



23rd IBEROAMERICAN CONGRESS
ON PATTERN RECOGNITION

NOVEMBER 19-22, 2018
UNIVERSIDAD AUTONOMA DE MADRID
SPAIN

General Schedule

<u>CIARP 2018: FINAL PROGRAM</u>	<i>SESSION TOPIC</i>	Private Meetings (by invitation only)
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Monday, November 19

16:30-18:00	UAM50 Exhibition at CentroCentro	
18:00-19:00	Madrid Sunset at CBA	
19:00-20:00	Keynote: Jiri Matas	COMPUTER VISION
20:00-22:00	Welcome Reception at CBA	

Tuesday, November 20

8:15-8:45	Registration		
8:45-9:00	Opening Session		
9:00-9:45	Keynote: Johan Suykens	MACHINE LEARNING	
9:45-10:15	Round Table (with Coffee)		
10:15-12:00	Oral Session 1: 5 papers	Machine Learning	
12:00-13:00	Lunch		
13:00-15:00	Poster Session 1: 35 papers (with Coffee)	Machine Learning, Computer Vision, Text and Handwriting Analysis, HCI	IAPR & CIARP Meetings
15:00-17:00	Oral Session 2: 6 papers	Computer Vision I	
17:00-18:00	Special Session: Research Funding & Cooperation		
18:00-18:30	Round Table		

SESSION TOPIC

Private Meetings
(by invitation only)

Wednesday, November 21

8:15-8:45	Registration	
8:45-10:30	Oral Session 3: 5 papers	Biometrics
10:30-12:00	Poster Session 2: 16 papers + 16 late-breaking works (w Coffee)	Machine Learning, Biometrics, Others
12:00-13:00	Lunch	
13:00-15:00	Oral Session 4: 6 papers	Classification
15:00-15:30	Coffee break	
15:30-16:15	Keynote: Björn Schuller	SPEECH & NATURAL LANGUAGE
16:15-17:00	Round Table	
18:30-20:30	Teatro Real > Palacio Real > Templo Debod > Banquet	
20:30-23:00	Banquet: Colonial Norte	

Thursday, November 22

8:30-8:45	Registration	
8:45-9:30	Keynote: Francisco Herrera	BIG DATA
9:30-10:00	Round Table (with Coffee)	
10:00-12:00	Oral Session 5: 6 papers	Computer Vision II
12:00-13:00	Lunch	
13:00-15:00	Poster Session 3: 27 papers (with Coffee)	Computer Vision, Medical Applications, Brain Signals, Sentiment Analysis
15:00-17:00	Oral Session 6: 6 papers	Medical Applications and Brain Signals
17:00-17:15	Closing Ceremony	

AERFAI (Spanish IAPR Society) & Projects Meetings

Content

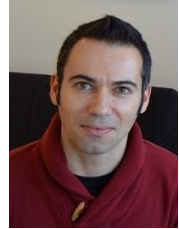
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Welcome from the General Chair

It is my pleasure to welcome you all to CIARP 2018 in Madrid.

Now in its 23rd edition, CIARP has become a key research event, and the most important in pattern recognition for the Iberoamerican community.

CIARP has always been an open international event, and this year we welcome researchers from more than 20 countries. As expected, the biggest presence is from Brazil, Chile, Colombia, Cuba, Mexico, Portugal and Spain. On the other hand, we have also good presence from Algeria, France, Germany, Italy, Tunisia, UK, and USA; and also presence from countries like Japan, Russia, South Africa, and South Korea. Our efforts to strengthen the bonds between Iberoamerican countries, and beyond, is patent in the program, which emphasizes interactive poster sessions, and includes a special session dedicated to international research cooperation.



Finally, we are witnessing a *deep* transformation in our field, now increasingly dominated by advances occurring at the industry in machine learning, computer vision, and related fields around pattern recognition. We have also tried to integrate CIARP in this vortex by incorporating a number of researchers and practitioners in pattern recognition into a number of round tables from companies like IBM, Google, MathWorks, Microsoft, Nuance, and Telefonica.

Welcome to Madrid, and welcome to CIARP 2018. *¡Bienvenidos!*

Main Organization

Team (left to right):

Aythami Morales
(*Publication Chair*)

Ruben Vera
(*Program Chair*)

Julian Fierrez
(*General Chair*)

Javier Ortega
(*UAM Vice Rector*)

Alejandro Acien and
Ruben Tolosana
(*Local Organization*)



Message from the Program Chairs

CIARP 2018 received 187 submissions. The review process for CIARP 2018 was diligent and required careful consideration of more than 550 reviews from 117 reviewers who spent significant time and effort in reviewing the papers. In the end 112 papers were accepted, which is a 59.9% of acceptance. To form the final program 34 papers were selected for oral presentations and 78 as poster presentations. The program is comprised of 6 oral sessions on the following topics: machine learning, computer vision (two sessions), classification, biometrics and medical applications and brain signals. Three poster sessions include papers on all previous topics and also on: text and character analysis, human interaction and sentiment analysis.

A novelty of CIARP 2018 has been the inclusion of late breaking works submissions, which are cutting edge or emerging works that have not been fully realized or developed and would not have reached the level of maturity expected for the main track of CIARP. In total, 16 late breaking works are included in the program as poster presentations.

The program is enhanced by four keynotes by eminent speakers: Jiri Matas, Johan Suykens, Björn Schuller and Francisco Herrera. Also, round tables are programmed after each of the keynotes including professionals from both academia and industry. Another novelty from CIARP 2018 is the organization of a special session focused on research funding and cooperation together with a round table for discussion among all the attendees.

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.

CIARP 2018 Program Chairs



Ruben Vera-Rodriguez
(Program Coordinator)

Universidad Autonoma de Madrid, Spain



Sergio Velastin

Univ. Carlos III de Madrid, Spain; and Queen Mary University of London, UK



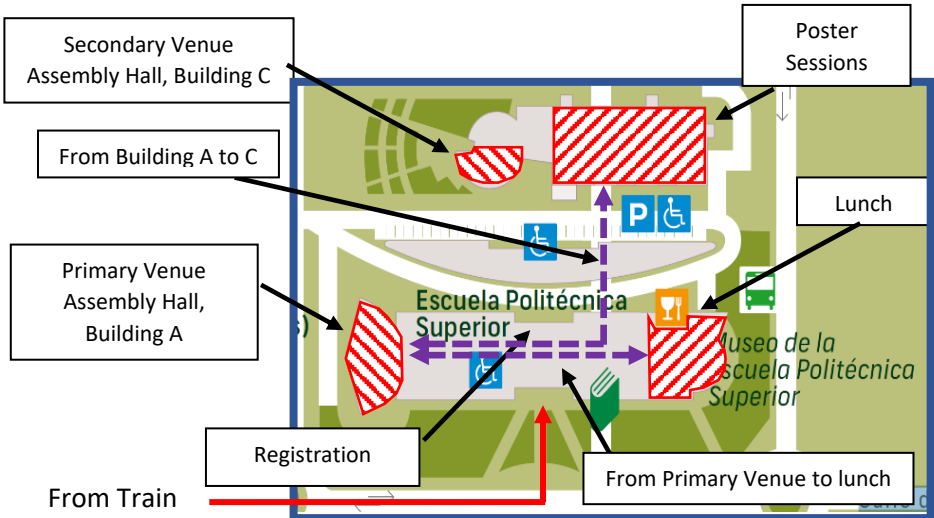
Manuel Montes-y-Gomez

INAOEP, Mexico

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.



Keynote Speakers

Jiri Matas, *Czech Technical University, Prague*



Jiri Matas is a full professor at the Center for Machine Perception, Czech Technical University in Prague. He holds a PhD degree from the University of Surrey, UK (1995). He has published more than 200 papers in refereed journals and conferences. His publications have approximately 34000 citations registered in Google Scholar and 13000 in the Web of Science. His h- index is 65 (Google scholar) and 43 (Clarivate Analytics Web of Science) respectively. He received the best paper prize e.g. at the British Machine Vision Conferences in 2002 and 2005, at the Asian Conference on Computer Vision in 2007 and at Int. Conf. on Document analysis and Recognition in 2015. J. Matas has served in various roles at major international computer vision conferences (e.g. ICCV, CVPR, ICPR, NIPS, ECCV), co-chairing ECCV 2004, 2016 and CVPR 2007. He is on the editorial board of IJCV and was the Associate Editor-in-Chief of IEEE T. PAMI. He served on the computer science panel of ERC. His research interests include visual tracking, object recognition, image matching and retrieval, sequential pattern recognition, and RANSAC-type optimization.

Model Fitting in Computer Vision

Many computer vision problems can be formulated as data fitting. In multi-class multi-instance fitting, the input data is interpreted as a mixture of noisy observations originating from multiple instances of multiple model types, e.g. as k lines and l circles in 2D edge maps, as k planes, l cylinders and m point clusters in 3D laser scans, as multiple homographies or fundamental matrices consistent with point correspondences in multiple views of a non-rigid scene.

I will review the basic assumptions, strengths and weakness of two historically popular data fitting methods - RANSAC and the Hough transform. I will then present a novel method, called Multi-X, for general multi-class multi-instance model fitting. The proposed approach combines a random sampling strategy like RANSAC, local energy minimization using alpha-expansion, and mode-seeking in the parameter domain like the Hough Transform. Multi-X outperforms significantly the state-of-the-art on standard datasets, runs in time approximately linear in the number of data points, an order of magnitude faster than available implementations of commonly used methods.

Johan Suykens, *KU Leuven, BELGIUM*



Johan A.K. Suykens received the master degree in Electro-Mechanical Engineering and the PhD degree in Applied Sciences from the Katholieke Universiteit Leuven, in 1989 and 1995, respectively. He has been a Postdoctoral Researcher with the Fund for Scientific Research FWO Flanders and is currently a full Professor with KU Leuven. He is author of the books "Artificial Neural Networks for Modelling and Control of Non-linear Systems" (Kluwer Academic Publishers) and "Least Squares Support Vector Machines" (World Scientific), and co-author of several more. He is a recipient of the International Neural

Networks Society INNS 2000 Young Investigator Award for significant contributions in the field of neural networks. He has served as a Director and Organizer of the NATO Advanced Study Institute on Learning Theory and Practice (Leuven 2002), as a program co-chair for the International Joint Conference on Neural Networks 2004 and the International Symposium on Nonlinear Theory and its Applications 2005, as an organizer of the International Symposium on Synchronization in Complex Networks 2007, a co-organizer of the NIPS 2010 workshop on Tensors, Kernels and Machine Learning, and chair of ROKS 2013. He has been awarded an ERC Advanced Grant 2011 and 2017, and has been elevated IEEE Fellow 2015 for developing least squares support vector machines.

Deep Learning and Kernel Machines: towards a Unifying Framework

Among powerful data-driven methods in machine learning are deep learning & neural networks and support vector machines & kernel methods. Deep architectures have caught major attention with convolutional neural networks, stacked autoencoders, deep Boltzmann machines and generative adversarial networks. Support vector machines on the other hand were overcoming the issues of non-convexity occurring in the training of neural networks. Moreover, it has stimulated the wide use of kernel-based approaches for different tasks in supervised, unsupervised and semi-supervised learning.

In this talk we show new synergies between deep learning, neural networks, least squares support vector machines and kernel methods. An important role at this point is played by different duality principles, paving the way towards a unifying framework.

Björn Schuller, *Imperial College London, UK & University of Augsburg, GERMANY*



Björn W. Schuller is Full Professor & Head of the Chair of Embedded Intelligence for Health Care and Wellbeing, University of Augsburg, Germany, Professor of Artificial Intelligence & Head of GLAM - Group on Language, Audio & Music, Imperial College London/UK, Chief Scientific Officer (CSO) and Co-Founding CEO, audEERING/Germany, and Visiting Professor, Harbin Institute of Technology/P.R. China. He received his diploma, doctor in engineering, and habilitation from TUM/Germany.

Björn co-authored more than 750 peer-reviewed technical contributions (20,000+ citations, h-Index 68). He is a Fellow of the IEEE, President-Emeritus of the AAAC, Editor-in-Chief of the IEEE Transactions on Affective Computing, and repeated General Chair (ACII 2019, ICMI 2014) and Program Chair (INTERSPEECH 2019, ICMI 2019, ACII 2015, ICMI 2013, SocialCom 2012, and ACII 2011) amongst manifold further service to the community.

Casting Data for Deep Speech and Audio Analysis

Deep Learning and many Machine Learning problems often suffer from sheer endless cravings for training data. This holds in particular for Speech and general Audio Analysis beyond Speech Recognition where data is usually sparse. Furthermore, it is often difficult to label such data as in subjective annotation tasks like speaker emotion or likability, where potentially several annotations are needed per audio segment resulting in high labelling costs and efforts. To ease this omnipresent and dominating bottleneck, this talk presents avenues towards highly efficient “casting” of training data. This includes synthesis of data such as by Generative Adversarial Networks on feature, but also on audio level aiming at overcoming model collapse to reach high diversity of generated data. Furthermore, rapid and targeted exploitation of social media such as YouTube by small-world modeling of recommendations combined with unsupervised content verification is introduced. Other avenues shown include transfer learning – even from other modalities such as from the computer vision domain – and advanced forms of collaborative learning based on dynamic active learning where also annotators are modelled for increased efficiency. Results are presented across a variety of Computer Audition tasks for speech and sound analysis.

Francisco Herrera, *Universidad de Granada, SPAIN*



Francisco Herrera is currently a Full Professor in the Department of Computer Science and Artificial Intelligence at the University of Granada. Francisco Herrera (SM'15) received his M.Sc. in Mathematics in 1988 and Ph.D. in Mathematics in 1991, both from the University of Granada, Spain. He is currently a Professor in the Department of Computer Science and Artificial Intelligence at the University of Granada. He has been the supervisor of 43 Ph.D. students. He has published more than 400 journal papers that have

received more than 65000 citations (Scholar Google, H-index 128).

He currently acts as Editor in Chief of the international journals "Information Fusion" (Elsevier) and "Progress in Artificial Intelligence" (Springer). He acts as editorial member of a dozen of journals. He received several honors and awards, such as: ECCAI Fellow 2009, IFSA Fellow 2013, 2010 Spanish National Award on Computer Science ARITMEL, IEEE Transactions on Fuzzy System Outstanding 2008 and 2012 Paper Award, 2013 AEPIA Award to a scientific career in Artificial Intelligence, and 2014 XV Andalucía Research Prize Maimónides (by the regional government of Andalucía), 2017 Security Forum I+D+I Prize, 2017 Andalucía Medal (by the regional government of Andalucía) and 2018 "Granada. City of Science and Innovation", among others. He has been selected as a Highly Cited Researcher <http://highlycited.com/> (in the fields of Computer Science and Engineering, respectively, 2014 to present, Clarivate Analytics). His current research interests include among others, soft computing (including fuzzy modeling, evolutionary algorithms and deep learning), computing with words, information fusion and decision making, and data science (including data preprocessing, prediction and big data).

Big Data: The Necessary Triplet of Technology, Quality Data and Scalable Algorithms

Big data applications are emerging during the last years, and researchers from many disciplines are aware of the high advantages related to the knowledge extraction from this type of problem. The term big data is classically associated with the technologies (Hadoop, Spark, Flink), together with the well-known characteristics of volume, variety and velocity of the data. Beyond these classic concepts, it is necessary to discuss about other essential elements to tackle a big data project, to have quality data and design scalable algorithms for analysis, efficient and effective algorithms. In this talk I will present big data from this triplet, that must be complemented, technology, data and algorithms. We will pay special attention to the last two elements. The first one, the transformation of the original data into quality data (smart data) providing value and knowledge. Second, the design of the algorithms, new scalable distributed machine learning algorithms under the MapReduce framework. We will include cases of study and challenges.

Round Table Discussions

Tuesday, November 20

9:45 – 10:15 Round Table: *Machine Learning*

Moderator:

João Paulo Papa, *Associate Professor, Department of Computing, São Paulo State University, (President of the Brazilian IAPR Society)*

João Paulo Papa is a B.Sc. (2002) in Information Systems by the São Paulo State University, M.Sc. (2005) in Computer Science by the Federal University of São Carlos, and Ph.D. in Computer Science (2008) from the State University of Campinas. He was a post doctoral fellow in Computer Science by the State University of Campinas and Harvard University (2015). Currently, he is an Associate Professor at the Department of Computing at São Paulo State University, campus of Bauru. His main research interests include Image Analysis, Pattern Recognition and Medical Diagnosis assisted by computer systems. He is the actual Coordinator of the Computer Science Graduate Program (UNESP) and member of the editorial board of important journals such as the IEEE Signal Processing Letters and Computers and Electrical Engineering.

Participants:

Johan Suykens, *KU Leuven, Belgium, (CIARP Keynote)*

[See Johan bio at Keynote Speakers Section.]

Alberto Suarez, *Professor of Computer Science and Artificial Intelligence, Computer Science Department, Universidad Autónoma de Madrid*

Alberto Suarez received the degree of Licenciado (BSc) in Chemistry from the Universidad Autónoma de Madrid, Spain, in 1988, and the Ph.D. degree in Physical Chemistry from the Massachusetts Institute of Technology (MIT), Cambridge, MA, in 1993. After holding

postdoctoral positions at Stanford University (USA), at the Université Libre de Bruxelles (Belgium), as a research fellow financed by the European Commission within the program “Training and Mobility of Researchers”, and at the Katholieke Universiteit Leuven (Belgium), he is currently a professor in the Computer Science Department of the Universidad Autónoma de Madrid (Spain). He has also held appointments as “Senior Visiting Scientist” at the International Computer Science Institute (Berkeley, CA) and at MIT (Cambridge, MA). He has worked on relaxation theory in condensed media, stochastic and thermodynamic theories of nonequilibrium systems, lattice-gas automata, and automatic induction from data. His current research interests include machine learning, computational statistics, quantitative finance, time series analysis and information processing in the presence of noise. He is a member of IEEE.

Alvaro Barbero, *Chief Data Scientist, Instituto de Ingeniería del Conocimiento*

Dr. Alvaro Barbero is Chief Data Scientist at IIC, as well as researcher in the Machine Learning group at the Autonomous University of Madrid (Universidad Autónoma de Madrid, UAM). He holds a BSc (2006), MSc (2008) and PhD (2011) degrees in Computer Science with a focus on Machine Learning, and has been two times finalist in the Textata Big Data Analytics World Championships. As a Data Scientist at IIC, he has taken part in several Big Data projects, involving various fields of application such as fraud detection, sentiment analysis on social networks, demand forecasting, stock management optimization or automated document classification. As part of his research and academic activities, he has authored 30 international research papers and is an active lecturer in several MSc-level courses on Data Science and Machine Learning. During his career, he has collaborated with recognized research centers such as the Max Planck Institute for Intelligent Systems, IBM Thomas J. Watson Research or the University of Tokyo. Presently his aim is to take part in innovation projects that allow applying state-of-the-art research into industry Data Science projects.

Lucas García, *Senior Application Engineer, MathWorks*

Lucas García is a Senior Application Engineer at MathWorks and Researcher at Universidad Complutense de Madrid specialized in Machine Learning. A mathematician with more than 12 years of experience in the computer software industry and research, he works with engineers and scientists across industries (aerospace, automotive, industrial automation, energy and utilities, oil and gas, robotics, etc.) to help them tackle real-world problems in Data Analytics. Lucas holds a PhD in Applied Mathematics from Universidad Complutense de Madrid and Universidad Politécnica de Madrid. His research is focused on how neural networks can be used to solve combinatorial optimization problems.

Wednesday, November 21

16:15 – 17:00 Round Table: *Speech and Natural Language*

Moderator:

Joaquin Gonzalez-Rodriguez, *Full Professor, Founder AuDias (Audio, Data Intelligence, and Speech) Research Group, Universidad Autónoma de Madrid*

Joaquin Gonzalez-Rodriguez, Ph.D. (1999) in Electrical Engineering from UPM, founded in early 2000s and co-led the ATVS Biometric Recognition Group up to October 2016, when ATVS splits his current activities in two groups, AUDIAS and BidaLab. AUDIAS Research Group is devoted to Research and Development in the areas of Speech and Audio, Temporal Signals Processing (Sensor arrays, Financial series, etc.), Forensic Science and Data Intelligence. Being a Full Professor since July 2011, he has led Audias/ATVS participations in multiple NIST Speaker and Language Recognition Evaluations since 2001, and he is since 2000 an invited member of the FSAAWG (Forensic Speech and Audio Analysis Working Group) in ENFSI (European Network of Forensic Science Institutes). In March 2009 he received a Google Research Award for the project entitled “Exploiting prior knowledge for robust recognition and indexing of audio information sources”. During academic term 2010-2011, he was on sabbatical leave as Visiting Scholar at ICSI (International Computer Science Institute) in the University of California at Berkeley. His research interests are focused on speaker and language characterization, financial series modeling, audio/music detection and indexing, financial series modeling, acoustic engineering, and forensic science.

Participants:

Björn Schuller, *Imperial College London, UK & University of Augsburg, Germany (CIARP Keynote)*

[See Björn bio at Keynote Speakers Section.]

Paulo Rosso, *Associate Professor, Universitat Politècnica de Valencia, Spain*

Paulo Rosso is professor at the Universitat Politècnica de València, Spain where he is also a member of the PRHLT research center. His research interests are focused on social media data

analysis, mainly on author profiling, irony detection, opinion spam detection, social copying and plagiarism detection. Since 2009 he has been involved in the organisation of PAN benchmark activities at CLEF, where he is also deputy steering committee chair for the conference, and at FIRE evaluation forum, mainly on plagiarism / text reuse detection and author profiling. At SemEval in 2015 he has been co-organiser of the shared task on sentiment analysis of figurative language in Twitter, and at the moment he is helping with the organisation of the hatEval shared task on Multilingual detection of Hate Speech against immigrants and women in Twitter. He has been PI of several national and international research projects funded by EC, U.S. Army Research Office, and recently Qatar National Research Fund. He is associate editor of Information Processing & Management, and co-author of several papers in international journals and conferences.

Javier Gonzalez, *Innovation & Digital Development Director, EVO Banco*

Javier Gonzalez -Ms.C Computer Science (2005) and Ph.D Telecommunications and Computer Science (2011) from UAM)- is a R&D director, professor and researcher. He has years of experience in both academic and industry, having developed his career, among others, in Google Research (New York, U.S.A), Universidad Autónoma de Madrid (Madrid, Spain), IE (Madrid, Spain) or Telefónica Digital (Madrid, Spain). Currently he leads the innovation & digital developments at EVO banco (Madrid, Spain). He has several peer reviewed journal & conference publications, holds industrial patents and accumulates a wide experience in innovation/digital industry projects.

Luis Buera, *Senior Manager Biometrics & Security Research, Nuance Communications Inc.*

Dr. Luis Buera is senior manager at Nuance Communications Inc. He received an engineering degree from the Universidad de Zaragoza in 2002, and a Ph.D. in 2007, all in Telecommunication Engineering. Before joining Nuance Communications Inc. in 2016, he worked in the speech group at Toshiba (Cambridge, UK) as research engineer in 2008, and in AGNITIO Voice ID as research engineer, manager and CTO (2009-2015).

Thursday, November 22

9:30 – 10:00 Round Table: *Big Data*

Moderator:

Jose Salvador Sanchez-Garreta, *Full Professor, Universitat Jaume I, Spain*
(President of the Spanish IAPR Society)

Jose Salvador Sanchez-Garreta is a Full Professor in the Department of Computer Languages and Systems at Universitat Jaume I (Castello de la Plana, Spain) since 1992. He received a BSc in Computer Science from the Universidad Politecnica de Valencia in 1990 and a Ph.D. in Computer Science Engineering from Universitat Jaume I in 1998. He has authored more than 150 scientific publications, and is co-editor of two books and guest editor of several special issues in international journals. He is a Senior Member of IEEE and IAPR. He serves as an Associate Editor for the Pattern Analysis and Applications Journal. His current research interests lie in the areas of pattern recognition and machine learning, including non-parametric classification, feature and prototype selection, ensembles of classifiers, and clustering.

Participants:

Francisco Herrera, *University of Granada, Spain* (*CIARP Keynote*)

[See Francisco 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.

Pablo Peris, *Digital Advisor, Microsoft*

Pablo Peris works for Microsoft as Digital Advisor. He studied Computer Engineering and holds a master's degree in Information Systems Management. Pablo has several years' experience leading International IoT projects. Before joining Microsoft, he was 4 years in London as managing Director of a technology consultancy. Previously he was an analyst/programmer, a university professor and founded his own startup in 2007.

Israel Herraiz, *Strategic Cloud Engineer, Google*

Israel Herraiz is a Strategic Cloud Engineer at Google. He has worked in different data science roles at BBVA Data & Analytics and Amadeus. He holds a PhD in Computer Science from Universidad Rey Juan Carlos (2008) and has been a visiting researcher at universities in Europe, Canada and the United States. In a prior life, he was an assistant professor at Universidad Politécnica de Madrid, where he carried out research applying data science to the study of software development and the phenomenon of open source software.

Wolfram Rozas, *Business Development Executive, IBM Cognitive Solutions*

Now developing business in IBM Cognitive Solutions as Energy & Utilities industry leader. Main mission is to sell cognitive solutions including cognitive contact center, cognitive customer experience, GDPR, video recognition, HSSE and asset health & risk. Cutting edge new solutions process big data on real time by applying artificial intelligence services on the cloud to automatize core business processes.

Leading programs in business school *Escuela de Organización Industrial* on Big Data and Business Analytics and Artificial Intelligence and Deep Learning. Lecturing frequently on Big Data, Business Analytics and Artificial Intelligence as believer in the upcoming social transformation due to the digital revolution.

Special Session

Tuesday, November 20

17:00 – 18:00 Special Session *Research Funding & Cooperation*

Speech: “Programs and Services for Supporting Technological International Cooperation in Iberoamerica”

Manuel Falcon, *Program and Project Officer, Department of Foreign Technology Action, CDTI, Ministerio de Ciencia, Innovación y Universidades*

Manuel Falcon is Master in Telecommunication Engineering from Universidad Politecnica de Valencia. Within the Spanish Ministry for Science, Innovation, and Universities (MCIU), at CDTI (Centro para el Desarrollo Tecnológico Industrial), he is in charge of the management of Programs and Projects with Chile, Argentina, Peru and Uruguay, in the Department of Foreign Technology Action.

Speech: “HORIZON 2020: EU Research and Innovation”

María Sopeña, *European Projects Manager, Office for European and International Projects, Universidad Autonoma de Madrid*

María has a Degree in Economics by the University of Zaragoza, and is specialized since 2010 in European Union affairs. She has large experience in development opportunities at European Union Level (projects, initiatives, networks, grants). She is specialist in building relationships with EU institutions and key partners in the Brussels sphere, aimed at participating in a range of proposals. She has strategic vision for achieving an important role at European level, based on needs and priorities of different entities. She is currently the InterTalentum project manager at UAM (Marie Skłodowska-Curie programme of Horizon 2020) and supports the Office of European and International Projects of the Vice-Rectorate for Research.

Speech: “Academic Internationalization at UAM”

Carmela Calés, *Vice Rector for Internationalization, Universidad Autonoma de Madrid*

Full Professor of Biochemistry and Molecular Biology at the School of Medicine of the Autonomous University of Madrid, Carmela Calés currently holds the position of Vice-Rector for Internationalization and heads a research group on stem cells for the study of hematological malignancies at the "Alberto Sols" Biomedical Research Institute. From 2010 to 2017, she was the Director of the Unit of Scientific Culture at the Universidad Autónoma de Madrid. She has also held the positions of Vice-Dean for Research of the School of Medicine (1999-2001) of the UAM, and Vice-Director Institute of Biomedical Investigation of the IIB-CSIC/UAM (2001-2003).

18:00 – 18:30 Round Table

Moderator:

Julian Fierrez, *Associate Professor, School of Engineering, Universidad Autonoma de Madrid (General Chair CIARP-2018)*

Julian is an Associate Professor since 2010 at Universidad Autonoma de Madrid, at the School of Engineering, where he was Vice Dean for External Relations between 2016 and 2017. After obtaining his PhD in 2006, from 2007 to 2009 he was a visiting researcher at Michigan State University in USA under a Marie Curie fellowship. He has also conducted postdoc research stays (several months) in foreign universities in Italy, UK, Sweden, and USA. He has been actively involved in multiple international projects (FP7 and H2020), research networks (e.g., COST), and commonly collaborates with reputed researchers all around the world. His research activities have been recognized with a number of distinctions, including a 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 was 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.

Technical Program

Monday, November 19

19:00–20:00 KEYNOTE 1

(Chair: Julian Fierrez, *General Chair CIARP-2018*)

“Model Fitting in Computer Vision”

Jiri Matas, *Czech Technical University, Prague*

Tuesday, November 20

08:45–09:00 CONFERENCE OPENING

Julian Fierrez, *General Chair CIARP-2018*

09:00–09:45 KEYNOTE 2

(Chair: Joao Paulo Papa, *Sao Paulo State University, Brazil*) (President of the Brazilian IAPR Society)

“Deep Learning and Kernel Machines: towards a Unifying Framework”

Johan Suykens, *KU Leuven, Belgium*

09:45–10:15 ROUND TABLE: MACHINE LEARNING

(Chair: Joao Paulo Papa, *Sao Paulo State University, Brazil*)

Participants:

Johan Suykens, *KU Leuven, Belgium* (*CIARP Keynote*)

Alberto Suarez, *Professor of Computer Science and Artificial Intelligence, Computer Science Department, School of Engineering, Universidad Autónoma de Madrid*

Alvaro Barbero, *Chief Data Scientist, Instituto de Ingeniería del Conocimiento*

Lucas Garcia, *Senior Application Engineer, MathWorks*

10:15 - 12:00. ORAL SESSION 1: MACHINE LEARNING

(Chair: Francesc Ferri, *Universitat de Valencia, Spain*)

Large Scale Learning Techniques For Least Squares Support Vector Machines

Santiago Toledo-Cortés, Ivan Y. Castellanos-Martinez and Fabio A. Gonzalez

An Automatic Approximate Bayesian Computation Approach Using Metric Learning

Wilson González Vanegas

Generative Models For Deep Learning with Very Scarce Data

Juan Maroñas, Roberto Paredes and Daniel Ramos

Data Augmentation via Variational Auto-Encoders

Unai Garay-Maestre, Antonio-Javier Gallego and Jorge Calvo-Zaragoza

LSTM-based Multi-scale Model for Wind Speed Forecasting

Ignacio Araya, Carlos Valle and Hector Allende

13:00 - 15:00. POSTER SESSION 1

(Chair: Ruben Tolosana, *Universidad Autonoma de Madrid, Spain*)

Machine Learning and Classification:

Using deep learning to classify class imbalanced gene-expression microarrays datasets

A. Reyes-Nava, H. Cruz-Reyes, R. Alejo, E. Rendón, A. A. Flores-Fuentes and E. E. Granda-Gutiérrez

A data representation approach to support imbalanced data classification based on TWSVM

Cristian Alfonso Jimenez Castaño, Andrés Marino Álvarez Meza and Alvaro Angel Orozco Gutiérrez

Improving regression models by dissimilarity representation of bio-chemical data

Francisco Jose Silva, Catherine Jimenez, Gabriela Barcas, David Estevez-Bresó, Niusvel Acosta-Mendoza, Andrés Gago-Alonso and Isneri Talavera-Bustamante

A Comparative Study on Unsupervised Domain Adaptation for Coffee Crop Mapping

Edemir Ferreira de Andrade Junior, Hugo Oliveira, Mário Sérgio Alvim and Jefersson Alex Dos Santos

Analytical Comparison of Histogram Distance Measures

Manuel Forero, Brigete Tatiana González and Carlos Arias Rubio

Gaussian processes regression with multiple annotators: when the annotator expertise is not homogeneous

Julian Gil Gonzalez, Andres Marino Alvarez Meza and Alvaro Angel Orozco Gutierrez

Linear projection learned from hybrid CKA for enhancing distance-based classifiers

Diego Fabian Collazos Huertas, David Cárdenas Peña and German Castellanos

Evaluation of Bag-of-Word performance for time series classification using discriminative SIFT-based mid-level representations

Raquel Almeida, Hugo Herlanin, Simon Malinowski, Zenilton K. G. Do Patrocínio Jr. and Silvio Jamil Ferzoli Guimarães

Computer Vision:

Detection of vertices in sketched drawings of polyhedral shapes

Pedro Company, Peter A. C. Varley, Raquel Plumed and Jorge D. Camba

A Note on the Phase Congruence Method in Image Analysis

Carlos Jacanamejoy and Manuel Forero

An Efficient CBIR System for High Resolution Remote Sensing Images

Samia Bouteldja and Assia Kourgli

Experimental Analysis of Measurements Fusion for Pose Estimation Using PMD Sensor

Ksenia Klionovska, Heike Benninghoff, Eicke-Alexander Risse and Felix Huber

Automated Colony Counter for Single Plate Serial Dilution Spotting

Dimitria T Boukouvalas, Peterson Belan, Cintia Raquel Lima Leal, Renato Araújo Prates and Sidnei Alves De Araújo

Image Inpainting Based on Local Patch Search Supported by Image Segmentation

Sarah Carneiro, Helio Pedrini and Silvio Jamil Ferzoli Guimarães

Color classification methods for perennial weed detection in cereal crops

Manuel Forero, Sergio Alejandro Herrera Rivera, Julián Alberto Avila Navarro, Camilo Andres Franco De Los Rios, Jesper Rasmussen and Jon Nielsen

Hierarchical graph-based segmentation in detection of object-related regions

Rafael Ribeiro, Silvio Jamil Ferzoli Guimarães and Zenilton K. G. Patrocínio Jr.

Dealing with heterogeneous Google Earth images on Building Area Detection task

Cassio Almeida, William Fernandes, Simone D. J. Barbosa and Hélio Lopes

Evaluation of scale-aware realignments of hierarchical image segmentation

Milena Adão, Silvio Jamil Ferzoli Guimaraes and Zenilton K. G. Do Patrocínio Jr.

3D SfM as a Measuring Technique for Human Body Transformation

Alessandro Marro, Stefan Wiesen, Max Langbein and Hans Hagen

Outlier detection for line matching

Roi Santos, Xose M. Pardo and Xose R. Fdez-Vidal

Detection of Small Portions of Water in VIS-NIR Images Acquired by UAVs

Daniel Trevisan Bravo, Stanley Jefferson Araujo Lima, Sidnei Alves de Araújo and Wonder Alexandre Luz Alves

Predicting city safety perception based on visual image content

Sergio F. Acosta and Jorge E. Camargo

Text and Characters Analysis:

Regularization for Graph-Based Transfer Learning Text Classification

Cristián Serpell, Héctor Allende and Carlos Valle

Math Formula Script and Type Identification and Recognition

Khazri Kawther and Afef Kacem

Evaluating AdaBoost for Plagiarism Detection

Thiago V. Reginaldo, Magali R. G. Meireles and Zenilton K. G. Patrocínio Jr.

Predicting academic-challenge success from competition proposals

Dante Lopez, Hugo Jair Escalante, Luis Villaseñor-Pineda, Eduardo Morales and Manuel Montes-Y-Gómez

Visual Semantic Reranker for Text Spotting

Ahmed Sabir, Francesc Moreno-Noguer and Lluís Padró

A Hybrid Feature Extraction Method for Offline Handwritten Math Symbol Recognition

Carlos Ramírez-Piña, Josep Salvador Sánchez, Rosa M. Valdovinos-Rosa and José A. Hernández-Servín

Improving handwritten character recognition by using a ranking-based feature selection approach

Nicole Dalia Cilia, Claudio De Stefano, Francesco Fontanella and Alessandra Scotto di Freca

Human Interaction:

Using Image Processing Techniques and HD-EMG for Upper Limb Gesture Recognition

Roberto Díaz-Amador, Carlos A. Ferrer-Riesgo and Juan V. Lorenzo-Ginori

An Effective Approach Based on a Subset of Skeleton Joints for Two-person Interaction Recognition

Ammar Sirine, Zaghden Nizar and Neji Mahmoud

Evaluating deep models for dynamic brazilian sign language recognition

Lucas Amaral, Givanildo L. N. Júnior, Tiago Vieira and Thales Vieira

A DTW-based representation to support static sign language recognition from binary images

Juan Sebastian Blandon Luengas, Andrés Marino Álvarez Meza and Álvaro Ángel Orozco Gutiérrez

Human activity recognition using multi-modal data fusion with Kinect, IMUs and EMGs

Andres Felipe Calvo Salcedo, German Andres Holguin Londoño and Henry Medeiros

Using Scene Context to Improve Action Recognition

Juarez Monteiro, Roger Leitzke Granada, Felipe Meneguzzi and Rodrigo Coelho Barros

15:00 - 17:00. ORAL SESSION 2: COMPUTER VISION I

(Chair: Heydi Mendez, *Advanced Tech. Application Center, CENATAV, Cuba*)

Non-Parametric Contextual Relationship Learning for Semantic Video Object Segmentation

Tinghuai Wang and Huiling Wang

Superpixel Segmentation by Object-based Iterative Spanning Forest

Felipe De Castro Belém, Silvio Jamil Ferzoli Guimarães and Alexandre Xavier Falcão

Frequency Analysis of Topological Projections onto Klein Bottle for Texture Characterization

Thiago Ribeiro, Andre Oliveira and Celia Barcelos

Singular Patterns in Optical Flows as Dynamic Texture Descriptors

Leandro Couto and Celia Barcelos

Efficient Unsupervised Image Segmentation by Optimum Cuts in Graphs

Hans Bejar, Lucy Mansilla and Paulo Miranda

Dirichlet series in complex network modeling of texture images

Joao Florindo

17:00 - 18:00. SPECIAL SESSION: RESEARCH FUNDING & COOPERATION

(Chair: Julian Fierrez, *Universidad Autonoma de Madrid, Spain*)

Speech: "Programs and Services for Supporting Technological International Cooperation in Iberoamerica"

Manuel Falcon, *Program and Project Officer, Department of Foreign Technology Action, CDTI, Ministerio de Ciencia, Innovación y Universidades*

Speech: "HORIZON 2020: EU Research and Innovation"

María Sopeña, *European Projects Manager, Office for European and International Projects, Universidad Autonoma de Madrid*

Speech: "Academic Internationalization at UAM"

Carmela Calés, *Vice Rector Internationalization, Univ. Autonoma de Madrid*

18:00 - 18:30. ROUND TABLE

(Chair: Julian Fierrez, *Universidad Autonoma de Madrid, Spain*)

Wednesday, November 21

08:45–10:30 ORAL SESSION 3: BIOMETRICS

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

On combining face local appearance and geometrical features for race classification

Fabiola Becerra-Riera, Nelson Méndez Llanes, Annette Morales-González, Heydi Méndez-Vázquez and Massimo Tistarelli

Facial Landmarks Detection using a Cascade of Recombinator Networks

Pedro Diego Lopez, Roberto Valle and Luis Baumela

Measuring the Gender and Ethnicity Bias in Deep Models for Face Recognition

Alejandro Acien, Aythami Morales, Rubén Vera, Ivan Bartolome and Julian Fierrez

3D Face Recognition With Reconstructed Faces From a Collection of 2D Images

João Baptista Cardia Neto and Aparecido Nilceu Marana

Comparison of Angle and Size Features with Deep Learning for Emotion Recognition

Patrick Dunau, Marco F. Huber and Juergen Beyerer

10:30 - 12:00. POSTER SESSION 2

(Chair: Ruben Tolosana, *Universidad Autonoma de Madrid, Spain*)

Machine Learning and Classification:

Analysis and classification of MoCap data by Hilbert space embedding-based distance and multikernel learning

Juan Diego Pulgarin-Giraldo, Andres Marino Alvarez Meza, Steven Van Vaerenbergh, Ignacio Santamaria and German Castellanos

An Out of Sample version of EM algorithm for imputation missing values in Classification

Sergio Campos, Alejandro Veloz and Hector Allende

Multi-granulation Strategy via Feature Subset Extraction by using a Genetic Algorithm and a Rough Sets-based Measure of Dependence

Ariam Rivas, Ricardo Navarro, Chyon Hae Kim and Rafael Bello

Boosting Collaborative Filters for Drug-Target Interaction Prediction

Cristian Marcelo Orellana Moreno, Ricardo Ñanculef and Carlos Valle

Fast Adapting Mixture Parameters Schemes for Probability Density Difference-based Deformable Model

Baya Goumeidane and Nafaâ Nacereddine

Optimal Stochastic Excitation for Linear Flaw Detection in a Solid Material

Nesrine Houhat, Sébastien Ménigot, Tarek Boutkedjirt, Redouane Draï and Jean- Marc Girault

Computing Anomaly Score Threshold with Autoencoders Pipeline

Igr Alexánder Fernández Saúco, Niusvel Acosta Mendoza, Andrés Gago Alonso and Edel Bartolo García Reyes

Generating Random Variates via Kernel Density Estimation and Radial Basis Function Based Neural Networks

Cristian Candia, Manuel Forero and Sergio Herrera

Detection of bat acoustics signals using Voice Activity Detection techniques with Random Forests classification

Adrian T. Ruiz, Julian Equihua, Santiago Martinez, Prof. Dr. Guenther Palm and Pd Dr. Friedhelm Schwenker

Space Efficient Incremental Betweenness Algorithm for Directed Graphs

Reynaldo Gil-Pons

Biometrics:

Fast and accurate person re-identification with Xception Conv-Net and C2F

Arthur van Rooijen, Henri Bouma and Fons Verbeek

A Novel Multi-Purpose Deep Architecture for Facial Attribute and Emotion Understanding

Ankit Sharma, Pooyan Balouchian and Hassan Foroosh

Are Deep Learning Methods Ready for Prime Time in Fingerprints Minutiae Extraction?

Ana Rebelo, Tiago Oliveira, Manuel E. Correia and Jaime S. Cardoso

Fingerprint Image Quality Assessment Based on Oriented Pattern Analysis

Raimundo Vasconcelos and Helio Pedrini

Towards End-to-end DNN-based Identification of Individual Manta Rays from Sparse Imagery

Tuana Celik, Benjamin Hughes and Tilo Burghardt

Two Stream Deep CNN-RNN Attentive Pooling Architecture for Video-based Person Re-Identification

Wajeeha Ansar, Muhammad Moazam Fraz and Muhammad Shahzad

Late Breaking Works:

Distant Speech Recognition Using Laser Doppler Vibrometer

Yunbin Deng

Learning Concept Drift with Optimum-Path Forest

Adriana Sayuri Iwashita, Joao Paulo Papa

Recognition of printing methods from printed characters using machine learning

Takeshi Furukawa

Local spectral analysis of co-occurrence features in image classification

Joao Florindo

Using out of domain units for word discovering in raw speech

Fernando García, Emilio Sanchis, Maria J. Castro, José A. González, and Lluís Hurtado

Multi-target Tracking from Unmanned Aerial Vehicles

Elena Luna, Juan C. San Miguel, Diego Ortego, José M. Martínez

People-background segmentation based on DeepPyramid Deformable Part Models

Alejandro Peña, Álvaro García-Martín, Paula Moral, José M. Martínez, and Noel O'Connor

Classification of bat call sequences using Random Forest and M2OR

Adrian T. Ruiz, Elham Bavafaye, Kirsten Jung, Marko Tschapka, Friedhelm Schwenker, Günther Palm

De-correlating learned weights for improving generalization performance in deep neural networks

Tahir Syed, Sanjay Hareesh, Bahram Khan Baloch, Sateesh Kumar

A modified four components decomposition method using PolSAR Data

Houda LATRACHE, Mounira OUARZEDDINE, Boularbah SOUISSI

3D Face Alignment Assisted by Nose Pose

Luan P. e Silva, Flávio H. de B. Zavan, Olga R. P. Bellon and Luciano Silva

Permanent Preservation Area Monitoring Based on Aerial Drone Images and CNN

Rogério Thomazella, Brenno A. Caldato, Ricardo A. Filho, Richard Algarve, Fabio Dotto, Gustavo H. Rosa, Oswaldo P. Rodrigues, José E.C. Castanho, João P. Papa, A. N. Marana

A New X-Bragg Scattering-Based Approach for Bare Surface Discrimination

Sofiane Tahraoui, Mounira Ouarzeddine

Entropy-based Metrics for Comparing Partitions: Characterizations and Consensus

Jyrko Correa-Morris, Belarmino González, Oscar Puente and Yensabro Kanashiro

Speeding up Large-scale Dual SVM Training on Budget with Precomputed GSS

Tobias Glasmachers, Sahar Qaadan

FPGA Based Floating-point Implementation for Real-time Background Subtraction

L.J. Morantes-Guzmán, Cristian Alzate, L. Castano-Londono, D. Marquez-Viloria, and J.F. Vargas-Bonilla

13:00–15:00 ORAL SESSION 4: CLASSIFICATION

(Chair: Andres Gago, *CENATAV, Cuba*) (President of the Cuban IAPR Society)

Confusion Matrix-based Building of Hierarchical Classification

Paulo Cavalin and Luiz Oliveira

Information Potential Variability for Hyperparameter Selection in the MMD Distance

Cristhian Valencia, Andrés Álvarez, Edgar Valencia, Mauricio Álvarez and Álvaro Orozco

A Fuzzy Classifier for Data Streams with Infinitely Delayed Labels

Tiago Pinho Da Silva, Vinícius Mourão Alves de Souza, Gustavo Enrique de Almeida Prado Alves Batista and Heloisa Camargo

Generalized Multitarget Linear Regression with Output Dependence Estimation

Héctor González, Carlos Morell and Francesc J. Ferri

A New Weighted K-Nearest Neighbor Algorithm based on Newton's Gravitational Force

Juan A. Aguilera Balderrama, Luis C. González, Manuel Montes and Paolo Rosso

Towards Hierarchical Classification of Data Streams

Antonio Rafael Sabino Parmezan, Vinicius Souza and Gustavo Batista

15:30–16:15 KEYNOTE 3

(Chair: Joaquin Gonzalez-Rodriguez, *Univ. Autonoma de Madrid, Spain*)

“Casting Data for Deep Speech and Audio Analysis”

Björn Schuller, *Imperial College London, UK & Univ. of Augsburg, Germany*

16:15–17:00 ROUND TABLE: SPEECH & NATURAL LANGUAGE

(Chair: Joaquin Gonzalez-Rodriguez, *Univ. Autonoma de Madrid, Spain*)

Participants:

Björn Schuller, *Imperial College London & Univ. of Augsburg (CIARP Keynote)*

Paulo Rosso, *Associate Professor, Universitat Politecnica de Valencia, Spain*

Javier Gonzalez, *Innovation & Digital Development Director, EVO Banco*

Luis Buera, *Senior Manager Biometrics & Security Research, Nuance Inc.*

Thursday, November 22

8:45–9:30 KEYNOTE 4

(Chair: Jose Salvador Sanchez-Garreta, *Universitat Jaume I, Spain*) (President of the Spanish IAPR Society)

“Big Data: The Necessary Triplet of Technology, Quality Data and Scalable Algorithms”

Francisco Herrera, *University of Granada, Spain*

9:30–10:00 ROUND TABLE: BIG DATA

(Chair: Jose Salvador Sanchez-Garreta, *Universitat Jaume I, Spain*)

Participants:

Francisco Herrera, *University of Granada, Spain* (CIARP Keynote)

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

Pablo Peris, *Digital Advisor, Microsoft*

Israel Herraiz, *Strategic Cloud Engineer, Google*

Wolfram Rozas, *Business Development Executive, IBM Cognitive Solutions*

10:00–12:00 ORAL SESSION 5: Computer Vision II

(Chair: Alvaro Garcia-Martin, *Universidad Autonoma de Madrid, Spain*)

Bio-inspired Perception Sensor (BIPS) Concept Analysis for Embedded Applications

Louise Sarrabezolles, Antoine Manzanera and Nicolas Hueber

Deterministic Partially Self-Avoiding Walks on Networks for Natural Shapes Classification

Lucas C. Ribas and Odemir M. Bruno

Hierarchy-Based Salient Regions: a region detector based on hierarchies of partitions

Karla Otiniano, Arnaldo De Albuquerque Araújo, Guillermo Cámara-Chávez, Jean Cousty, Silvio Jamil Ferzoli Guimaraes and Benjamin Perret

Logarithmic Mathematical Morphology: a new framework adaptive to illumination changes

Guillaume Noyel

FqSD: Full-Quaternion Saliency Detection in Images

Reynolds León Guerra, Edel B. García Reyes, Annette M. González Quevedo and Heydi Méndez Vázquez

Graph-based Image Segmentation using Dynamic Trees

Jordão Bragantini, Samuel Botter Martins, César Castelo-Fernández and Alexandre Xavier Falcão

13:00 - 15:00. POSTER SESSION 3

(Chair: Ruben Tolosana, *Universidad Autonoma de Madrid, Spain*)

Computer Vision:

Radial textures: A new approach to analyze meat quality by using MRI

Daniel Caballero, Andres Caro, José Manuel Amigo, Mar Avila, Teresa Antequera and Trinidad Perez-Palacios

An enhanced sequential search feature selection based on mRMR to support FCD localization

Jhon Jairo Castañeda, Andrés Marino Alvarez and Álvaro Ángel Orozco

Automated Identification and Classification of Diatoms from Water Resources

Jose Libreros, Gloria Bueno, Maria Trujillo and Maria Ospina

Novel Scene Recognition Using TrainDetector

Jean Sebastien Mambou and Ondrej Krejcar

PointNet Evaluation for Detection of On-Road Object Using a Multi-Resolution Conditioning

Fernando Pamplona, Carlos Madrigal and Arturo De la Escalera

Multimodal Object Recognition using Deep Learning Representations extracted from Images and Smartphone Sensors

Javier Ortega-Bastida, Antonio-Javier Gallego and Antonio Pertusa

Object detection on base of modified convolutional network

Alexey Alexeev, Yuriy Matveev and Georgy Kukharev

Robust Fourier-based Checkerboard Corner Detection for Camera Calibration

Benjamin Spitschan and Jörn Ostermann

Spatiotemporal CNNs for Pornography Detection in Videos

Murilo Varges Da Silva and Aparecido Nilceu Marana

Nose Based Rigid Face Tracking

Luan Silva, Flavio Zavan, Olga Bellon and Luciano Silva

Brain Signals:

Gender effects on an EEG-based emotion level classification system

Iván De La Pava Panche, Andres Alvarez, Paula Herrera, German Castellanos and Álvaro Ángel Orozco Gutiérrez

EEG channel relevance analysis using maximum mean discrepancy on BCI systems

David Felipe Luna Naranjo, Juana Valeria Hurtado-Rincon, David Cárdenas Peña, Victor Hugo Castro Londoño, Hector Fabio Torres and German Castellanos

Forward modelling complexity influence in EEG source localization using real EEG data

Ernesto Cuartas, Carlos Daniel Acosta, German Castellanos and Yohan Ricardo Cespedes Villar

Emotion recognition with ensemble using mRMR-based feature selection

Jhon Jairo Castañeda, Paola Andrea Valencia Alzate, Genaro Daza Santacoloma, Alvaro Ángel Orozco Gutierrez and Jhoan Keider Hoyos Osorio

Medical Applications:

Color Features Extraction and Classification of Digital Images of Erythrocytes Infected by Plasmodium berghei

Juan Valentín Lorenzo-Ginori, Lyanett Chinea-Valdés, Yanela Izquierdo-Torres, Rubén Orozco-Morales, Niurka Mollineda-Diogo, Sergio Sifontes-Rodríguez and Alfredo Meneses-Marcel

Automated Pneumothorax Diagnosis using Deep Neural Networks

Tony Lindsey, Rebecca Lee, Ronald Grisell, Saul Vega and Sena Veazey

Classification of melanoma images with Fisher vectors and deep learning

Gaston Liberman, Daniel Acevedo and Marta Mejail

Automatic identification of DBS parameters from the volume of tissue activated (VTA) using support vector machines

Robinson Aguilar, Hernan Vargas, Andres Alvarez, Orozco Alvaro and Piedad Navarro

Interactive Border Contour with Automatic Tracking Algorithm Selection for Medical Images

André Leinio, Lucas Lellis and Fabio Cappabianco

Learning to recognize Abnormalities in Chest X-Rays with Location-Aware Dense Networks

Sebastian Gündel, Sasa Grbic, Bogdan Georgescu, Siqi Liu, Andreas Maier and Dorin Comaniciu

An automatic brain tumor segmentation approach based on affinity clustering

Carlos Arturo Ramírez Londoño, Viviana Gomez Orozco, Iván De La Pava Panche, Andrés Marino Alvarez Meza and Álvaro Ángel Orozco Gutiérrez

Enhanced Graph Cuts for Brain Tumor Segmentation Using Bayesian Optimization

Mauricio Castaño Aguirre, Hernan Felipe Garcia Arias, Gloria Liliana Porras Hurtado, Álvaro Ángel Orozco Gutiérrez and Jorge Ivan Marin Hurtado

Convolutional Neural Network Architectures for Texture Classification of Pulmonary Nodules

Carlos Alexandre Ferreira, António Cunha, Ana Maria Mendonça and Aurélio Campilho

Reconstructed Phase Space and Convolutional Neural Networks for Classifying Voice Pathologies

João Vilian Marinus, Joseana Régis de Araújo and Herman Gomes

QRS Detection in ECG Signal with Convolutional Network

Pedro Silva, Eduardo Luz, Elizabeth Wanner, David Menotti and Gladston Moreira

Sentiment Analysis:

Empirical evaluation of the BCOC method on multidomain sentiment analysis data sets

Brian Keith Norambuena and Claudio Meneses Villegas

Improving Attitude Words Classification for Opinion Mining using Word Embedding

Reynier Ortega Bueno, José E. Medina-Pagola, Carlos Enrique Muñiz Cuza and Paolo Rosso

15:00–17:00 ORAL SESSION 6: Medical Applications and Brain Signals

(Chair: Maria P. Trujillo, *Universidad del Valle, Colombia*) (President of the Colombian IAPR Society)

Recognition of Genetic Disorders Based on Deep Features and Geometric Representation

Jadisha Cornejo and Helio Pedrini

Circular non-uniform sampling patch inputs for CNN applied to multiple sclerosis lesion segmentation

Gustavo Ulloa, Rodrigo Naranjo, Héctor Allende-Cid, Steren Chabert and Héctor Allende

End-to-End Ovarian Structures Segmentation

Diego Wanderley, Catarina Carvalho, Ana Catarina Domingues, Carla Peixoto, Jorge Beires, Jorge Silva, Aurelio Campilho and Duarte Pignatelli

Exploring Deep-Based Approaches for Semantic Segmentation of Mammographic Images

Hugo Oliveira, Claudio Avelar, Alexei Machado, Arnaldo Araujo and Jefersson Dos Santos

Short time EEG connectivity features to support interpretability of MI discrimination

Viviana Gómez Orozco, Andres Alvarez, Paula Marcela Herrera Gómez, German Castellanos and Álvaro Ángel Orozco Gutiérrez

Improving ensemble averaging by epoch detrending in evoked potentials

Idileisy Torres-Rodríguez, Carlos Ariel Ferrer-Riesgo, Ernesto Velarde-Reyes and Alberto Taboada-Crispí

Social Program

Monday, November 19

16:30–18:00: “UAM50 Exhibition”

We recommend you to visit “UAM50 Exhibition” at *Sala CentroCentro* of *Palacio de Cibeles de Madrid* (free, at your own). Exposition about 50 years of *Universidad Autonoma de Madrid*.

More info at: <https://50aniversario.uam.es/expouam50/>.

How to arrive there: <https://goo.gl/maps/AFPU48VYNJk>

18:00–19:00: Madrid Sunset at Circulo de Bellas Artes

A member of CIARP2018 organization will be at the entrance of *Circulo de Bellas Artes* from 18:00 to 18:30 to provide you a ticket to the rooftop (with one drink).

How to arrive there: <https://goo.gl/maps/mNPpaN6gKJw>

19:00–20:00: Keynote Speech

(Chair: Julian Fierrez, *General Chair CIARP-2018*)

“Model Fitting in Computer Vision”

Jiri Matas, *Czech Technical University, Prague*

Location: Sala María Zambrano (fifth floor of *Circulo de Bellas Artes*).

20:00–22:00: Welcome Reception

Location: fifth floor of *Circulo de Bellas Artes*.

Wednesday, November 21

18:30-20:15: Recommended Walk (subject to weather conditions):

Start in *Opera* (Metro Station Lines 2, 5, and R) → *Palacio Real* → *Catedral de la Almudena* → *Templo de Debod* → Banquet

Google Maps route: <https://goo.gl/maps/N1zk4Wx6hY92>

18:00-19:30: Discussion at CentroCentro (in Spanish):

Alternatively, if you don't want to walk, you may attend a panel discussion about the social impact of artificial intelligence (discussion in Spanish only): "*Bienvenidos al futuro: Impacto social y humano de la Inteligencia Artificial*". Free entrance until full capacity is reached.

More info: <https://goo.gl/TQNKuy>

How to arrive there: <https://goo.gl/maps/AFPU48VYNJk>

20:00–22:00: 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 *Cercanías Renfe* Lines C1, C7, C10]

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Ruben Tolosana (Universidad Autonoma de Madrid, Spain)

Alejandro Acien (Universidad Autonoma de Madrid, Spain)

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