Mexico. Our efforts to strengthen the bonds between the research conducted in the Iberian Peninsula and other countries is patent in the program, which emphasizes interactive poster sessions, and includes a special session dedicated to international research cooperation.

On the other hand, we are witnessing a *deep* transformation in our field, now increasingly dominated by advances occurring at the industry. We have also tried to integrate IBPRIA in this vortex by including in the program a number of panel discussions with world research leaders from companies like Google, Microsoft, Telefonica, Vodafone, and Accenture.

After a strong beginning with the 1st IbPRIA in 2003 with a number of papers around 150, we have observed a decline in the conference size in the last years, to near a half. This tendency is coming at the same time the biggest related events like CVPR are going bigger and bigger every year (by the thousands). The risk is ending with a single winner event that takes all the research attention, reducing the benefits the closer research interactions that can happen in a small-sized and more local event like IbPRIA. We are very proud to have changed the declining tendency in IbPRIA, with more than 100 papers accepted. I really thank you all for keeping this community alive in the Iberian Peninsula, and keeping IbPRIA alive. **Welcome to IbPRIA 2019. *¡Bienvenidos!***

Main Organization (left to right):

Aythami Morales
(*Program Chair*)

Ruben Vera
(*Local Organization*)

Julian Fierrez
(*Local Chair*)

Javier Ortega
(*UAM Vice Rector*)

Alejandro Acien and
Ruben Tolosana
(*Local Organization*)

Message from the Program Chairs

IbPRIA 2019 received 137 submissions. The review process for IbPRIA 2019 was diligent and required careful consideration of more than 400 reviews from 100 reviewers who spent significant time and effort in reviewing the papers. In the end 105 papers were accepted, which is a 76% of acceptance. To form the final program 30 papers were selected for oral presentations (22% acceptance rate) and 75 as poster presentations. The program is comprised of 7 oral sessions on the following topics: machine learning, image representation, image processing, biometrics, and document analysis. Three poster sessions include papers on all previous topics and also on the most important applications of nowadays technologies.

The program is enhanced by four keynotes by eminent speakers: Andrew Fitzgibbon, Matti Pietikäinen, Vittorio Ferrari, and Nuria Oliver. Also, panel discussions are programmed after each of the keynotes including professionals from both academia and industry. The first day is composed by three tutorial by top researchers: Gaël Varoquaux (project-lead of scikit-learn), Agata Lapedriza, and Daniel Hernandez-Lobato. Another novelty from IbPRIA 2019 is the organization of a special session focused on research funding and cooperation.

We hope that this conference will result in fruitful technical interactions for the benefit of both the attendees and the pattern recognition research community. We would like to thank all who made this possible, especially the authors, reviewers as well as the invited speakers.

IBPRIA 2019 Program Chairs

Aythami Morales
University Autonoma de Madrid, Spain

Manuel J. Marin
University of Cordoba, Spain

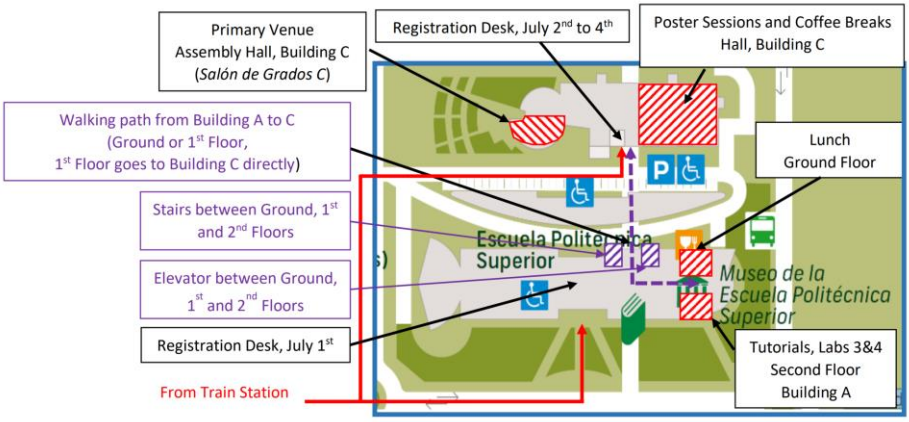
Antonio Pertusa
University of Alicante, Spain

Hugo Proenca
University of Beira Interior, Portugal

Venue

Escuela Politécnica Superior (School of Engineering)
Universidad Autónoma de Madrid, SPAIN

Calle Francisco Tomás y Valiente, 11
Campus de Cantoblanco
28049 Madrid, SPAIN



WiFi Connection

Eduroam network is available for all attendees. Attendees can also get access to the free WiFI service through the **UAM_Visitantes** network. Shortly after filling out a short form, credentials will be sent via SMS to the phone number provided. Two devices with the same credential can be connected simultaneously.

Tutorials

Gaël Varoquaux

Gaël Varoquaux is a tenured computer-science researcher at Inria. His research develops statistical learning tools for scientific inference. He has pioneered the use of machine learning on brain images to map cognition and brain pathologies. More generally, he develops tools to make the use of machine learning easier, with statistical models suited for real-life, uncurated data, and software development for data science. He is project-lead for scikit-learn, one of the reference machine-learning toolboxes, as well as core contributor to joblib, Mayavi, and nilearn. Varoquaux has contributed key methods for learning on spatial data, matrix factorizations, and modeling covariance matrices. He has a PhD in quantum physics and is a graduate from Ecole Normale Superieure, Paris.

Machine learning with scikit-learn

This tutorial will briefly cover how to do machine learning with scikit-learn. It will not go in the details, but rather try to give pointers to important aspects of the software as well as key concepts in machine learning.

Agata Lapedriza Garcia

Agata Lapedriza is a Professor at the Universitat Oberta de Catalunya. She received her MS degree in Mathematics at the Universitat de Barcelona and her Ph.D. degree in Computer Science at the Computer Vision Center, at the Universitat Autonoma Barcelona. She was working as a Visiting Researcher in the Computer Science and Artificial Intelligence Lab, at the Massachusetts Institute of Technology (MIT), from 2012 until 2015. Currently she is also a Visiting Researcher at the MIT Medialab, at the Affective Computing group. Her research interests are related to Scene Understanding and Emotional Artificial Intelligence.

Computer Vision for Affective Computing

Over the past decade we have observed an increasing interest in developing technologies for automatic emotion recognition. The capacity of automatically recognizing emotions has many of applications in environments where machines need to interact and collaborate with humans. However, how can machines recognize emotions? In this tutorial I will give an introduction to Affective Computing (also known as Emotional Artificial Intelligence), the discipline that studies and develops systems and devices that can recognize, interpret, process or simulate emotions or feelings. After a general introduction to Affective Computing I will focus on techniques for emotion recognition, paying a special attention to the problem of emotion recognition from images. We will review some research on emotion recognition based on face and body analysis and we discuss about the importance of analyzing scenes and context, in addition to faces, to better recognize emotions. In particular, we will see how emotion recognition can be approached from a Scene Understanding perspective.

Daniel Hernandez-Lobato

Dr. Daniel Hernandez-Lobato obtained a Ph.D. and an M.Phil. in Computer Science from Universidad Autónoma de Madrid, Spain, in January 2010 and June 2007, respectively. His Ph.D. thesis received the award to the best thesis on Computer Science defended during that academic year in that institution. Between November 2009 and September 2011 he worked as a post-doc researcher at Université Catholique de Louvain, Belgium. There he had the opportunity to collaborate with Prof. Pierre Dupont and Prof. Bernard Lauwerys in the identification of biomarkers for the early diagnosis of arthritis. In September 2011, he moved back to Universidad Autónoma de Madrid, and since January 2014 he works there as a Lecturer of Computer Science. His research interests are mainly focused on the Bayesian approach to machine learning, including topics such as Bayesian optimization, kernel methods, Gaussian processes, and approximate Bayesian inference. He has participated, as an invited speaker, in the workshop on Gaussian process approximations, in 2015 and 2017, and in the Second Workshop on Gaussian processes at Saint-Étienne, in 2018. He was also one of the two main organizers of the Machine Learning Summer School 2018, at Universidad Autónoma de Madrid.

Bayesian Optimization

Many optimization problems are characterized by an objective function that is very expensive to evaluate. More precisely, the evaluation may involve carrying out a time-consuming experiment. This also means that the objective may lack a closed-form expression and, moreover, that the evaluation process can be noisy. That is, two measurements of the objective function at the same input location can give different results. Examples of these problems include tuning the hyper-parameters of a deep neural network, adjusting the parameters of the control system of a robot, or finding new materials for, e.g., solar energy production. Standard optimization methods give sub-optimal results when tackling this type of problems. In this tutorial, I will present a general overview of Bayesian optimization (BO), a collection of methods that can be used to efficiently solve problems with the characteristics described. For this, BO methods fit, at each iteration, a probabilistic model to observed evaluations of the objective. This model is typically a Gaussian process whose predictive distribution captures the potential values of the objective in regions of the space in which there are no observations. This uncertainty is then used to build an acquisition function whose maximum indicates where to

perform the next evaluation of the objective with the goal of solving the problem in the smallest number of steps. Because the acquisition function only depends on the probabilistic model and not on the actual objective, it can be cheaply optimized. Therefore, BO methods make, at each iteration, intelligent decisions about where to evaluate next the objective. This can save a lot of computational time. In this tutorial, I will explain in detail each of the steps performed by BO methods and, focusing on information theory-based methods, I will also describe some extensions to address problems dealing with multiple evaluations in parallel, and multiple constraints and/or objectives. I will conclude with a description of BO software, open problems and future research directions in the field. The tutorial will be followed by an afternoon session in which some of the concepts and methods described will be put in practice. More precisely, BO software will be used for tuning the hyper-parameters of machine learning algorithms.

Keynote Speakers

Andrew Fitzgibbon

Fitzgibbon is a partner scientist at Microsoft in Cambridge, UK. He has published numerous highly-cited papers, and received many awards for his work, including ten “best paper” prizes at various venues, the Silver medal of the Royal Academy of Engineering, and the BCS Roger Needham award. He is a fellow of the Royal Academy of Engineering, the British Computer Society, and the International Association for Pattern Recognition. He studied at University College, Cork, and then did a Masters at Heriot-Watt University, before taking up an RSE job at the University of Edinburgh, which eventually morphed into a PhD. He moved to Oxford in 1996 and drove large software projects such as the VXL project, and then spent several years as a Royal Society University Research Fellow before joining Microsoft in 2005. He loves programming, particularly in C++, and his recent work has included new numerical algorithms for Eigen, and compilation of F# to C.

Building Computer Vision Systems That Really Work

I have been shipping advanced computer vision systems for two decades. In 1999, prize-winning research from Oxford University was spun out to become the Emmy-award-winning camera tracker “boujou”, which has been used to insert computer graphics into live-action footage in pretty much every movie made since its release, from the “Harry Potter” series to “Bridget Jones’s Diary”. In 2007, I was part of the team that delivered human body tracking in Kinect for Xbox 360, and in 2015 I moved from Microsoft Research to the Windows division to work on Microsoft’s HoloLens, an AR headset brimming with cutting-edge computer vision technology.

In all of these projects, the academic state of the art has had to be leapfrogged in accuracy and efficiency, sometimes by several orders of magnitude. Sometimes that’s just raw engineering, sometimes it means completely new ways of looking at the research. I will talk about this interplay, between mathematics and code, and show how each helps to understand the other. If I had to nominate one key to success, it’s a focus on, well, everything: from cache misses to end-to-end experience, and on always being willing to change one’s mind.

Matti Pietikäinen

Matti Pietikäinen received his Doctor of Science in Technology degree from the University of Oulu, Finland. He is a professor at the Center for Machine Vision and Signal Analysis, University of Oulu. From 1980 to 1981 and from 1984 to 1985, he visited the Computer Vision Laboratory at the University of Maryland. He has made fundamental contributions, e.g. to local binary pattern (LBP) methodology, texture-based image and video analysis, and facial image analysis. He has authored about 350 refereed papers in international journals, books and conferences. His papers have about 53,500 citations in Google Scholar (h-index 78), and eight of these have over 1,350 citations. He was Associate Editor of IEEE Trans. on Pattern Analysis and Machine Intelligence (TPAMI), Pattern Recognition, IEEE Trans. on Forensics and Security, and Image and Vision Computing journals. Currently he serves as Associate Editor of IEEE Transactions on Biometrics, Behavior and Identity Science, and Guest Editor for special issues of IEEE TPAMI and International Journal of Computer Vision. He was President of the Pattern Recognition Society of Finland from 1989 to 1992, and was named its Honorary Member in 2014. From 1989 to 2007 he served as Member of the Governing Board of International Association for Pattern Recognition (IAPR), and became one of the founding fellows of the IAPR in 1994. He is IEEE Fellow for contributions to texture and facial image analysis for machine vision. In 2014, his research on texture-based face description was awarded the Koenderink Prize for Fundamental Contributions in Computer Vision. He was the recipient of the prestigious IAPR King-Sun Fu Prize 2018 for fundamental contributions to texture analysis and facial image analysis. He was named a Highly Cited Researcher by Clarivate Analytics in 2018, by producing multiple highly cited papers in 2006-2016 that rank in the top 1% by citation for his field in Web of Science.

Face Analysis for Multimodal Emotional Interfaces

Emotions are central for human intelligence, and should have a similar role in artificial intelligence. There is a growing need to develop multimodal emotional interfaces, which are able to read the emotions of people and adapt their operations accordingly. Among the areas of application are emotional chatbots, personal assistants, human-robot interaction, emotion-aware games, health and medicine, on-line learning, safe car driving, security, and user / customer experience analysis. Facial image analysis will play a key role in developing emotionally intelligent systems. In this talk, first an introduction to emotions, face information and applications of emotion analysis is presented. Then, highlights of our recent research on facial image analysis are introduced, including methods for image and video description, face and facial (micro-)expression recognition, and heart-rate measurement from face videos. Some examples of multimodal emotion analysis are presented. Finally, future challenges for building multimodal emotional interfaces are discussed.

Vittorio Ferrari

Vittorio Ferrari is a Senior Staff Research Scientist at Google, where he leads a research group on visual learning. He received his PhD from ETH Zurich in 2004, then was a post-doc at INRIA Grenoble (2006-2007) and at the University of Oxford (2007-2008). Between 2008 and 2012 he was an Assistant Professor at ETH Zurich, funded by a Swiss National Science Foundation Professorship grant. In 2012-2018 he was faculty at the University of Edinburgh, where he became a Full Professor in 2016 (now he is a Honorary Professor). In 2012 he received the prestigious ERC Starting Grant, and the best paper award from the European Conference in Computer Vision. He is the author of over 110 technical publications. He regularly serves as an Area Chair for the major computer vision conferences, he was a Program Chair for ECCV 2018 and will be a General Chair for ECCV 2020. He is an Associate Editor of IEEE Pattern Analysis and Machine Intelligence. His current research interests are in learning visual models with minimal human supervision, human-machine collaboration, and semantic segmentation.

Fun with human-machine collaboration for computer vision

Training computer vision models typically requires tedious and time consuming manual annotation, which hinders scaling, especially for complex tasks such as full image segmentation. In this talk I will present recent human-machine collaboration techniques from my team, where the machine assists a human in annotating the training data and training a new model. These can substantially reduce human effort and also yield more interesting interfaces to interact with. The talk will explore several cases, including segmentation of individual objects, joint segmentation of all objects and background regions in an image, using speech together with mouse inputs, and annotating object classes using free-form text written by undirected annotators.

Nuria Oliver

Nuria Oliver is Director of Research in Data Science at Vodafone and Chief Data Scientist at Data-Pop Alliance. She has pioneered the development of intelligent, interactive systems that are able to recognize and predict different types of human behavior on desktops, mobile phones and even cars. She received a PhD in Perceptual Intelligence at the MIT Media Laboratory.

Nuria has over 20 years of research experience developing novel computational models of both individual and aggregate human behavior to power intelligent, interactive and personalized systems. Her work has contributed to the improvement of services, the creation of new services, the definition of strategies and the creation of new companies. Her projects include building a real-time facial expression recognition system which was licensed to Nokia in 1997, a visual surveillance system to detect and recognize human interactions in 1998, a smart car which was able to predict the most likely maneuver in 2000, a multi-modal office activity recognition system demoed with Bill Gates at IJCAI 2001, a range of mobile intelligent interfaces to detect sleep apnea (2006), enable runners to achieve their exercise goals (2007), improve medication non-compliance (2009) or even detect boredom (2015). Since 2009, she is also working on the area of computational social sciences by leveraging large-scale human behavioral data to enable better decision making and have positive social impact. She has published over 180 academic papers and 40 patents. Ten of her papers have received awards or nominations to best scientific article, including two best paper awards at Ubicomp 2014 and 2015, a best paper award at RecSys 2012 and the ACM ICMI Ten Year Technical Impact Award in 2015. Nuria has given more than 140 invited talks.

She is a Fellow of the ACM (2017), a Fellow of the IEEE (2017) and a Fellow of the European Association of Artificial Intelligence (2016). She is a member of the Spanish Royal Academy of Engineering, the Academia Europaea and the ACM SIGCHI Academy. She received an honorary PhD from the University Miguel Hernandez in 2018. Her work has received many awards, including the MIT TR35 Young Innovator Award (2004), the European Ada Byron Award (2016), the Spanish National Computer Science Award (2016) and the Spanish Engineer of the Year Award (2018). She is a member of the scientific advisory board of six European universities, of Mahindra Comviva and the Future Digital Society. She advises the Spanish Government and the European Commission on AI related topics. She is a member of a Global Future Council at the World Economic Forum.

Nuria is committed to service to the scientific community. She has served in a chair role in 18 ACM/IEEE/AAAI international conferences and is a regular member of the program committee of the top international conferences in her fields of research. She is in the editorial board of

several journals, has served in about 10 PhD thesis committees and on the ACM IUI oversight committee, among others.

In addition to her scientific work, Nuria devotes part of her time to scientific-technological outreach and to inspire young people and adolescents - and especially girls - to study technical careers. Her work and profile have been featured in more than 200 media articles. She has given talks to more than 8000 adolescents, has contributed with the chapter entitled "Digital Scholars" in the book "Digital natives do not exist" (Deusto, 2017), has written articles for EL PAIS, The Guardian, India Economic Times, TechCrunch among others and has been co-organizer large, open conferences, such as the first TEDxBarcelona event devoted to education. Her talks on WIRED, TEDx and similar events have been seen thousands of times.

Towards Human Behavior Modeling from (Big) Mobile Data

Human Behavior Modeling and Understanding is a key challenge in the development of intelligent systems and a great asset to help us make better decisions. Over the course of the past 23 years, I have worked on building automatic data-driven machine-learning based models of human behaviors for a variety of applications, including smart rooms, smart cars, smart offices, smart mobile phones and smart cities.

In my talk, I will describe three of such projects. The first project is a smartphone app to automatically detect boredom. This project received the best paper award at Ubicomp 2015. The second project, MobiScore, tackles the challenge of financial inclusion by building machine learning based models of credit scoring from mobile network data. MobiScore enables people who do not have a bank account and hence are excluded from the financial system to get access to credit. Finally, the third project focuses on automatically detecting crime hotspots in a city through the analysis of mobile data.

Panel Discussions

Tuesday, July 2

10:45 – 11:15 Round Table: Building Computer Vision Systems that Really Work

Moderator:

Josep Salvador Sánchez Garreta, *Full Professor, Universitat Jaume I*

Prof. Sánchez is Full Professor at the Department of Computer Languages and Systems at the Universitat Jaume I of Castelló. He received a BSc. in Computer Science from the Universidad Politécnica de Valencia in 1990 and a Ph.D. in Computer Science Engineering from Universitat Jaume I in 1998. He has participated in more than 30 R+D+i projects and contracts with private companies to transfer results, all of them related to pattern recognition, machine learning and data mining. He has authored or co-authored more than 180 publications, in journals with a high relative impact index in the JCR and in books, book chapters and communications to conferences; he has also co-edited 6 scientific books in prestigious editorials. He has been served as advisor or co-advisor in a total of 11 Ph.D. theses. Currently, he is the research leader of the Pattern Analysis and Learning group of the Universitat Jaume I, coordinator of the Doctoral Program in Computer Science of this University and director of Scientific Policy of the Institute of New Imaging Technologies. He is also President of the Spanish Association for Pattern Recognition and Image Analysis, Senior Member of the Institute of Electrical and Electronics Engineers and Associate Editor of the journals Pattern Analysis and Applications and Progress in Artificial Intelligence.

Participants:

Andrew Fitzgibbon, *Microsoft, (IbPRIA Keynote)*

[See Andrew bio at Keynote Speakers Section.]

Alexandre Bernardino, *Associate Professor, University of Lisbon*

I'm an Associate Professor at the Dept. of Electrical and Computer Engineering of the Faculty of Engineering at IST, the Faculty of Engineering in the Technical University of Lisbon. I teach on the scientific area of decision systems and control, in courses involving signal and image processing, automation and robotics, modeling and control, artificial intelligence and machine learning. I'm a senior researcher at ISR-Lisboa (the Institute for Systems and Robotics of IST), member of LARSyS (Laboratory of Robotics, Systems of Engineering and Science), and co-director of VisLab, the Computer and Robot Vision Laboratory. My main research interests focus on the application of computer vision, cognitive science, control theory and machine learning to advanced robotic and surveillance systems. I've published works on foveal sensors, visual attention and stereo, image feature extraction, binocular head control, image based tracking and identification, learning object affordances, sensorimotor coordination, human activity recognition, among other topics. I have been participating in many national and international projects involving both academic and industrial partners. The topics include Humanoid Robots, Service Robots, Surveillance Systems, Dexterous Manipulation, Traffic Monitoring, Modeling Mirror Neurons, among others.

Jesús Figueres, *Data Science Senior Manager - AI Research & Innovation, Accenture*

My professional profile is focused to fill the gap between business needs and mathematical modelling in the age of Big Data. I've been working for more than 15 years for some of the most important companies in Spain and I specialize in Data Science and Machine Learning. I have a strong scientific spirit and enjoy doing research in the field of Economics and Artificial Intelligence, working to enrich my skills in both subjects in order to make my humble contribution with knowledge I gain and passion I share to change the world.

Tuesday, July 2

16:15 – 16:45 Round Table: Face Analysis for Multimodal Emotional Interfaces

Moderator:

Jordi Vitrià, *Full Professor, Universitat de Barcelona*

In 2007, Jordi Vitrià joined the University of Barcelona (UB) as Full Professor, where he teaches an introductory course on Algorithms and advanced courses on Data Science and Deep Learning. From April 2011 to January 2016 he served as Head of the Applied Mathematics and Analysis Department, UB. Now, he is member of the new Mathematics & Computer Science Department at UB. He is also Director of the Master in Foundations of Data Science at the UB. His research, when personal computers had 128KB of memory, was originally oriented towards digital image analysis and how to extract quantitative information from them, but soon evolved towards computer vision problems. Now, he is leading a research group working in machine learning, computer vision and data science.

Participants:

Matti Pietikäinen, *University of Oulu, Finland (IbPRIA Keynote)*

[See Matti bio at Keynote Speakers Section.]

Oriol Pujol, *Full Professor, Vice-President for Digital Transformation, Universitat de Barcelona*

Oriol Pujol Vila is tenured associate professor in Computer Science and Artificial Intelligence at the department of Matemàtiques i Informàtica at Universitat de Barcelona. He obtained the degree in Telecomunications Engineering in 1998 from the Universitat Politècnica de Catalunya (UPC). The same year, he joined the Computer Vision Center and the Computer Science Department at Universitat Autònoma de Barcelona (UAB). In 2004 he received the Ph.D. in Computer Science at the UAB with a work in deformable models, fusion of supervised and unsupervised learning and intravascular ultrasound medical image analysis. In 2005 he joined the Dept. of Matemàtica Aplicada i Anàlisi at Universitat de Barcelona (UB) where he became

tenured associate professor. He currently leads the Vision and Computational Learning consolidated research group (SGR). He has published more than one hundred and fifty articles in machine learning, computer vision, and their applications. He has more than eighteen years in knowledge transference in data analysis projects is fields such as finance, health, marketing, wearable sensors, among others. He served as director of Computer Science undergraduate studies, director of the postgraduate courses on Data Science and Big Data, and director of the official master's program in Fundamental Principles of Data Science. He is currently vice-president for Digital Transformation at the University of Barcelona.

Oscar Deniz, *Associate Professor, Universidad de Castilla-La Mancha*

His research interests are mainly focused on computer vision and pattern recognition. He is the author of more than 50 refereed papers in journals and conferences. He has been a visiting researcher at Carnegie Mellon University (USA), Imperial College London (UK) and Leica Biosystems (Ireland). Currently, he works as an Associate Professor at UCLM and contributes to VISILAB. He also serves as an Academic Editor of Journal PLoS ONE. He has been the Coordinator of European Project “Eyes of Things” and has also participated in FP7 AIDPATH and H2020 BONSEYES projects. Reviewer / Technical Expert for EU programs such as Eurostars. Recipient of following awards/mentions: Internet of Things (IoT) Technology Research Award Pilot by Google, Runner-up best PhD work on computer vision & pattern recognition by AERFAI, ‘Image File & Reformatting Sofware’ Challenge Award by Innocentive Inc, a Marie Curie Fellowship and the HiPEAC 2018 Technology Transfer Award. He has published two books on computer vision programming

Wednesday, July 3

10:45 – 11:15 Panel: Human Behavior Modeling and Prediction from (Mobile) Data

Moderator:

Julian Fierrez, *Associate Professor, University Autonoma de Madrid*

Julian FIERREZ received the MSc and the PhD degrees in telecommunications engineering from Universidad Politecnica de Madrid, Spain, in 2001 and 2006, respectively. Since 2002 he was affiliated as a PhD candidate with the Universidad Politecnica de Madrid, and since 2004 at Universidad Autonoma de Madrid, where he is currently an Associate Professor since 2010. From 2007 to 2009 he was a visiting researcher at Michigan State University in USA under a Marie Curie fellowship. His research interests include general signal and image processing, pattern recognition, and biometrics. Since 2016 he is Associate Editor for Elsevier's Information Fusion and IEEE Trans. on Information Forensics and Security, and since 2018 also for IEEE Trans. on Image Processing. Prof. Fierrez has been actively involved in multiple EU projects focused on biometrics (e.g. TABULA RASA and BEAT), has attracted notable impact for his research, and is the recipient of a number of distinctions, including: EBF European Biometric Industry Award 2006, EURASIP Best PhD Award 2012, Medal in the Young Researcher Awards 2015 by the Spanish Royal Academy of Engineering, and the Miguel Catalan Award to the Best Researcher under 40 in the Community of Madrid in the general area of Science and Technology. In 2017 he has been also awarded the IAPR Young Biometrics Investigator Award, given to a single researcher worldwide every two years under the age of 40, whose research work has had a major impact in biometrics.

Participants:

Nuria Oliver, *Vodafone, Spain (IbPRIA Keynote)*

[See Nuria short bio at Keynote Speakers Section.]

Jose M. Torres, *Commercial Intelligence and Market Research Manager, Chief Data Office Unit, Telefonica*

Jose María is Market Research and Forecasting manager at Telefonica in the CDO unit. With a Physics PhD from University of Zaragoza, he has spent more than 18 years in different positions inside the company, mainly related with market research and quality, trying to understand, model and forecast customer behavior and needs. He also collaborates with different institutions as lecturer, specially in data analysis and customer insights.

Ruben Vera-Rodriguez, *Associate Professor, Universidad Autonoma of Madrid*

Ruben Vera-Rodriguez received the M.Sc. degree in telecommunications engineering from Universidad de Sevilla, Spain, in 2006, and the Ph.D. degree in electrical and electronic engineering from Swansea University, U.K., in 2010. Since 2010, he has been affiliated with the Biometric Recognition Group, Universidad Autonoma de Madrid, Spain, where he is currently an Associate Professor since 2018. His research interests include signal and image processing, pattern recognition, and biometrics, with emphasis on signature, face, gait verification and forensic applications of biometrics. Ruben has published over 85 research papers including 1 edited book, 5 book chapters, 20 articles in high impact journal and over 60 conference papers, most of them international (including CVPR, ICPR, ICB, BTAS, etc.). In 2007, he was the recipient of the Best Paper Award at the 4th International Summer School on Biometrics, held in Alghero, Italy, by top international researchers in the field. In September 2018, two of his PhD students (Ester Gonzalez-Sosa and Ruben Tolosana) won the EAB Biometric Industry and Reseach Awards to the best PhD theses in the field of biometric recognition at European level. Dr. Vera-Rodriguez is actively involved in several National and European projects focused on biometrics. Recently, he was involved in transferring state-of-the-art dynamic handwritten signature recognition technology to CECABANK for use in a large part of the Spanish banking sector. Ruben has been Program Chair for the IEEE 51st International Carnahan Conference on Security and Technology (ICCST) in 2017; and the 23rd Iberoamerican Congress on Pattern Recognition (CIARP 2018) in 2018.

16:00 – 16:30 Panel: Fun with Human-Machine Collaboration for Computer Vision

Moderator:

Manuel J. Marin, *Associate Professor, Universidad de Cordoba*

M. J. Marín–Jiménez received his B.Sc., M.Sc. degrees from the University of Granada, Spain, in 2003, and Ph.D. degree from the University of Granada, Spain in 2010. He has worked, as a visiting student, at the Computer Vision Center of Barcelona (Spain), Vislab-ISR/IST of Lisboa (Portugal) and the Visual Geometry Group of Oxford (UK). Currently, he works as an assistant professor at the University of Cordoba (Spain). His research interests include object detection, human-centric video understanding and machine learning.

Participants:

Vittorio Ferrari, *Google, (IbPRIA Keynote)*

[See Vittorio short bio at Keynote Speakers Section.]

Enrique Vidal, *Full Professor of Computer Science*, *Universidad Politecnica de Valencia*

Enrique Vidal is a full professor of computer science in the Universitat Politècnica de València (Spain) and former co-leader of PRHLT research center in this University. He has published more than two hundred and fifty research papers in the fields of Pattern Recognition, Multimodal Interaction and applications to Language, Speech and Image Processing and has led many important projects in these fields. Dr. Vidal is a member of the IEEE and a fellow of the International Association for Pattern Recognition (IAPR).

Agata Lapedriza, *Associate Professor and Researcher, Universitat Oberta de Catalunya*

[See Agata short bio at Tutorials Section.]

Special Session

Thursday, July 4

12:15 – 12:45 Special Session *Research Funding & Cooperation*

Speech: "HORIZON 2020: EU Research and Innovation"

Paula Molina, *European Projects Manager, International Research Projects Office, Universidad Autonoma de Madrid*

Paula has a Degree in Psychology and two Master's Degrees in Neuroscience and Criminology by the University of Granada. Since 2015, she has been working as a project manager for international research projects in different universities, with special focus on financial management. She has large experience in the technical and economic management of projects funded by the European Union but also other projects funded by private grants both in Europe and some other countries. She is currently working as a Project manager for the International Research Projects Office of Vice-Rectorate for Research at UAM.

Moderator:

Aythami Morales, *Associate Professor, Universidad Autonoma de Madrid*

Aythami Morales Moreno received his M.Sc. degree in Telecommunication Engineering in 2006 from Universidad de Las Palmas de Gran Canaria. He received his Ph.D degree from La Universidad de Las Palmas de Gran Canaria in 2011. He performs his research works in the BiDA Lab - Biometric and Data Pattern Analytics Laboratory at Universidad Autónoma de Madrid, where he is currently an Associate Professor. He has performed research stays at the Biometric Research Laboratory at Michigan State University, the Biometric Research Center at Hong Kong Polytechnic University, the Biometric System Laboratory at University of Bologna and Schepens Eye Research Institute (Harvard Medical School). His research interests include pattern recognition, computer vision, machine learning and biometrics signal processing. He is author of more than 70 scientific articles published in international journals and conferences. He has received awards from ULPGC, La Caja de Canarias, SPEGC, and COIT. He has participated in several National and European projects in collaboration with other universities and private entities such as ULPGC, UPM, EUPMt, Accenture, Unión Fenosa, Soluziona,...

Technical Program

Monday, July 1

8:30–12:00 Tutorial 1

"Machine Learning"
Gaël Varoquaux

13:00–16:30 Tutorial 2

"Computer Vision for Affective Computing"
Agata Lapedriza

17:00–19:00 Tutorial 3

"Bayesian Optimization"
Daniel Hernandez

Tuesday, July 2

08:45–09:00 Opening Session

(Chair: Julian Fierrez, Universidad Autonoma de Madrd)

09:00–10:00 Session 1: Best Ranked papers: Machine Learning

(Chair: Oriol Pujol, Universitat de Barcelona)

Towards a Joint Approach to Produce Decisions and Explanations Using CNNs
Isabel Rio-Torto, Kelwin Fernandes and Luís Teixeira

Interactive-predictive neural multimodal systems
Álvaro Peris and Francisco Casacuberta

Uncertainty estimation for black-box classification models: a use case for sentiment analysis
José Mena, Axel Brando, Oriol Pujol and Jordi Vitrià

10:00–10:45 Keynote
(Chair: Salvador Sanchez, Universitat Jaume I)

"Building Computer Vision Systems That Really Work"
Andrew Fitzgibbon

10:45–11:15 Panel Discussion

(Chair: Salvador Sanchez, Universitat Jaume I)

Participants:
Andrew Fitzgibbon, Alexandre Bernardino, Jesús Figueres

11:15–13:00 Session 2: Machine Learning

(Chair: Antonio Pertusa, University of Alicante)

Description and Recognition of Activity Patterns Using Sparse Vector Fields
Ana Portelo, Andrea Cavallaro, Catarina Barata and Jorge S. Marques

Combining Online Clustering and Rank Pooling Dynamics for Action Proposals

Nadjia Khatir, Roberto J. López-Sastre, Marcos Baptista-Ríos, Safia Nait-Bahloul and Francisco Javier Acevedo-Rodríguez

On the Direction Guidance in Structure Tensor Total Variation Based Denoising

Ezgi Demircan-Tureyen and Mustafa E. Kamasak

Impact of Fused Visible-Infrared Video Streams on Visual Tracking

Stéphane Vujasinovic, Stefan Becker, Norbert Scherer-Negenborn and Michael Arens

Deep structured semantic model for recommendations with heterogeneous side information in e-commerce

Anna Larionova, Polina Kazakova and Nikita Nikitinsky

13:00 - 15:00. Poster Session 1

(Chair: Ruben Tolosana, Universidad Autonoma de Madrid)

Recognition of Arabic Handwritten Literal Amounts Using Deep Convolutional Neural Networks

Moumen T. El-Melegy and Asmaa A. Abdelbaset

Frame by Frame Pain Estimation Using Locally Spatial Attention Learning

Jun Yu, Toru Kurihara and Shu Zhan

Optimization of the numeric and categorical attribute weights in Kamila mixed data clustering algorithm

Nádia Junqueira Martarelli and Marcelo Seido Nagano

Line Segmentation Free Probabilistic Keyword Spotting and Indexing

Killian Barrere, Alejandro Toselli and Enrique Vidal

Incremental Learning for Football Match Outcomes Prediction

Killian Barrere, Alejandro Toselli and Enrique Vidal

Mosquito Larvae Image Classification based on DenseNet and Guided Grad-CAM

Zaira Garcia, Keiji Yanai, Mariko Nakano, Antonio Arista, Laura Cleofas and Hector Perez

Towards Automatic Rat's Gait Analysis Under Suboptimal Illumination Conditions

Ana F. Adonias, Jaime S. Cardoso, Joana Ferreira-Gomes, Fani Neto and Raquel Alonso

Impact of Enhancement for Coronary Artery Segmentation Based on Deep Learning Neural Network

Ahmed Ghazi Blaiech, Asma Mansour, Asma Kerkeni, Mohamed Hédi Bedoui and Asma Ben Abdallah

Model Based Recursive Partitioning for Customized Price Optimization Analytics

Jorge Martín Arevalillo

Pencil drawing of microscopic images through edge preserving filtering

Carlos Sanchez Bueno, Gabriel Cristóbal Pérez, Harbinder Singh and Gloria Bueno Garcia

Offline Signature Verification using Textural Descriptors

Hadjadj Ismail, Abdeljalil Gattal, Chawki Djeddi, Mouloud Ayad, Imran Siddiqi and Faycel Abbes

Towards automatic and robust particle tracking in microrheology studies

Marina Castro, Ricardo Araujo, Laura Campo-Deaño and Hélder Oliveira

3D Reconstruction of Archaeological Pottery from its Point Cloud

Wilson Sakpere, Alessandro Bevilacqua, Alessandro Gherardi, Roberto Togni and Marco Rovinelli

Geometric interpretation of CNN's last layer

Alejandro de la Calle, Javier Tovar and Emilio J. Almazán

Deep Vesselness Measure from scale-space analysis of Hessian Matrix Eigenvalues

Ricardo Araújo, Jaime Cardoso and Hélder Oliveira

Image Feature Detection Based on Phase Congruency by Monogenic Filters with new Noise Estimation

Carlos Antonio Jacanamejoy Jamioy, Nohora Meneses Casas and Manuel Guillermo Forero Vargas

Segmentation in Corridor Environments: Combining door and ceiling detection

Sergio Lafuente, Saturnino Maldonado, Hilario Gómez and Cristina Alén

Quality-based rPPG Heart Rate Estimation System for Driver Monitoring Using NIR Video Sequences

Javier Hernandez-Ortega, Shigenori Nagae, Julian Fierrez and Aythami Morales

3D Non-rigid registration of Deformable object using GPU

Junesuk Lee, Eung-Su Kim and Soon-Yong Park

A note on Gradient-Based Intensity Normalization

Manuel Forero, Carlos Arias Rubio, José De Anchieta Horta and Dolores E. López

A Social Bonds Integration Approach for Crowd Panic Simulation

Imene Bouderbal and Abdenour Amamra

Automatic Fault Detection in a Cascaded Transformer Multilevel Inverter Using Pattern Recognition Techniques

Diego Salazar D'Antonio, Nohora Meneses Casas, Manuel G. Forero and Oswaldo López Santos

Retinal Blood Vessel Segmentation: A semi-supervised approach

Tanmai K. Ghosh, Sajib Saha, G M Atiqur Rahaman, Md. Abu Sayed and Yogesan Kanagasingam

Blind Robust 3-D Mesh Watermarking based on Mesh Saliency and QIM quantization for Copyright Protection

Mohamed Hamidi, Aladine Chetouani, Mohamed El Haziti, Mohammed El Hassouni and Hocine Cherifi

Using Copies to Remove Sensitive Data: A Case Study on Fair Superhero Alignment Prediction

Irene Unceta, Jordi Nin and Oriol Pujol

15:30–16:15 Keynote

(Chair: Jordi Vitria, University of Barcelona)

"Face Analysis for Multimodal Emotional Interfaces"

Matti Pietikäinen

16:15–16:45 Panel Discussion

(Chair: Jordi Vitria, University of Barcelona)

Participants:

Matti Pietikäinen, Oriol Pujol, Oscar Deniz

16:45–18:30 Session 3: Image Representation

(Chair: Gloria Bueno, Universidad de Castilla-La Mancha)

Single-View Facial Hair 3D Reconstruction

Gemma Rotger, Francesc Moreno-Noguer, Felipe Lumbreras and Antonio Agudo

From Features to Attribute Graphs for Point Set Registration

Carlos Orrite and Elías Herrero

BELID: Boosted efficient local image descriptor

Iago Suárez, Ghesn Sfeir, José Miguel Buenaposada and Luis Baumela

A novel graph-based approach for seriation of mouse brain cross-section from images

Saber Sarbazvatan, Rodrigo Ventura, Francisco F. Esteves, Susana Q. Lima and Joao Miguel Sanches

Class Reconstruction Driven Adversarial Domain Adaptation for Hyperspectral Image Classification

Shivam Pande, Biplab Banerjee and Aleksandra Pizurica

Wednesday, July 3

09:00–10:00 Session 4: Best Ranked Papers: Image Classification

(Chair: Enrique Vidal, Universidad Politecnica de Valencia)

Impact of ultrasound image reconstruction method on breast lesion classification with deep learning

Michal Byra, Tomasz Sznajder, Danijel Korzinek, Hanna PiotrzkowskaWroblewska, Katarzyna DobruchSobczak, Andrzej Nowicki and Krzysztof Marasek.

Segmentation of cell nuclei in fluorescence microscopy images using deep learning

Hemaxi Narotamo, J. Miguel Sanches and Margarida Silveira

Food Recognition by Integrating Local and Flat Classifiers

Eduardo Aguilar and Petia Radeva

10:00–10:45 Keynote

(Chair: Julian Fierrez, Universidad Autonoma de Madrid)

"Human Behavior Modeling and Prediction from (Mobile) Data"

Nuria Oliver

10:45–11:15 Panel Discussion

(Chair: Julian Fierrez, Universidad Autonoma de Madrid)

Participants:

Nuria Oliver, Jose M. Torres, Ruben Vera-Rodriguez

11:15–13:00 Session 5: Biometrics

(Chair: Ruben Vera-Rodriguez, Universidad Autonoma de Madrid)

What is the Role of Annotations in the Detection of Dermoscopic Structures?

Bárbara Ferreira, Catarina Barata and Jorge S. Marques

Keystroke Mobile Authentication: Performance of LongTerm Approaches and Combination with Behavioral-based Profiling

Alejandro Acien, Aythami Morales, Ruben Vera-Rodriguez and Julian Fierrez

Incremental Learning Techniques within a Self-updating Approach for Face Verification in Video-Surveillance

Eric Lopez-Lopez, Carlos V. Regueiro, Xose M. Pardo, Annalisa Franco and Alessandra Lumini

Don't You Forget About Me: A Study on Long-Term Performance in ECG Biometrics

Gabriel Lopes, João Ribeiro Pinto and Jaime S. Cardoso

Face Identification using Local Ternary Tree Pattern based Spatial Structural Components

Rinku Datta Rakshit, Dakshina Ranjan Kisku, Massimo Tistarelli and Phalguni

14:00 - 15:15. Poster Session 2

(Chair: Ruben Tolosana, Universidad Autonoma de Madrid)

Instance Selection for the Nearest Neighbor Classifier Connecting the Performance to the Underlying Data Structure

Vicente García, Josep Salvador Sánchez, Alberto Ochoa-Ortiz and Abraham López-Najera

Modified DBSCAN algorithm for microscopic image analysis of wood

Aurora Martins, André R. S. Marcal and José Pissarra

Reinforcement Learning and Neuroevolution in Flappy Bird Game

André Brandão, Pedro Pires and Petia Georgieva

Automatic Detection of Tuberculosis Bacilli from Microscopic Sputum Smear Images using Faster R-CNN, Transfer Learning and Augmentation

Moumen T. El-Melegy, Doaa Mohamed and Tarek Elmelegy

Computer Aided Diagnosis System of Thyroid Nodules From Scintigraphic Images

Aysun Sezer, Hasan Basri Sezer and Emre Alptekin

Detection of stone circles in periglacial regions of Antarctica in UAV datasets

Pedro Pina, Francisco Pereira, Jorge S. Marques and Sandra Heleno

Glyph and Position Classification of Music Symbols in Early Music Manuscripts

Alicia Nuñez-Alcover, Pedro J. Ponce de León and Jorge Calvo-Zaragoza

Lesion Detection in Breast Ultrasound Images Using a Machine Learning Approach and Genetic Optimization

Fabian Torres, Boris Escalante-Ramirez, Jimena Olveres and Yen Ping-Lang

Evaluating the Impact of Color Information in Deep Neural Networks

Vanessa Buhrmester, David Münch, Dimitri Bulatov and Michael Arens

Development of a Fire Detection based on the Analysis of Video Data by means of Convolutional Neural Networks

Jan Lehr

Diatom classification including morphological adaptations using CNNs

Carlos Sanchez Bueno, Noelia Vallez Enano, Gloria Bueno Garcia and Gabriel Cristóbal Pérez

Deep Learning of Visual and Textual Data for Region Detection Applied to Item Coding

Roberto Arroyo, Javier Tovar, Francisco J. Delgado, Emilio J. Almazán, Diego G. Serrador and Antonio Hurtado

Deep learning versus classic methods for multi-taxon diatom segmentation

Jesus Ruiz-Santaquiteria, Anibal Pedraza, Carlos Sanchez Bueno, Jose Libreros, Jesus Salido, Oscar Deniz Suarez, Saul Blanco, Gabriel Cristóbal and Gloria Bueno

Estimation of Sulfonamides Concentration in Water based on Digital Colourimetry

Pedro H. Carvalho, Sílvia Bessa, Ana Rosa M. Silva, Patrícia S. Peixoto, Marcela A. Segundo and Hélder P. Oliveira

Automatic vision based calibration system for planar cable-driven parallel robots

Jorge Andrés García Vanegas, Brhayan Liberato Tafur, Manuel Guillermo Forero Vargas, Antonio González Rodríguez and Fernando Castillo García

Aggregation of deep features for image retrieval based on object detection

Juan Ignacio Forcén Carvalho, Miguel Pagola Barrio, Edurne Barrenechea Tartas and Humberto Bustince Sola

Iris Center Localization Using Geodesic Distance and CNN

Radovan Fusek and Eduard Sojka

Characterization of cardiac and respiratory system of healthy subjects in supine and sitting position

Juan Sebastián Mejía-Herrera, Angel Daniel Ruiz-Ortiz, Juan Manuel López López and Beatriz F. Giraldo Giraldo

Study of the impact of pre-processing applied to images acquired by the Cygno Experiment

G Lopes, E Baracchini, F Bellini, L Benussi, S Bianco, G Cavoto, I Costa, E Di Marco, G Maccarrone, M Marafini, G Mazzitelli, A Messina, R Nobrega, D Piccolo, D Pinci, F Renga, F Rosatelli, D Souza and S Tomassini

Focus estimation in academic environments using Computer Vision

Daniel Canedo, António Neves and Alina Trifan

Collision anticipation via deep reinforcement learning for visual navigation

Eduardo Gutiérrez-Maestro, Roberto J. López-Sastre and Saturnino Maldonado-Bascón

Spectral band subset selection for discrimination of healthy skin and cutaneous Leishmanial ulcers

Ricardo Franco-Ceballos, Maria C. Torres-Madronero, July Galeano-Zea, Javier Murillo, Artur Zarzycki, Johnson Garzon and Sara M. Robledo

Low-Light Face Image Enhancement based on Dynamic Face Part Selection

Adel Oulefki, Mustapha Aouache and Messaoud Bengherabi

Data Augmentation of Minority class with transfer learning for Classification of Imbalanced Breast Cancer Dataset using Inception V3

Manisha Saini and Seba Susan

Image based estimation of fruit phytopathogenic lesions area

Andre R. S. Marcal, Elisabete M. D. S. Santos and Fernando Tavares

15:15–16:00 Keynote

(Chair: Manuel J.Marin)

"Fun with Human-Machine Collaboration for Computer Vision"

Vittorio Ferrari

16:00–16:30 Panel Discussion

(Chair: Manuel J. Marin)

Participants:

Vittorio Ferrari, Enrique Vidal, Agata Lapedriza

16:30–17:30 Session 6: Document Analysis

(Chair: Aythami Morales, Universidad Autonoma de Madrid)

Multi-Task Layout Analysis of Handwritten Musical Scores

Lorenzo Quirós, Alejandro Toselli and Enrique Vidal

Domain Adaptation for Handwritten Symbol Recognition: A Case of Study in Old Music Manuscripts

Tudor N. Mateiu, Antonio-Javier Gallego and Jorge Calvo-Zaragoza

Approaching End-to-End Optical Music Recognition for Homophonic Scores

María Alfaro-Contreras, Jorge CalvoZaragoza and Jose M. Iñesta

17:30–19:00 AERFAI General Assembly

Thursday, July 4

09:00–11:00 Session 7: Image Processing and Representation

(Chair: Alexandre Bernardino, University of Lisbon)

Multi-Label Logo Classification using Convolutional Neural Networks
Antonio-Javier Gallego, Antonio Pertusa and Marisa Bernabeu

Non-destructively prediction of quality parameters of drycured Iberian ham by applying computer vision and lowfield MRI
Juan Pedro Torres, Mar Avila, Andres Caro, Trinidad Perez-Palacios and Daniel Caballero

Dempster-Shafer Parzen-Rosenblatt Hidden Markov Fields for Multichannel Image Segmentation
Mohamed El Yazid Boudaren, Ali Hamache, Islam Debicha and Hamza Tarik Sadouk

Personalised aesthetics with residual adapters
Carlos Rodríguez - Pardo and Hakan Bilen

An Improvement for Capsule Networks using Depthwise Separable Convolution
Nguyen Huu Phong and Bernardete Ribeiro

Wave Front Tracking in High Speed Videos Using a Dynamic Template Matching
Samee Maharjan

11:00 - 12:15. Poster Session 3

(Chair: Ruben Tolosana, Universidad Autonoma de Madrid)

Impact of Pre-Processing on Recognition of Cursive Video Text
Ali Mirza, Imran Siddiqi, Syed Ghulam Mustufa and Mazahir Hussain

Catastrophic interference in Disguised Face Recognition
Parichehr Behjati Ardakani, Diego Velazquez, Josep Gonfaus, Pau Rodriguez, Xavier Roca and Jordi Gonzalez

Real-Time Traffic Monitoring with Occlusion Handling
Mauro Fernandez, Manuel Mucientes and Victor Brea

A weakly-supervised approach for discovering common objects in airport video surveillance footage

Francisco Manuel Castro, Rubén Delgado-Escaño, Nicolás Guil and Manuel Jesús Marín-Jiménez

Standard Plenoptic Camera Calibration for a Range of Zoom and Focus Levels

Nuno Barroso Monteiro and José António Gaspar

Going back to basics on volumetric segmentation of the lungs in CT: a fully image processing based technique

Ana Oliveira, Inês Domingues, Hugo Duarte, João Santos and Pedro H. Abreu

Radiogenomics: Lung Cancer-Related Genes Mutation Status Prediction

Catarina Dias, Gil Pinheiro, António Cunha and Hélder P. Oliveira

Re-Weighted algorithms within the Lagrange duality framework: bringing interpretability to weights

Matías Valdés and Marcelo Fiori

An Efficient Binary Descriptor to Describe Retinal Bifurcation Point for Image Registration

Sarder Tazul Islam, Sajib Saha, G.M. Atiqur Rahaman, Deep Dutta and Yogesan Kanagasingam

Evidential Parzen-Rosenblatt Classifier for Multiattribute Data

Mohamed El Yazid Boudaren, Ali Hamache, Islam Debicha, Younes Meziani and Noureddine Ghenia

Learning to perform visual tasks from human demonstrations

Alfonso Nunes, Rui Figueiredo and Plinio Moreno

Serious Game Controlled by a Human-Computer Interface for Upper Limb Motor Rehabilitation: A Feasibility Study

Sergio David Pulido Castro, Álvaro José Bocanegra Pérez, Sandra Liliana Cancino Suárez and Juan Manuel López López

Weapon detection for particular scenarios using deep learning

Noelia Vallez, Alberto Velasco-Mata, Juan Jose Corroto and Oscar Deniz

Hierarchical Deep Learning Approach for Plant Disease Detection
Joana Costa, Catarina Silva and Bernardete Ribeiro

An artificial vision based method for vehicle detection and classification in urban traffic
Camilo Camacho, César Pedraza and Carolina Higuera

Weighted Multisource TrAdaboost
João Antunes, Alexandre Bernardino, Daniel Siewiorek and Asim Smailagic

A proposal of neural networks with intermediate outputs
Billy Peralta, Juan Reyes, Luis Caro and Christian Pieringer

Breaking Text-based CAPTCHA with Sparse Convolutional Neural Networks
Diogo Daniel Ferreira, Luís Leira, Petya Mihaylova and Petia Georgieva

Texture Classification Using Capsule Networks
Bharat Mamidibathula, Sai Shravani Sistla, Niharika Patnam and Satakarni Amirneni

Image processing method for epidermal cells detection and measurement in Arabidopsis thaliana leaves
Manuel Forero, Sammy Perdomo, Guillermo Perez and Mauricio Quimbaya

User Modeling on Mobile Device based on Facial Clustering and Object Detection in Photos and Videos
Ivan Grechikhin and Andrey Savchenko

Gun and knife detection based on Faster R-CNN for video surveillance
M. Milagro Fernandez-Carrobles, Oscar Deniz and Fernando Maroto

Addressing the Big Data multi-class imbalance problem with oversampling and Deep Learning neural networks
Victor Manuel González-Barcenas, Eréndira E. Rendón-Lara, Roberto Alejo, Everardo Granda-Gutiérrez and Rosa María Valdovinos

A Method for the Evaluation and Classification of the Orange Peel Effect on Painted Injection Moulded Part Surfaces
Atae Jafari Tabrizi, Hannah Luise Lichtenegger and Dieter P. Gruber

A New Automatic Cancer Colony Forming Units Counting Method

Nicolás Roldán, Lizeth Rodriguez, Andrea Hernandez, Karen Cepeda, Alejandro Ondo, Sandra Cancino, Manuel Forero and Juan López

12:15–12:45 Invited Speech

(Chair: Aythami Morales, Universidad Autonoma de Madrid))

"HORIZON 2020: EU Research and Innovation"

UAM Office for Int.l Projects

12:45–13:00 Closing Ceremony

(Chair: Julián Fierrez, Universidad Autonoma de Madrid)

Social Program

Monday, July 1

19:30–22:00: Welcome Reception at UAM Plaza Mayor

How to arrive there: Google Maps: G8W4+3G Madrid

Wednesday, July 3

21:00–23:00: Banquet Dinner

Location: ***Restaurante Colonial Norte***

How to arrive there: https://goo.gl/maps/KaGuXSi2Yg92

Metro and Train Station: *Príncipe Pio* [Metro Lines 2, 3, 5, 6, 10, and R] [Train *Cercanias Renfe* Lines C1, C7, C10]

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Lev Goldfarb, Faculty of CS, UNB, Canada
Luis-Carlos González-Gurrola, Universidad Autonoma de Chihuahua, Mexico
Luís A. Alexandre, UBI and Instituto de Telecomunicações, Portugal
Manuel J. Marín-Jiménez, University of Cordoba, Spain
Manuel Montes-Y-Gómez, Instituto Nacional de Astrofísica, Óptica y Electrónica, Mexico
Marcelo Fiori, Universidad de la República, Uruguay
Marcos A. Levano, Universidad Catolica de Temuco, Chile
Mariella Dimiccoli, Institut de Robòtica i Informàtica Industrial, Spain
Mario Bruno, Universidad de Playa Ancha, Chile
Mark Embrechts, RPI, New York
Martin Kampel, Vienna University of Technology, Austria
Matilde Santos, Universidad Complutense de Madrid, Spain
Michele Nappi, Dipartimento di Matematica e Informatica,
Miguel Angel Guevara Lopez, Computer Graphics Center,

Moises Diaz, Universidad del Atlantico Medio, Spain
Nicolaie Popescu-Bodorin, University of S-E Europe Lumina, Romania
Nicolas Perez De La Blanca, University of Granada, Spain
Niusvel Acosta-Mendoza, Advanced Technologies Application Center (CENATAV), Cuba
Paolo Rosso, Universitat Politècnica de València, Spain
Paulo Correia, Instituto de Telecomunicacoes - Instituto Superior Tecnico, Portugal
Pedro Cardoso, Universidade do Algarve, Portugal
Pedro Latorre Carmona, Universidad Jaume I, Castellon de la Plana, Spain
Pedro Real Jurado, Institute Mathematics of Seville University (IMUS), Spain
Rafael Medina-Carnicer, Cordoba University, Spain
Ramón A. Mollineda Cárdenas, University Jaume I, Spain
Rebeca Marfil, University of Malaga, Spain
Ricardo Torres, Institute of Computing, University of Campinas, Brazil
Roberto Alejo, Tecnológico Nacional de México, Campus Toluca, Mexico
Sebastian Moreno, Universidad Adolfo Ibañez, Chile
Sergio A Velastin, Universidad Carlos III de Madrid, Spain
Turki Turki, King Abdulaziz University, Saudi Arabia
V. Javier Traver, Universitat Jaume I, Spain
Ventzeslav Valev, Bulgarian Academy of Sciences, Bulgaria
Vitaly Kober, CICESE, Mexico
Vitomir Struc, Faculty of Electrical Engineering, University of Ljubljana, Eslovenia
Xiaoyi Jiang, University of Münster, Germany

Authors (Alphabetical)

A Messina	**Italy**	*Istituto Nazionale di Fisica Nucleare*
Abdeljalil Gattal	**Algeria**	*Larbi Tebessi Uinversity, Tebessa, Algeria*
Abdenour Amamra	**Algeria**	*Ecole Militaire Polytechnique, Bordj El-Bahri BP 17, Algiers, Algeria*
Abraham López-Najera	**Mexico**	*Universidad Autónoma de Ciudad Juárez*
Adel Oulefki	**Algeria**	*CDTA | Centre de développement des technologies avancées*
Afonso Nunes	**Portugal**	*Universidade de Lisboa*
Ahmed Ghazi Blaiech	**Tunisia**	*ISSAT, Université de Sousse, 4003, Sousse, Tunisie*
Aladine Chetouani	**France**	*PRISME Laboratory, University of Orleans*
Alberto Ochoa-Ortiz	**Mexico**	*Universidad Autónoma de Ciudad Juárez*
Alberto Velasco-Mata	**Spain**	*University of Castilla-La Mancha*
Alejandro Acien	**Spain**	*Universidad Autónoma de Madrid*
Alejandro de la Calle	**Spain**	*Nielsen*
Alejandro Ondo	**Colombia**	*Universidad del Rosario*
Alejandro Toselli	**Spain**	*Universitat Politècnica de València*
Aleksandra Pizurica	**Belgium**	*Ghent University*
Alessandra Lumini	**Italy**	*University of Bologna*
Alexandre Bernardino	**Portugal**	*Instituto de Sistemas e Robótica / Instituto Superior Técnico*
Ali Hamache	**Algeria**	*Ecole Militaire Polytechnique*
Ali Mirza	**Pakistan**	*Bahria University, Islamabad*
Alicia Nuñez-Alcover	**Spain**	*Universidad de Alicante*
Alina Trifan	**Portugal**	*University of Aveiro*
Álvaro José Bocanegra Pérez	**Colombia**	*Escuela Colombiana de Ingeniería Julio Garavito*
Álvaro Peris	**Spain**	*Universitat Politècnica de València*
Ana F. Adonias	**Portugal**	*University of Porto*
Ana Oliveira	**Portugal**	*University of Coimbra*
Ana Portelo	**Portugal**	*INESC-ID, Lisboa*
Ana Rosa M. Silva	**Portugal**	*INESC TEC*
André Brandão	**Portugal**	*University of Aveiro*
Andre R. S. Marcal	**Portugal**	*University of Porto*
Andrea Cavallaro	**United Kingdom**	*Centre for Intelligent Sensing, Queen Mary University of London*
Andrea Hernandez	**Colombia**	*Universidad del Rosario*
Andres Caro	**Spain**	*University of Extremadura*
Andrey Savchenko	**Russia**	*NRU HSE, Laboratory of Algorithms and Technologies for Network Analysis, Nizhny Novgorod, Russia*
Andrzej Nowicki	**Poland**	*Department of Ultrasound, Institute of Fundamental Technological Research, Polish Academy of Sciences, Warsaw, Poland*
Angel Daniel Ruiz-Ortiz	**Colombia**	*Escuela Colombiana de Ingeniería Julio Garavito - Universidad del Rosario*
Anibal Pedraza	**Spain**	*VISILAB, Universidad de Castilla-La Mancha*
Anna Larionova	**Netherlands**	*Picturer LLC*
Annalisa Franco	**Italy**	*University of Bologna*
Antonio Agudo	**Spain**	*Institut de Robtica i Informatica Industrial, CSIC-UPC*

Antonio Arista	**Mexico**	*Instituto Politecnico Nacional*
António Cunha	**Portugal**	*INESC TEC*
Antonio González Rodríguez	**Spain**	*Universidad de Castilla-La Mancha*
Antonio Hurtado	**Spain**	*Nielsen Spain*
António Neves	**Portugal**	*University of Aveiro*
Antonio Pertusa	**Spain**	*University of Alicante*
Antonio-Javier Gallego	**Spain**	*University of Alicante. Pattern Recognition and Artificial Intelligence Group*
Artur Zarzycki	**Colombia**	*Instituto Tecnológico Metropolitano*
Asim Smailagic	**United States**	*Carnegie Mellon University*
Asma Ben Abdallah	**Tunisia**	*ISIM, Université de Monastir, 5019, Monastir, Tunisie*
Asma Kerkeni	**Tunisia**	*ISIM, Université de Monastir, 5019, Monastir, Tunisie*
Asma Mansour	**Tunisia**	*Laboratoire de Technologie et Imagerie Médicale, FMM, Université de Monastir, 5019, Monastir, Tunisie*
Asmaa A. Abdelbaset	**Egypt**	*Assiut University*
Atae Jafari Tabrizi	**Austria**	*Polymer Competence Center Leoben GmbH*
Aurora Martins	**Portugal**	*University of Porto*
Axel Brando	**Spain**	*BBVA Data & Analytics, Universitat de Barcelona*
Aysun Sezer	**France**	*Unité d'Informatique et d'Ingénierie des Systèmes, ENSTA-ParisTech, Université de Paris-Saclay, France*
Aythami Morales	**Spain**	*Universidad Autonoma de Madrid*
Bárbara Ferreira	**Portugal**	*Universidade de Lisboa*
Beatriz F. Giraldo Giraldo	**Spain**	*Universitat Politècnica de Catalunya*
Bernardete Ribeiro	**Portugal**	*University of Coimbra*
Bernardo Lopes	**Portugal**	*University of Aveiro*
Bharat Mamidibathula	**India**	*Indian Institute of Technology, Kharagpur*
Billy Peralta	**Chile**	*Andres Bello University*
Biplab Banerjee	**India**	*Indian Institute of Technology Bombay*
Boris Escalante-Ramirez	**Mexico**	*UNAM*
Brhayan Liberato Tafur	**Colombia**	*Universidad de Ibagué*
Camilo Camacho	**Colombia**	*Universidad Santo Tomás*
Carlos Antonio Jacanamejoy Jamioy	**Colombia**	*Universidad de Ibagué*
Carlos Arias Rubio	**Colombia**	*Universidad de Ibagué*
Carlos Orrite	**Spain**	*University of Zaragoza*
Carlos Rodríguez - Pardo	**Spain**	*The University of Edinburgh*
Carlos Sanchez Bueno	**Spain**	*Institute of Optics - CSIC*
Carlos V. Regueiro	**Spain**	*Universidade da Coruña*
Carolina Higuera	**Colombia**	*Universidad Santo Tomás*
Catarina Barata	**Portugal**	*ISR/IST*
Catarina Dias	**Portugal**	*University of Porto*
Catarina Silva	**Portugal**	*ESTG-IPLEIRIA-PORTUGAL*
César Pedraza	**Colombia**	*Universidad Nacional de Colombia*
Chawki Djeddi	**Algeria**	*Larbi Tebessi Uinversity, Tebessa, Algeria*

Christian Pieringer	**Chile**	*INACAP*
Cristina Alén	**Spain**	*Universidad de Alcalá*
D Piccolo	**Italy**	*Istituto Nazionale di Fisica Nucleare*
D Pinci	**Italy**	*Istituto Nazionale di Fisica Nucleare*
D Souza	**Brazil**	*Federal University of Juiz de Fora*
Dakshina Ranjan Kisku	**India**	*National Institute of Technology (NIT) Durgapur*
Daniel Caballero	**Denmark**	*University of Copenhagen*
Daniel Canedo	**Portugal**	*University of Aveiro*
Daniel Siewiorek	**United States**	*Carnegie Mellon University*
Danijel Korzinek	**Poland**	*Department of Multimedia, Polish-Japanese Academy of Information Technology, Warsaw, Poland*
David Münch	**Germany**	*Fraunhofer*
Deep Dutta	**Bangladesh**	*Khulna University*
Diego G. Serrador	**Spain**	*Nielsen Spain*
Diego Salazar D'Antonio	**Colombia**	*Universidad de Ibagué*
Diego Velazquez	**Spain**	*Computer Vision Center*
Dieter P. Gruber	**Austria**	*Polymer Competence Center Leoben GmbH*
Dimitri Bulatov	**Germany**	*Fraunhofer*
Diogo Daniel Ferreira	**Portugal**	*University of Aveiro*
Doaa Mohamed	**Egypt**	*Assiut University*
Dolores E. López	**Spain**	*UNIVERSIDAD DE SALAMANCA*
E Baracchini	**Italy**	*Istituto Nazionale di Fisica Nucleare*
E Di Marco	**Italy**	*Istituto Nazionale di Fisica Nucleare*
Eduard Sojka	**Czechia**	*VSB - Technical University of Ostrava*
Eduardo Aguilar	**Chile**	*Universidad Católica del Norte*
Eduardo Gutiérrez-Maestro	**Spain**	*University of Alcalá*
Edurne Barrenechea Tartas	**Spain**	*Universidad Pública de Navarra*
Elías Herrero	**Spain**	*University of Zaragoza*
Elisabete M. D. S. Santos	**Portugal**	*INESC TEC*
Emilio J. Almazán	**Spain**	*Nielsen*
Emre Alptekin	**Turkey**	*Industrial Engineering Department, Faculty of Engineering and Technology, Galatasaray University*
Enrique Vidal	**Spain**	*Universitat Politècnica de València*
Eréndira E. Rendón-Lara	**Mexico**	*National Institute of Technology of Mexico*
Eric Lopez-Lopez	**Spain**	*Universidade da Coruña*
Eung-Su Kim	**South Korea**	*Kyungpook National University*
Everardo Granda-Gutiérrez	**Mexico**	*Universidad Autónoma del Estado de México*
Ezgi Demircan-Tureyen	**Turkey**	*Istanbul Kultur University*
F Bellini	**Italy**	*Istituto Nazionale di Fisica Nucleare*
F Renga	**Italy**	*Istituto Nazionale di Fisica Nucleare*
F Rosatelli	**Italy**	*Istituto Nazionale di Fisica Nucleare*
Fabian Torres	**Mexico**	*UNAM*

Fani Neto	**Portugal**	*Faculdade de Medicina da Universidade do Porto*
Faycel Abbes	**Algeria**	*LIMPAF Laboratory, Computer sciences department, Faculty of Sciences and applied Sciences, Bouira University, Algeria*
Felipe Lumbreras	**Spain**	*Computer Vision Center & Departament de Ciencies de Computacio UAB*
Fernando Castillo García	**Spain**	*Universidad de Castilla-La Mancha*
Fernando Maroto	**Spain**	*University of Castilla-La Mancha, ETSI Industriales, VISILAB*
Fernando Tavares	**Portugal**	*University of Porto*
Francesc Moreno-Noguer	**Spain**	*Institut de Robtica i Informatica Industrial, CSIC-UPC*
Francisco Casacuberta	**Spain**	*Universitat Politècnica de València*
Francisco F. Esteves	**Portugal**	*Champalimaud for unknown*
Francisco J. Delgado	**Spain**	*Nielsen Spain*
Francisco Javier Acevedo-Rodríguez	**Spain**	*University of Alcalá*
Francisco Manuel Castro	**Spain**	*University of Malaga*
Francisco Pereira	**Portugal**	*Universidade de Lisboa*
G Cavoto	**Italy**	*Istituto Nazionale di Fisica Nucleare*
G Lopes	**Brazil**	*Federal University of Juiz de Fora*
G M Atiqur Rahaman	**Bangladesh**	*Khulna University*
G Maccarrone	**Italy**	*Istituto Nazionale di Fisica Nucleare*
G Mazzitelli	**Italy**	*Istituto Nazionale di Fisica Nucleare*
G.M. Atiqur Rahaman	**Bangladesh**	*Khulna University*
Gabriel Cristóbal	**Spain**	*Institute of Optics - CSIC*
Gabriel Lopes	**Portugal**	*University of Porto*
Gemma Rotger	**Spain**	*Computer Vision Center & Departament de Ciencies de Computacio UAB*
Ghesn Sfeir	**Venezuela**	*Universidad Politécnica de Madrid*
Gil Pinheiro	**Portugal**	*INESC TEC*
Gloria Bueno Garcia	**Spain**	*VISILAB - UCLM*
Guillermo Perez	**Colombia**	*Pontificia Universidad Javeriana Cali*
Hadjadj Ismail	**Algeria**	*LIMPAF Laboratory, Computer sciences department, Faculty of Sciences and applied Sciences, Bouira University, Algeria*
Hakan Bilen	**Spain**	*The University of Edinburgh*
Hamza Tarik Sadouk	**Algeria**	*Ecole Militaire Polytechnique*
Hanna Piotrzkowska-Wroblewska	**Poland**	*Department of Ultrasound, Institute of Fundamental Technological Research, Polish Academy of Sciences, Warsaw, Poland*
Hannah Luise Lichtenegger	**Austria**	*Polymer Competence Center Leoben GmbH*
Harbinder Singh	**India**	*Chandigarh Engineering College*
Hasan Basri Sezer	**Turkey**	*SISLI Hamidiye Etfal Training and Research Hospital, Orthopaedics and Traumatology Clinic, Istanbul, Turkey*
Hector Perez	**Mexico**	*Instituto Politecnico Nacional*
Hélder P. Oliveira	**Portugal**	*INESC TEC*
Hemaxi Narotamo	**Portugal**	*Universidade de Lisboa*
Hilario Gómez	**Spain**	*Universidad de Alcalá*

Hocine Cherifi	**France**	*LIB EA 7534, Université de Bourgogne, Dijon*
Hugo Duarte	**Portugal**	*Nuclear Medicine Department, IPO-Porto; Portuguese Institute of Oncology of Porto (IPO-Porto) Research Center*
Humberto Bustince Sola	**Spain**	*Universidad Pública de Navarra*
I Costa	**Brazil**	*Federal University of Juiz de Fora*
Iago Suárez	**Spain**	*Universidad Politécnica de Madrid*
Imene Bouderbal	**Algeria**	*Ecole Nationale Prparatoire aux Etudes d'Ingniorat, Rouiba, Algiers, Algeria*
Imran Siddiqi	**Pakistan**	*Bahria University, Islamabad*
Inês Domingues	**Portugal**	*Portuguese Institute of Oncology of Porto (IPO-Porto) Research Center*
Irene Unceta	**Spain**	*BBVA Data & Analytics, Universitat de Barcelona*
Isabel Rio-Torto	**Portugal**	*FEUP*
Islam Debicha	**Algeria**	*Ecole Militaire Polytechnique*
Ivan Grechikhin	**Russia**	*NRU HSE, Laboratory of Algorithms and Technologies for Network Analysis, Nizhny Novgorod, Russia*
J. Miguel Sanches	**Portugal**	*Universidade de Lisboa*
Jaime S. Cardoso	**Portugal**	*INESC TEC; Faculdade de Engenharia da Universidade do Porto*
Jan Lehr	**Germany**	*Fraunhofer*
Javier Hernandez-Ortega	**Spain**	*Universidad Autonoma de Madrid*
Javier Murillo	**Colombia**	*Universidad de Antioquia*
Javier Tovar	**Spain**	*Nielsen*
Jesus Ruiz-Santaquiteria	**Spain**	*VISILAB, Universidad de Castilla-La Mancha*
Jesus Salido	**Spain**	*Universidad de Castilla-La Mancha*
Jimena Olveres	**Mexico**	*UNAM*
Joana Costa	**Portugal**	*Polytechnic Institute of Leiria*
Joana Ferreira-Gomes	**Portugal**	*Faculdade de Medicina da Universidade do Porto*
João Antunes	**Portugal**	*Carnegie Mellon University*
Joao Miguel Sanches	**Portugal**	*Universidade de Lisboa*
João Ribeiro Pinto	**Portugal**	*INESC TEC; Faculdade de Engenharia da Universidade do Porto*
João Santos	**Portugal**	*IPO-Porto Research Center; Instituto de Ciências Biomédicas Abel Salazar, Universidade do Porto*
Johnson Garzon	**Colombia**	*Universidad Pontificia Bolivariana*
Jordi Gonzalez	**Spain**	*Computer Vision Center*
Jordi Nin	**Spain**	*BBVA Data & Analytics, Universitat de Barcelona*
Jordi Vitrià	**Spain**	*Universitat de Barcelona*
Jorge Andrés García Vanegas	**Colombia**	*Universidad de Ibagué*
Jorge Calvo-Zaragoza	**Spain**	*Unversity of Alicante*
Jorge Martín Arevalillo	**Spain**	*UNED*
Jorge S. Marques	**Portugal**	*ISR/IST*
José António Gaspar	**Portugal**	*Institute for Systems and Robotics (ISR/IST)*
José De Anchieta Horta	**Brazil**	*São Paulo State University*
José Domingues	**Portugal**	*University of Aveiro*
Jose Libreros	**Colombia**	*Universidad del Valle*

Jose M. Iñesta	**Spain**	*Universidad de Alicante*
José Mena	**Spain**	*Eurecat, Centre Tecnològic de Catalunya and Universitat de Barcelona*
José Miguel Buenaposada	**Spain**	*Universidad Rey Juan Carlos*
José Pissarra	**Portugal**	*University of Porto*
Josep Gonfaus	**Spain**	*Visual Tagging Services*
Josep Salvador Sánchez	**Spain**	*Universitat Jaume I*
Juan Ignacio Forcén Carvalho	**Spain**	*das-Nano | veridas*
Juan Jose Corroto	**Spain**	*University of Castilla-La Mancha*
Juan Manuel López López	**Colombia**	*Escuela Colombiana de Ingeniería Julio Garavito*
Juan Pedro Torres	**Spain**	*University of Extremadura*
Juan Reyes	**Chile**	*Catholic University of Temuco*
Juan Sebastián Mejía-Herrera	**Colombia**	*Escuela Colombiana de Ingeniería Julio Garavito - Universidad del Rosario*
Julian Fierrez	**Spain**	*Universidad Autonoma de Madrid*
July Galeano-Zea	**Colombia**	*Instituto Tecnológico Metropolitano*
Jun Yu	**Japan**	*Kochi University of Technology*
Junesuk Lee	**South Korea**	*Kyungpook National University*
Karen Cepeda	**Colombia**	*Universidad del Rosario*
Katarzyna Dobruch-Sobczak	**Poland**	*Department of Ultrasound, Institute of Fundamental Technological Research, Polish Academy of Sciences, Warsaw, Poland*
Keiji Yanai	**Japan**	*The University of Electro-Communications*
Kelwin Fernandes	**Portugal**	*NILG.AI*
Killian Barrere	**France**	*Univ Rennes*
Krzysztof Marasek	**Poland**	*Department of Multimedia, Polish-Japanese Academy of Information Technology, Warsaw, Poland*
L Benussi	**Italy**	*Istituto Nazionale di Fisica Nucleare*
Laura Campo-Deaño	**Portugal**	*Centro de Estudos de Fenomenos de Transporte*
Laura Cleofas	**Mexico**	*Instituto Politecnico Nacional*
Lizeth Rodriguez	**Colombia**	*Escuela Colombiana de Ingeniería Julio Garavito*
Lorenzo Quirós	**Spain**	*Pattern Recognition and Human Language Technologies Research Center, Universitat Politècnica de València*
Luis Baumela	**Spain**	*Universidad Politécnica de Madrid*
Luis Caro	**Chile**	*Catholic University of Temuco*
Luís Leira	**Portugal**	*University of Aveiro*
Luís Teixeira	**Portugal**	*FEUP, INESC TEC*
M Marafini	**Italy**	*Istituto Nazionale di Fisica Nucleare*
M. Milagro Fernandez-Carrobles	**Spain**	*University of Castilla-La Mancha, ETSI Industriales, VISILAB*
Manisha Saini	**India**	*G D Goenka University, Gurgaon, India*
Manuel Forero	**Colombia**	*Universidad de Ibagué*
Manuel Guillermo Forero Vargas	**Colombia**	*Universidad de Ibagué*
Manuel Jesús Marín-Jiménez	**Spain**	*University of Cordoba*

Manuel Mucientes	**Spain**	*Universidade de Santiago de Compostela*
Mar Avila	**Spain**	*University of Extremadura*
Marcela A. Segundo	**Portugal**	*FFUP, REQUIMTE*
Marcelo Fiori	**Uruguay**	*Universidad de la República*
Marcelo Seido Nagano	**Brazil**	*University of São Paulo*
Marcos Baptista-Ríos	**Spain**	*University of Alcalá*
Margarida Silveira	**Portugal**	*Universidade de Lisboa*
María Alfaro-Contreras	**Spain**	*Universidad de Alicante*
Maria C. Torres-Madronero	**Colombia**	*Instituto Tecnológico Metropolitano*
Mariko Nakano	**Mexico**	*Instituto Politecnico Nacional*
Marina Castro	**Portugal**	*INESC TEC / FEUP*
Marisa Bernabeu	**Spain**	*University of Alicante*
Massimo Tistarelli	**Italy**	*University of Sassari*
Matías Valdés	**Uruguay**	*Universidad de la República*
Mauricio Quimbaya	**Colombia**	*Pontificia Universidad Javeriana Cali*
Mauro Fernandez	**Spain**	*Universidade de Santiago de Compostela*
Mazahir Hussain	**Pakistan**	*Bahria University, Islamabad*
Md. Abu Sayed	**Bangladesh**	*Khulna University*
Messaoud Bengherabi	**Algeria**	*CDTA | Centre de développement des technologies avancées*
Michael Arens	**Germany**	*Fraunhofer*
Michal Byra	**Poland**	*Department of Ultrasound, Institute of Fundamental Technological Research, Polish Academy of Sciences, Warsaw, Poland*
Miguel Pagola Barrio	**Spain**	*Universidad Pública de Navarra*
Mohamed El Haziti	**Morocco**	*LRIT - CNRST URAC29, Mohammed V University in Rabat*
Mohamed El Yazid Boudaren	**Algeria**	*Ecole Militaire Polytechnique*
Mohamed Hamidi	**Morocco**	*LRIT - CNRST URAC29, Mohammed V University in Rabat*
Mohamed Hédi Bedoui	**Tunisia**	*Laboratoire de Technologie et Imagerie Médicale, FMM, Université de Monastir, 5019, Monastir, Tunisie*
Mohammed El Hassouni	**Morocco**	*LRIT - CNRST URAC29, Mohammed V University in Rabat*
Mouloud Ayad	**Algeria**	*Electrical Engineering Department, Mohand Akli University, Bouira,Algeria*
Moumen T. El-Melegy	**Egypt**	*Assiut University*
Mustafa E. Kamasak	**Turkey**	*Istanbul Technical University*
Mustapha Aouache	**Algeria**	*CDTA | Centre de développement des technologies avancées*
Nádia Junqueira Martarelli	**Brazil**	*University of São Paulo*
Nadjia Khatir	**Algeria**	*University Oran1 Ahmed Ben Bella*
Nguyen Huu Phong	**Portugal**	*CISUC – Department of Informatics Engineering University of Coimbra*
Nicolás Guil	**Spain**	*University of Malaga*
Nicolás Roldán	**Colombia**	*Escuela Colombiana de Ingeniería Julio Garavito*
Niharika Patnam	**India**	*Indian Institute of Technology, Kharagpur*
Nikita Nikitinsky	**Russia**	*Integrated Systems*
Noelia Vallez	**Spain**	*University of Castilla-La Mancha*
Nohora Meneses Casas	**Colombia**	*Universidad de Ibagué*

Norbert Scherer-Negenborn	**Germany**	*Fraunhofer*
Noureddine Ghenia	**Algeria**	*Ecole Militaire Polytechnique*
Nuno Barroso Monteiro	**Portugal**	*Institute for Systems and Robotics (ISR/IST)*
Oriol Pujol	**Spain**	*Universitat de Barcelona*
Oscar Deniz	**Spain**	*University of Castilla-La Mancha*
Oswaldo López Santos	**Colombia**	*Universidad de Ibagué*
Parichehr Behjati Ardakani	**Spain**	*Computer Vision Center*
Patrícia S. Peixoto	**Portugal**	*FFUP, REQUIMTE*
Pau Rodriguez	**Canada**	*ElementAI*
Pedro H. Abreu	**Portugal**	*University of Coimbra*
Pedro H. Carvalho	**Portugal**	*INESC TEC*
Pedro J. Ponce de León	**Spain**	*Universidad de Alicante*
Pedro Pina	**Portugal**	*Universidade de Lisboa*
Pedro Pires	**Portugal**	*University of Aveiro*
Petia Georgieva	**Portugal**	*University of Aveiro*
Petia Radeva	**Spain**	*Universitat de Barcelona*
Petya Mihaylova	**Bulgaria**	*Technical University of Sofia*
Phalguni Gupta	**India**	*IIT Kanpur*
Plinio Moreno	**Portugal**	*Universidade de Lisboa/Instituto Superior Técnico*
Polina Kazakova	**Russia**	*National University of Science and Technology MISIS*
R Nobrega	**Brazil**	*Federal University of Juiz de Fora*
Radovan Fusek	**Czechia**	*VSB - Technical University of Ostrava*
Raquel Alonso	**Portugal**	*Faculdade de Medicina da Universidade do Porto*
Ricardo Araujo	**Portugal**	*INESC TEC/FCUP*
Ricardo Franco-Ceballos	**Colombia**	*Instituto Tecnológico Metropolitano*
Rinku Datta Rakshit	**India**	*Asansol Engineering College*
Roberto Alejo	**Mexico**	*Tecnológico Nacional de México, Campus Toluca*
Roberto Arroyo	**Spain**	*Nielsen Spain*
Roberto J. López-Sastre	**Spain**	*University of Alcalá*
Rodrigo Ventura	**Portugal**	*Universidade de Lisboa*
Rosa María Valdovinos	**Mexico**	*Universidad Autónoma del Estado de México*
Rubén Delgado-Escaño	**Spain**	*University of Malaga*
Ruben Vera-Rodriguez	**Spain**	*Universidad Autonoma de Madrid*
Rui Figueiredo	**Portugal**	*ISR-IST*
S Bianco	**Italy**	*Istituto Nazionale di Fisica Nucleare*
S Tomassini	**Italy**	*Istituto Nazionale di Fisica Nucleare*
Saber Sarbazvatan	**Portugal**	*Universidade de Lisboa*
Safia Nait-Bahloul	**Algeria**	*University Oran1 Ahmed Ben Bella*
Sai Shravani Sistla	**India**	*Indian Institute of Technology, Kharagpur*
Sajib Saha	**Australia**	*Commonwealth Scientific and Industrial Research Organisation*
Samee Maharjan	**Norway**	*University College of Southeast Norway*
Sammy Perdomo	**Colombia**	*Servicio Nacional de Aprendizaje SENA*
Sandra Cancino	**Colombia**	*Escuela Colombiana de Ingeniería Julio Garavito*
Sandra Heleno	**Portugal**	*Universidade de Lisboa*

Sandra Liliana Cancino Suárez	**Colombia**	*Escuela Colombiana de Ingeniería Julio Garavito*
Sara M. Robledo	**Colombia**	*Universidad de Antioquia*
Sarder Tazul Islam	**Bangladesh**	*Khulna University*
Satakarni Amirneni	**India**	*Indian Institute of Technology, Kharagpur*
Saturnino Maldonado	**Spain**	*Universidad de Alcalá*
Saul Blanco	**Spain**	*Universidad de León*
Seba Susan	**India**	*Delhi Technological University, Delhi, India*
Sergio David Pulido Castro	**Colombia**	*Escuela Colombiana de Ingeniería Julio Garavito*
Sergio Lafuente	**Spain**	*Universidad de Alcala*
Shigenori Nagae	**Japan**	*OMRON Corporation*
Shivam Pande	**India**	*Indian Institute of Technology Bombay*
Shu Zhan	**China**	*Hefei University of Technology*
Sílvia Bessa	**Portugal**	*INESC TEC, FCUP*
Soon-Yong Park	**South Korea**	*Kyungpook National University*
Stefan Becker	**Germany**	*Fraunhofer*
Stéphane Vujasinovic	**Germany**	*Fraunhofer*
Susana Q. Lima	**Portugal**	*Champalimaud for unknown*
Syed Ghulam Mustufa	**Pakistan**	*Bahria University, Islamabad*
Tanmai K. Ghosh	**Bangladesh**	*Khulna University*
Tarek Elmelegy	**Egypt**	*Assiut University*
Tomasz Sznajder	**Poland**	*Department of Multimedia, Polish-Japanese Academy of Information Technology, Warsaw, Poland*
Toru Kurihara	**Japan**	*Kochi University of Technology*
Trinidad Perez-Palacios	**Spain**	*University of Extremadura*
Tudor N. Mateiu	**Spain**	*University of Alicante*
Vanessa Buhrmester	**Germany**	*Fraunhofer*
Vicente García	**Mexico**	*Universidad Autónoma de Ciudad Juárez*
Victor Brea	**Spain**	*Universidade de Santiago de Compostela*
Victor Manuel González-Barcenas	**Mexico**	*National Institute of Technology of Mexico*
Wilson Sakpere	**Italy**	*University of Bologna*
Xavier Roca	**Spain**	*Computer Vision Center*
Xose M. Pardo	**Spain**	*CiTIUS - Universidade de Santiago*
Yen Ping-Lang	**Taiwan**	*NTU*
Yogesan Kanagasingam	**Australia**	*Commonwealth Scientific and Industrial Research Organisation*
Younes Meziani	**Algeria**	*Ecole Militaire Polytechnique*
Zaira Garcia	**Mexico**	*Instituto Politecnico Nacional*

Authors (By Country)

Algeria	Abdeljalil Gattal	*Larbi Tebessi Uinversity, Tebessa, Algeria*
Algeria	Abdenour Amamra	*Ecole Militaire Polytechnique, Bordj El-Bahri BP 17, Algiers, Algeria*
Algeria	Adel Oulefki	*CDTA | Centre de développement des technologies avancées*
Algeria	Ali Hamache	*Ecole Militaire Polytechnique*
Algeria	Chawki Djeddi	*Larbi Tebessi Uinversity, Tebessa, Algeria*
Algeria	Faycel Abbes	*LIMPAF Laboratory, Computer sciences department, Faculty of Sciences and applied Sciences, Bouira University, Algeria*
Algeria	Hadjadj Ismail	*LIMPAF Laboratory, Computer sciences department, Faculty of Sciences and applied Sciences, Bouira University, Algeria*
Algeria	Hamza Tarik Sadouk	*Ecole Militaire Polytechnique*
Algeria	Imene Bouderbal	*Ecole Nationale Prparatoire aux Etudes d'Ingniorat, Rouiba, Algiers, Algeria*
Algeria	Islam Debicha	*Ecole Militaire Polytechnique*
Algeria	Messaoud Bengherabi	*CDTA | Centre de développement des technologies avancées*
Algeria	Mohamed El Yazid Boudaren	*Ecole Militaire Polytechnique*
Algeria	Mouloud Ayad	*Electrical Engineering Department, Mohand Akli University, Bouira,Algeria*
Algeria	Mustapha Aouache	*CDTA | Centre de développement des technologies avancées*
Algeria	Nadjia Khatir	*University Oran1 Ahmed Ben Bella*
Algeria	Noureddine Ghenia	*Ecole Militaire Polytechnique*
Algeria	Safia Nait-Bahloul	*University Oran1 Ahmed Ben Bella*
Algeria	Younes Meziani	*Ecole Militaire Polytechnique*
Australia	Sajib Saha	*Commonwealth Scientific and Industrial Research Organisation*
Australia	Yogesan Kanagasingam	*Commonwealth Scientific and Industrial Research Organisation*
Austria	Atae Jafari Tabrizi	*Polymer Competence Center Leoben GmbH*
Austria	Dieter P. Gruber	*Polymer Competence Center Leoben GmbH*
Austria	Hannah Luise Lichtenegger	*Polymer Competence Center Leoben GmbH*
Bangladesh	Deep Dutta	*Khulna University*
Bangladesh	G M Atiqur Rahaman	*Khulna University*
Bangladesh	G.M. Atiqur Rahaman	*Khulna University*
Bangladesh	Md. Abu Sayed	*Khulna University*
Bangladesh	Sarder Tazul Islam	*Khulna University*
Bangladesh	Tanmai K. Ghosh	*Khulna University*
Belgium	Aleksandra Pizurica	*Ghent University*
Brazil	D Souza	*Federal University of Juiz de Fora*
Brazil	G Lopes	*Federal University of Juiz de Fora*
Brazil	I Costa	*Federal University of Juiz de Fora*
Brazil	José De Anchieta Horta	*São Paulo State University*
Brazil	Marcelo Seido Nagano	*University of São Paulo*
Brazil	Nádia Junqueira Martarelli	*University of São Paulo*

Brazil	R Nobrega	*Federal University of Juiz de Fora*
Bulgaria	Petya Mihaylova	*Technical University of Sofia*
Canada	Pau Rodriguez	*ElementAI*
Chile	Billy Peralta	*Andres Bello University*
Chile	Christian Pieringer	*INACAP*
Chile	Eduardo Aguilar	*Universidad Católica del Norte*
Chile	Juan Reyes	*Catholic University of Temuco*
Chile	Luis Caro	*Catholic University of Temuco*
China	Shu Zhan	*Hefei University of Technology*
Colombia	Alejandro Ondo	*Universidad del Rosario*
Colombia	Álvaro José Bocanegra Pérez	*Escuela Colombiana de Ingeniería Julio Garavito*
Colombia	Andrea Hernandez	*Universidad del Rosario*
Colombia	Angel Daniel Ruiz-Ortiz	*Escuela Colombiana de Ingeniería Julio Garavito - Universidad del Rosario*
Colombia	Artur Zarzycki	*Instituto Tecnológico Metropolitano*
Colombia	Brhayan Liberato Tafur	*Universidad de Ibagué*
Colombia	Camilo Camacho	*Universidad Santo Tomás*
Colombia	Carlos Antonio Jacanamejoy Jamioy	*Universidad de Ibagué*
Colombia	Carlos Arias Rubio	*Universidad de Ibagué*
Colombia	Carolina Higuera	*Universidad Santo Tomás*
Colombia	César Pedraza	*Universidad Nacional de Colombia*
Colombia	Diego Salazar D'Antonio	*Universidad de Ibagué*
Colombia	Guillermo Perez	*Pontificia Universidad Javeriana Cali*
Colombia	Javier Murillo	*Universidad de Antioquia*
Colombia	Johnson Garzon	*Universidad Pontificia Bolivariana*
Colombia	Jorge Andrés García Vanegas	*Universidad de Ibagué*
Colombia	Jose Libreros	*Universidad del Valle*
Colombia	Juan Manuel López López	*Escuela Colombiana de Ingeniería Julio Garavito*
Colombia	Juan Sebastián Mejía-Herrera	*Escuela Colombiana de Ingeniería Julio Garavito - Universidad del Rosario*
Colombia	July Galeano-Zea	*Instituto Tecnológico Metropolitano*
Colombia	Karen Cepeda	*Universidad del Rosario*
Colombia	Lizeth Rodriguez	*Escuela Colombiana de Ingeniería Julio Garavito*
Colombia	Manuel Forero	*Universidad de Ibagué*
Colombia	Manuel Guillermo Forero Vargas	*Universidad de Ibagué*
Colombia	Maria C. Torres-Madronero	*Instituto Tecnológico Metropolitano*
Colombia	Mauricio Quimbaya	*Pontificia Universidad Javeriana Cali*
Colombia	Nicolás Roldán	*Escuela Colombiana de Ingeniería Julio Garavito*
Colombia	Nohora Meneses Casas	*Universidad de Ibagué*
Colombia	Oswaldo López Santos	*Universidad de Ibagué*
Colombia	Ricardo Franco-Ceballos	*Instituto Tecnológico Metropolitano*
Colombia	Sammy Perdomo	*Servicio Nacional de Aprendizaje SENA*
Colombia	Sandra Cancino	*Escuela Colombiana de Ingeniería Julio Garavito*

Colombia	Sandra Liliana Cancino Suárez	*Escuela Colombiana de Ingeniería Julio Garavito*
Colombia	Sara M. Robledo	*Universidad de Antioquia*
Colombia	Sergio David Pulido Castro	*Escuela Colombiana de Ingeniería Julio Garavito*
Czechia	Eduard Sojka	*VSB - Technical University of Ostrava*
Czechia	Radovan Fusek	*VSB - Technical University of Ostrava*
Denmark	Daniel Caballero	*University of Copenhagen*
Egypt	Asmaa A. Abdelbaset	*Assiut University*
Egypt	Doaa Mohamed	*Assiut University*
Egypt	Moumen T. El-Melegy	*Assiut University*
Egypt	Tarek Elmelegy	*Assiut University*
France	Aladine Chetouani	*PRISME Laboratory, University of Orleans*
France	Aysun Sezer	*Unité d'Informatique et d'Ingénierie des Systèmes, ENSTA-ParisTech, Université de Paris-Saclay, France*
France	Hocine Cherifi	*LIB EA 7534, Université de Bourgogne, Dijon*
France	Killian Barrere	*Univ Rennes*
Germany	David Münch	*Fraunhofer*
Germany	Dimitri Bulatov	*Fraunhofer*
Germany	Jan Lehr	*Fraunhofer*
Germany	Michael Arens	*Fraunhofer*
Germany	Norbert Scherer-Negenborn	*Fraunhofer*
Germany	Stefan Becker	*Fraunhofer*
Germany	Stéphane Vujasinovic	*Fraunhofer*
Germany	Vanessa Buhrmester	*Fraunhofer*
India	Bharat Mamidibathula	*Indian Institute of Technology, Kharagpur*
India	Biplab Banerjee	*Indian Institute of Technology Bombay*
India	Dakshina Ranjan Kisku	*National Institute of Technology (NIT) Durgapur*
India	Harbinder Singh	*Chandigarh Engineering College*
India	Manisha Saini	*G D Goenka University, Gurgaon, India*
India	Niharika Patnam	*Indian Institute of Technology, Kharagpur*
India	Phalguni Gupta	*IIT Kanpur*
India	Rinku Datta Rakshit	*Asansol Engineering College*
India	Sai Shravani Sistla	*Indian Institute of Technology, Kharagpur*
India	Satakarni Amirneni	*Indian Institute of Technology, Kharagpur*
India	Seba Susan	*Delhi Technological University, Delhi, India*
India	Shivam Pande	*Indian Institute of Technology Bombay*
Italy	A Messina	*Istituto Nazionale di Fisica Nucleare*
Italy	Alessandra Lumini	*University of Bologna*
Italy	Annalisa Franco	*University of Bologna*
Italy	D Piccolo	*Istituto Nazionale di Fisica Nucleare*
Italy	D Pinci	*Istituto Nazionale di Fisica Nucleare*
Italy	E Baracchini	*Istituto Nazionale di Fisica Nucleare*
Italy	E Di Marco	*Istituto Nazionale di Fisica Nucleare*
Italy	F Bellini	*Istituto Nazionale di Fisica Nucleare*
Italy	F Renga	*Istituto Nazionale di Fisica Nucleare*
Italy	F Rosatelli	*Istituto Nazionale di Fisica Nucleare*
Italy	G Cavoto	*Istituto Nazionale di Fisica Nucleare*

Italy	G Maccarrone	*Istituto Nazionale di Fisica Nucleare*
Italy	G Mazzitelli	*Istituto Nazionale di Fisica Nucleare*
Italy	L Benussi	*Istituto Nazionale di Fisica Nucleare*
Italy	M Marafini	*Istituto Nazionale di Fisica Nucleare*
Italy	Massimo Tistarelli	*University of Sassari*
Italy	S Bianco	*Istituto Nazionale di Fisica Nucleare*
Italy	S Tomassini	*Istituto Nazionale di Fisica Nucleare*
Italy	Wilson Sakpere	*University of Bologna*
Japan	Jun Yu	*Kochi University of Technology*
Japan	Keiji Yanai	*The University of Electro-Communications*
Japan	Shigenori Nagae	*OMRON Corporation*
Japan	Toru Kurihara	*Kochi University of Technology*
Mexico	Abraham López-Najera	*Universidad Autónoma de Ciudad Juárez*
Mexico	Alberto Ochoa-Ortiz	*Universidad Autónoma de Ciudad Juárez*
Mexico	Antonio Arista	*Instituto Politecnico Nacional*
Mexico	Boris Escalante-Ramirez	*UNAM*
Mexico	Eréndira E. Rendón-Lara	*National Institute of Technology of Mexico*
Mexico	Everardo Granda-Gutiérrez	*Universidad Autónoma del Estado de México*
Mexico	Fabian Torres	*UNAM*
Mexico	Hector Perez	*Instituto Politecnico Nacional*
Mexico	Jimena Olveres	*UNAM*
Mexico	Laura Cleofas	*Instituto Politecnico Nacional*
Mexico	Mariko Nakano	*Instituto Politecnico Nacional*
Mexico	Roberto Alejo	*Tecnológico Nacional de México, Campus Toluca*
Mexico	Rosa María Valdovinos	*Universidad Autónoma del Estado de México*
Mexico	Vicente García	*Universidad Autónoma de Ciudad Juárez*
Mexico	Victor Manuel González-Barcenas	*National Institute of Technology of Mexico*
Mexico	Zaira Garcia	*Instituto Politecnico Nacional*
Morocco	Mohamed El Haziti	*LRIT - CNRST URAC29, Mohammed V University in Rabat*
Morocco	Mohamed Hamidi	*LRIT - CNRST URAC29, Mohammed V University in Rabat*
Morocco	Mohammed El Hassouni	*LRIT - CNRST URAC29, Mohammed V University in Rabat*
Netherlands	Anna Larionova	*Picturer LLC*
Norway	Samee Maharjan	*University College of Southeast Norway*
Pakistan	Ali Mirza	*Bahria University, Islamabad*
Pakistan	Imran Siddiqi	*Bahria University, Islamabad*
Pakistan	Mazahir Hussain	*Bahria University, Islamabad*
Pakistan	Syed Ghulam Mustufa	*Bahria University, Islamabad*
Poland	Andrzej Nowicki	*Department of Ultrasound, Institute of Fundamental Technological Research, Polish Academy of Sciences, Warsaw, Poland*
Poland	Danijel Korzinek	*Department of Multimedia, Polish-Japanese Academy of Information Technology, Warsaw, Poland*
Poland	Hanna Piotrzkowska-Wroblewska	*Department of Ultrasound, Institute of Fundamental Technological Research, Polish Academy of Sciences, Warsaw, Poland*

Poland	Katarzyna Dobruch-Sobczak	*Department of Ultrasound, Institute of Fundamental Technological Research, Polish Academy of Sciences, Warsaw, Poland*
Poland	Krzysztof Marasek	*Department of Multimedia, Polish-Japanese Academy of Information Technology, Warsaw, Poland*
Poland	Michal Byra	*Department of Ultrasound, Institute of Fundamental Technological Research, Polish Academy of Sciences, Warsaw, Poland*
Poland	Tomasz Sznajder	*Department of Multimedia, Polish-Japanese Academy of Information Technology, Warsaw, Poland*
Portugal	Afonso Nunes	*Universidade de Lisboa*
Portugal	Alexandre Bernardino	*Instituto de Sistemas e Robótica / Instituto Superior Técnico*
Portugal	Alina Trifan	*University of Aveiro*
Portugal	Ana F. Adonias	*University of Porto*
Portugal	Ana Oliveira	*University of Coimbra*
Portugal	Ana Portelo	*INESC-ID, Lisboa*
Portugal	Ana Rosa M. Silva	*INESC TEC*
Portugal	André Brandão	*University of Aveiro*
Portugal	Andre R. S. Marcal	*University of Porto*
Portugal	António Cunha	*INESC TEC*
Portugal	António Neves	*University of Aveiro*
Portugal	Aurora Martins	*University of Porto*
Portugal	Bárbara Ferreira	*Universidade de Lisboa*
Portugal	Bernardete Ribeiro	*University of Coimbra*
Portugal	Bernardo Lopes	*University of Aveiro*
Portugal	Catarina Barata	*ISR/IST*
Portugal	Catarina Dias	*University of Porto*
Portugal	Catarina Silva	*ESTG-IPLEIRIA-PORTUGAL*
Portugal	Daniel Canedo	*University of Aveiro*
Portugal	Diogo Daniel Ferreira	*University of Aveiro*
Portugal	Elisabete M. D. S. Santos	*INESC TEC*
Portugal	Fani Neto	*Faculdade de Medicina da Universidade do Porto*
Portugal	Fernando Tavares	*University of Porto*
Portugal	Francisco F. Esteves	*Champalimaud for unknown*
Portugal	Francisco Pereira	*Universidade de Lisboa*
Portugal	Gabriel Lopes	*University of Porto*
Portugal	Gil Pinheiro	*INESC TEC*
Portugal	Hélder P. Oliveira	*INESC TEC*
Portugal	Hemaxi Narotamo	*Universidade de Lisboa*
Portugal	Hugo Duarte	*Nuclear Medicine Department, IPO-Porto; Portuguese Institute of Oncology of Porto (IPO-Porto) Research Center*
Portugal	Inês Domingues	*Portuguese Institute of Oncology of Porto (IPO-Porto) Research Center*
Portugal	Isabel Rio-Torto	*FEUP*
Portugal	J. Miguel Sanches	*Universidade de Lisboa*
Portugal	Jaime S. Cardoso	*INESC TEC; Faculdade de Engenharia da Universidade do Porto*
Portugal	Joana Costa	*Polytechnic Institute of Leiria*
Portugal	Joana Ferreira-Gomes	*Faculdade de Medicina da Universidade do Porto*

Portugal	João Antunes	*Carnegie Mellon University*
Portugal	Joao Miguel Sanches	*Universidade de Lisboa*
Portugal	João Ribeiro Pinto	*INESC TEC; Faculdade de Engenharia da Universidade do Porto*
Portugal	João Santos	*IPO-Porto Research Center; Instituto de Ciências Biomédicas Abel Salazar, Universidade do Porto*
Portugal	Jorge S. Marques	*ISR/IST*
Portugal	José António Gaspar	*Institute for Systems and Robotics (ISR/IST)*
Portugal	José Domingues	*University of Aveiro*
Portugal	José Pissarra	*University of Porto*
Portugal	Kelwin Fernandes	*NILG.AI*
Portugal	Laura Campo-Deaño	*Centro de Estudos de Fenomenos de Transporte*
Portugal	Luís Leira	*University of Aveiro*
Portugal	Luís Teixeira	*FEUP, INESC TEC*
Portugal	Marcela A. Segundo	*FFUP, REQUIMTE*
Portugal	Margarida Silveira	*Universidade de Lisboa*
Portugal	Marina Castro	*INESC TEC / FEUP*
Portugal	Nguyen Huu Phong	*CISUC – Department of Informatics Engineering University of Coimbra*
Portugal	Nuno Barroso Monteiro	*Institute for Systems and Robotics (ISR/IST)*
Portugal	Patrícia S. Peixoto	*FFUP, REQUIMTE*
Portugal	Pedro H. Abreu	*University of Coimbra*
Portugal	Pedro H. Carvalho	*INESC TEC*
Portugal	Pedro Pina	*Universidade de Lisboa*
Portugal	Pedro Pires	*University of Aveiro*
Portugal	Petia Georgieva	*University of Aveiro*
Portugal	Plinio Moreno	*Universidade de Lisboa/Instituto Superior Técnico*
Portugal	Raquel Alonso	*Faculdade de Medicina da Universidade do Porto*
Portugal	Ricardo Araujo	*INESC TEC/FCUP*
Portugal	Rodrigo Ventura	*Universidade de Lisboa*
Portugal	Rui Figueiredo	*ISR-IST*
Portugal	Saber Sarbazvatan	*Universidade de Lisboa*
Portugal	Sandra Heleno	*Universidade de Lisboa*
Portugal	Sílvia Bessa	*INESC TEC, FCUP*
Portugal	Susana Q. Lima	*Champalimaud for unknown*
Russia	Andrey Savchenko	*NRU HSE, Laboratory of Algorithms and Technologies for Network Analysis, Nizhny Novgorod, Russia*
Russia	Ivan Grechikhin	*NRU HSE, Laboratory of Algorithms and Technologies for Network Analysis, Nizhny Novgorod, Russia*
Russia	Nikita Nikitinsky	*Integrated Systems*
Russia	Polina Kazakova	*National University of Science and Technology MISIS*
South Korea	Eung-Su Kim	*Kyungpook National University*
South Korea	Junesuk Lee	*Kyungpook National University*
South Korea	Soon-Yong Park	*Kyungpook National University*
Spain	Alberto Velasco-Mata	*University of Castilla-La Mancha*
Spain	Alejandro Acien	*Universidad Autónoma de Madrid*
Spain	Alejandro de la Calle	*Nielsen*
Spain	Alejandro Toselli	*Universitat Politècnica de València*
Spain	Alicia Nuñez-Alcover	*Universidad de Alicante*

Spain	Álvaro Peris	*Universitat Politècnica de València*
Spain	Andres Caro	*University of Extremadura*
Spain	Anibal Pedraza	*VISILAB, Universidad de Castilla-La Mancha*
Spain	Antonio Agudo	*Institut de Robtica i Informatica Industrial, CSIC-UPC*
Spain	Antonio González Rodríguez	*Universidad de Castilla-La Mancha*
Spain	Antonio Hurtado	*Nielsen Spain*
Spain	Antonio Pertusa	*University of Alicante*
Spain	Antonio-Javier Gallego	*University of Alicante. Pattern Recognition and Artificial Intelligence Group*
Spain	Axel Brando	*BBVA Data & Analytics, Universitat de Barcelona*
Spain	Aythami Morales	*Universidad Autonoma de Madrid*
Spain	Beatriz F. Giraldo Giraldo	*Universitat Politècnica de Catalunya*
Spain	Carlos Orrite	*University of Zaragoza*
Spain	Carlos Rodríguez - Pardo	*The University of Edinburgh*
Spain	Carlos Sanchez Bueno	*Institute of Optics - CSIC*
Spain	Carlos V. Regueiro	*Universidade da Coruña*
Spain	Cristina Alén	*Universidad de Alcalá*
Spain	Diego G. Serrador	*Nielsen Spain*
Spain	Diego Velazquez	*Computer Vision Center*
Spain	Dolores E. López	*UNIVERSIDAD DE SALAMANCA*
Spain	Eduardo Gutiérrez-Maestro	*University of Alcalá*
Spain	Edurne Barrenechea Tartas	*Universidad Pública de Navarra*
Spain	Elías Herrero	*University of Zaragoza*
Spain	Emilio J. Almazán	*Nielsen*
Spain	Enrique Vidal	*Universitat Politècnica de València*
Spain	Eric Lopez-Lopez	*Universidade da Coruña*
Spain	Felipe Lumbreras	*Computer Vision Center & Departament de Ciencies de Computacio UAB*
Spain	Fernando Castillo García	*Universidad de Castilla-La Mancha*
Spain	Fernando Maroto	*University of Castilla-La Mancha, ETSI Industriales, VISILAB*
Spain	Francesc Moreno-Noguer	*Institut de Robtica i Informatica Industrial, CSIC-UPC*
Spain	Francisco Casacuberta	*Universitat Politècnica de València*
Spain	Francisco J. Delgado	*Nielsen Spain*
Spain	Francisco Javier Acevedo-Rodríguez	*University of Alcalá*
Spain	Francisco Manuel Castro	*University of Malaga*
Spain	Gabriel Cristóbal	*Institute of Optics - CSIC*
Spain	Gemma Rotger	*Computer Vision Center & Departament de Ciencies de Computacio UAB*
Spain	Gloria Bueno Garcia	*VISILAB - UCLM*
Spain	Hakan Bilen	*The University of Edinburgh*
Spain	Hilario Gómez	*Universidad de Alcalá*
Spain	Humberto Bustince Sola	*Universidad Pública de Navarra*
Spain	Iago Suárez	*Universidad Politécnica de Madrid*
Spain	Irene Unceta	*BBVA Data & Analytics, Universitat de Barcelona*
Spain	Javier Hernandez-Ortega	*Universidad Autonoma de Madrid*
Spain	Javier Tovar	*Nielsen*

Spain	Jesus Ruiz-Santaquiteria	*VISILAB, Universidad de Castilla-La Mancha*
Spain	Jesus Salido	*Universidad de Castilla-La Mancha*
Spain	Jordi Gonzalez	*Computer Vision Center*
Spain	Jordi Nin	*BBVA Data & Analytics, Universitat de Barcelona*
Spain	Jordi Vitrià	*Universitat de Barcelona*
Spain	Jorge Calvo-Zaragoza	*Unversity of Alicante*
Spain	Jorge Martín Arevalillo	*UNED*
Spain	Jose M. Iñesta	*Universidad de Alicante*
Spain	José Mena	*Eurecat, Centre Tecnològic de Catalunya and Universitat de Barcelona*
Spain	José Miguel Buenaposada	*Universidad Rey Juan Carlos*
Spain	Josep Gonfaus	*Visual Tagging Services*
Spain	Josep Salvador Sánchez	*Universitat Jaume I*
Spain	Juan Ignacio Forcén Carvalho	*das-Nano | veridas*
Spain	Juan Jose Corroto	*University of Castilla-La Mancha*
Spain	Juan Pedro Torres	*University of Extremadura*
Spain	Julian Fierrez	*Universidad Autonoma de Madrid*
Spain	Lorenzo Quirós	*Pattern Recognition and Human Language Technologies Research Center, Universitat Politècnica de València*
Spain	Luis Baumela	*Universidad Politécnica de Madrid*
Spain	M. Milagro Fernandez-Carrobles	*University of Castilla-La Mancha, ETSI Industriales, VISILAB*
Spain	Manuel Jesús Marín-Jiménez	*University of Cordoba*
Spain	Manuel Mucientes	*Universidade de Santiago de Compostela*
Spain	Mar Avila	*University of Extremadura*
Spain	Marcos Baptista-Ríos	*University of Alcalá*
Spain	María Alfaro-Contreras	*Universidad de Alicante*
Spain	Marisa Bernabeu	*University of Alicante*
Spain	Mauro Fernandez	*Universidade de Santiago de Compostela*
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Tunisia	Ahmed Ghazi Blaiech	*ISSAT, Université de Sousse, 4003, Sousse, Tunisie*
Tunisia	Asma Ben Abdallah	*ISIM, Université de Monastir, 5019, Monastir, Tunisie*
Tunisia	Asma Kerkeni	*ISIM, Université de Monastir, 5019, Monastir, Tunisie*
Tunisia	Asma Mansour	*Laboratoire de Technologie et Imagerie Médicale, FMM, Université de Monastir, 5019, Monastir, Tunisie*
Tunisia	Mohamed Hédi Bedoui	*Laboratoire de Technologie et Imagerie Médicale, FMM, Université de Monastir, 5019, Monastir, Tunisie*
Turkey	Emre Alptekin	*Industrial Engineering Department, Faculty of Engineering and Technology, Galatasaray University*
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