IDEAL 2018

19TH INTERNATIONAL CONFERENCE ON INTELLIGENT DATA ENGINEERING AND AUTOMATED LEARNING

CONFERENCE PROGRAMME

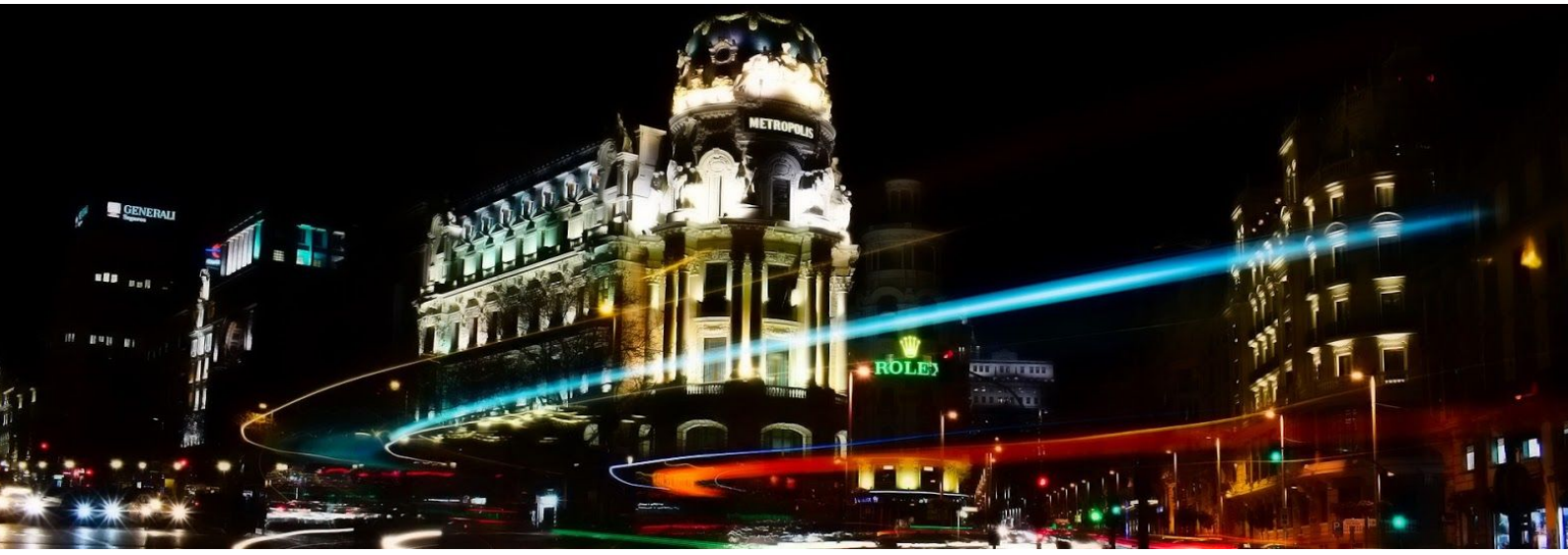
21-23 NOVEMBER, MADRID, SPAIN

https://aida.ii.uam.es/ideal2018

IDEAL 2018

Welcome Note

21-23 November, Madrid, Spain



Welcome to Madrid!

We have the pleasure and honour of hosting the 19th edition of *IDEAL - International Conference on Intelligent Data Engineering and Automated Learning*. IDEAL2018 is organized by the Universidad Autónoma de Madrid and the Applied Intelligence and Data Analysis research group (AI+DA). It is technically sponsored by Springer, the Spanish Association for Artificial Intelligence (AEPIA) and the Portuguese Association for Artificial Intelligence (APPIA). Thanks to those partners, who help us make this event possible.

We hope you can find time to enjoy our beautiful city. Madrid, the headquarters for the Public Administration, Government, Spanish Parliament and the home of the Spanish Royal Family. The city is an excellent combination of modern infrastructure and historic squares, churches, monuments and city gates which make this one of Europe's most attractive cities for sightseeing.

We wish you a productive and memorable conference, as well as an enjoyable stay in Madrid.

The IDEAL 2018 Organizing Committee

Content

Keynote Speaker

Vincenzo Loia

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University of Salerno, Italy

Short bio.

Professor Vincenzo Loia received B.S. degree in computer science from University of Salerno , Italy in 1985 and the M.S. and Ph.D. degrees in computer science from University of Paris VI, France, in 1987 and 1989, respectively. From 1989 he is Faculty member at the University of Salerno where he teaches Safe Systems, Situational Awareness. His current position is as Chair and Professor of Computer Science at Department of Management and Innovation Systems. He is the editor-in-chief of Evolutionary Intelligence and the editor-in-chief of Ambient Intelligence and Humanized Computing, both from Springer. He is an Associate Editor of various journals, including the IEEE Transactions on System, Man and Cybernetics: Systems; IEEE Transactions on Fuzzy Systems; IEEE Transactions on Industrial Informatics; IEEE Transactions on the IEEE Transactions on Cognitive and Developmental Systems. His research interests include soft computing, agent technology for technologically complex environments Web intelligence, Situational Awareness He was principal investigator in a number of industrial R&D projects and in academic research projects. He is author of over 400 original research papers in international journals, book chapters, and in international conference proceedings. He hold in the last years several role in IEEE Society in particular for Computational Intelligence Society (Chair of Emergent Technologies Technical Committee, IEEE CIS European Representative, Vice-Chair of Intelligent Systems Applications Technical Committee).

Abstract

Towards enriched Cognitive Security Systems

To solve the pressing security challenges of our era, we need more creative approaches capable to detect connections between relations, events concepts, in evolving context characterized by an explosive mixture of structured and unstructured data coming up from multiple sensor and human based networks.

In this talk we explore how to integrate Granular Computing and Computational Intelligence with security based systems in order to enrich the cognitive reaction, in terms of decision-support systems capability.

We present the evolution of a framework where different application scenarios are described, evidentiating the benefits arising from such an integration. The proposed approaches consider some enabling technologies like multi-agents systems and semantic modelling to provide a solution to face the complexity and heterogeneity of the monitored environment and the capability to represent, in a machine-understandable way, procedural, factual and other kind of knowledge and all the memory facilities that could be required.

Keynote Speaker

Xin Yao

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University of Birmingham,UK

Short bio.

Xin Yao is a Chair Professor of Computer Science at the Southern University of Science and Technology, Shenzhen, China, and a part-time Professor of Computer Science at the University of Birmingham, UK. He is an IEEE Fellow, a former President (2014-15) of IEEE Computational Intelligence Society, and a former Editor-in-Chief (2003-08) of IEEE Transactions on Evolutionary Computation. His major research interests include evolutionary computation, ensemble learning and search-based software engineering. His work won the 2001 IEEE Donald G. Fink Prize Paper Award, 2010, 2016 and 2017 IEEE Transactions on Evolutionary Computation Outstanding Paper Awards, 2010 BT Gordon Radley Award for Best Author of Innovation (Finalist), 2011 IEEE Transactions on Neural Networks Outstanding Paper Award, and many other best paper awards. He received the prestigious Royal Society Wolfson Research Merit Award in 2012 and the IEEE CIS Evolutionary Computation Pioneer Award in 2013.

Abstract

Tackling Many Objectives

Many optimisation problems in the real world need to consider multiple conflicting objectives simultaneously. Evolutionary algorithms are excellent candidates for finding a good approximation to the Pareto optimal front in a single run. However, many multi-objective optimisation algorithms are effective for two or three objective only. It is an ongoing challenge to deal with a larger number of objectives. In this talk, I will explain several methods for dealing with many objectives. First, we will describe a method for reducing a large number of objectives to a smaller one, especially when there is redundancy among different objectives. Second, alternative dominance relationship, other than the Pareto dominance, will be introduced into to make previously non-comparable solutions comparable. Lastly, new algorithms will be introduced to cope with many objectives through the use of two separate archives, for convergence and diversity, respectively. Our studies show that these methods are very effective and outperform other popular methods in the literature.

Keynote Speaker

Alexander Gammerman

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Royal Holloway University of London, UK

Short bio.

Professor of Computer Science and co-Director of Computer Learning Research Centre at Royal Holloway, University of London. He is Fellow of the Royal Statistical Society and BCS. He has worked as Visiting Professor in Columbia University, New York, University of Paris 9, Complutense University of Madrid and University College London.

Professor Gammerman's research interests lie in pattern recognition, Bayesian inference and machine learning. He has published about two hundred research papers and 9 books on computational learning and probabilistic inference. The fundamental theoretical research in machine learning has established a basis for practical applications. The applications includes medicine, neurosciences, chemo-informatics, information security, bioinformatics and other fields with major grants from EU, UK Research Councils and industry.

Abstract

Statistical and Algorithmic Learning

Let's assume that the training set of our data follows the assumption of randomness - the examples are independent and identically distributed (i.i.d.). That is our only assumption and we want to check out if a new example follows this i.i.d. assumption. To estimate if the new example is a "typical" or "strange" in some sense (or how well it fits or conforms to the training set distribution), we need to define a strangeness (non-conformity) measure (NCM). To make a prediction or to estimate a confidence of the prediction we can convert our NCMs into statistical p-values using the Martin-Löf test for randomness. The highest p-value gives us a prediction and the (1 - 2nd highest p-value) gives us a confidence in the prediction. The learning machines based on these ideas is called conformal predictors (CP) and has a number of advantages over the conventional machine learning algorithms. In particular, CPs can be used in connection with any machine learning algorithms (support vector machine, neural networks/deep learning, kernel methods, random forest, logistic regression, etc.): we extract our measure of non-conformity from the underlying machine learning algorithm and use it in the calculations of p-values. It also connects a confidence with accuracy of the prediction. In other words, unlike in the classical machine learning algorithms, we can control a number of errors by setting up a required confidence level. In the online mode, we can also prove that the probability of error at every step is epsilon and errors are made independently at different trials. In combination with the law of large numbers, this implies “validity” property: the long-run percentage of the erroneous predictions will be close, with high probability, to the chosen significance level.

The talk also considers an application of Conformal Predictors to several problems in different fields. In particular, we consider a chemo-informatics problem of identifying activities of compounds. The paper addresses some specific challenges of this domain: a large number of compounds (training examples), high-dimensionality of feature space, sparseness and a strong class imbalance. A variant of conformal predictors called Inductive Mondrian Conformal Predictor is applied to deal with these challenges. Results are presented for several nonconformity measures (NCM) extracted from underlying algorithms and different kernels. A number of performance measures are used in order to demonstrate the flexibility of Inductive Mondrian Conformal Predictors in dealing with such a complex set of data.

Tutorial Speaker

Dr. Xin-She Yang
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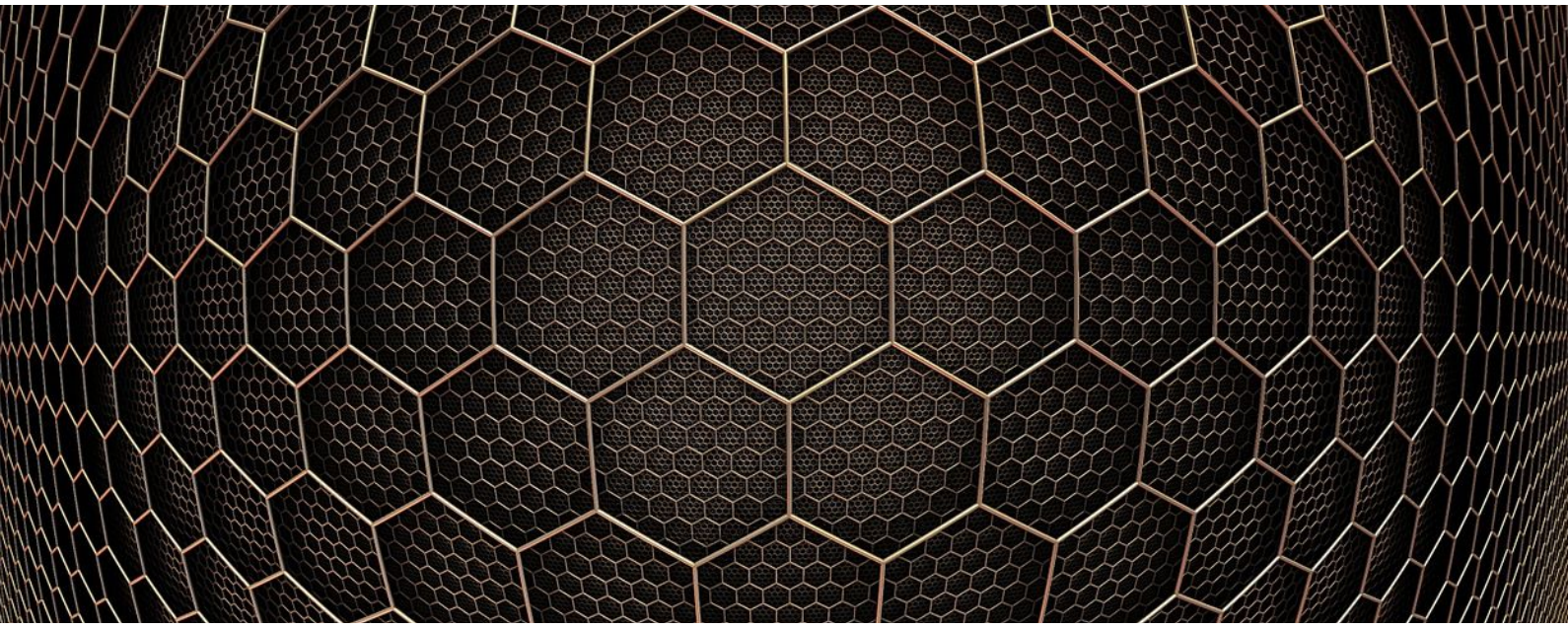
Middlesex University, UK

Short bio.

Xin-She Yang is Reader at School of Science and Technology, Middlesex University (UK) and an Adjunct Professor at Reykjavik University (Iceland). He is also an elected Bye-Fellow at Downing College, Cambridge University. He worked at Cambridge University and then National Physical Laboratory as a Senior Research Scientist after obtaining his DPhil in Applied Mathematics at Oxford University. With more 250 publications and more than 20 books, his research has been cited more than 30,000 times (according to Google Scholar) with an h-index of 66. He is also on the list of Highly Cited Researchers in 2016 and 2017 according to Thomson Reuters' Web of Science. He is the Chair of IEEE CIS Task Force on Business Intelligence and Knowledge Management. Yang has given many invited keynote talks at international conferences such as ICCS2015 (Iceland), SIBGRAPI2015 (Brazil), IEEE OIPE2016 (Italy), HS2017 (Spain), and ICIST2018 (London). He has also given tutorials at international conferences such as ECTA2015 (Portugal), MOD2017 (Italy) and EANN2018 (UK) on algorithms and nature-inspired computation.

Tutorial Abstract



Nature-Inspired Optimization Algorithms

Many problems in optimization and computational intelligence are very challenging to solve, and some of these problems can be NP-hard, which means that there are often no efficient algorithms to tackle such hard problems. In many cases, nature-inspired metaheuristic algorithms can be a good alternative and such algorithms include genetic algorithms (GA), particle swarm optimization (PSO), firefly algorithm (FA) and many others. Over the last two decades, nature-inspired algorithms have become increasingly popular in solving large-scale, nonlinear, global optimization with many real-world applications. They also become an important of part of optimization and computational intelligence. This tutorial will provide a critical analysis of recent algorithms using mathematical theories such as Markov chains, dynamic systems, random walks and self-organization systems. This will provide some insight into these algorithms and their proper use in applications.

Topics and Format

This tutorial intends to introduce the fundamentals and latest advances of the state-of-the-art nature-inspired algorithms with the focus on analysis on new algorithms. Topics include

- Essence of evolutionary algorithms and their key components
- Introduction to some recent nature-inspired algorithms
- Review of some recent theoretical results concerning evolutionary algorithms

Tutorial Speakers

Raúl Lara-Cabrera

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Universidad Politécnica de Madrid, Spain

M.Sc. and Ph.D. in Computer Science from the University of Málaga (UMA), Spain in 2013 and 2015 respectively. He is a research fellow at the Department of Sistemas Informáticos of the Universidad Politécnica de Madrid, Spain. His main research areas involve computational intelligence, videogames and complex systems.

Alejandro Martín

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Universidad Autónoma de Madrid, Spain

B.Sc. in Computer Science from Universidad Carlos III de Madrid (2014) and a M.Sc. in Computer Science and Technology at Universidad Carlos III de Madrid (2015). Currently he is a Ph.D. candidate at Universidad Autónoma de Madrid, where he is also involved with AIDA research group. His main research interests are related to Machine Learning and Cybersecurity, focused on malware detection and classification problems.

David Camacho

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Universidad Autónoma de Madrid, Spain

Associate Professor in the Computer Science Department at Universidad Autonoma de Madrid (Spain) and Head of the Applied Intelligence & Data Analysis group. He received a Ph.D. in Computer Science (2001) from Universidad Carlos III de Madrid, and a B.S. in Physics (1994) from Universidad Complutense de Madrid. He has published more than 200 journals, books, and conference papers. His research interests includes Data Mining (Clustering), Evolutionary Computation (GA & GP), Multi-Agent Systems and Swarm Intelligence (Ant colonies), Automated Planning and Machine Learning, or Video games among others.

Tutorial Abstract

Applying Machine Learning to detect Android Malware

The possibilities and advantages of applying Machine Learning to solve the most diverse problems are beyond question. It has been proved how this wide set of techniques can help to address various issues related to computer vision, natural language processing, fraud detection, robotics or bioinformatics, among many others. In this tutorial we aim to present the possibilities of this field when dealing with a complex, current and critical problem: the detection of malware in Android devices. As we will show, Machine Learning techniques such as classification and clustering algorithms, deep learning or evolutionary computation are currently being employed to detect those malware samples whose behavior exhibits malicious patterns. Furthermore, we will explain the different tools designed for performing Android malware analysis and reverse engineering processes. Finally, we will describe in first place our framework AndroPyTool, aimed at extracting a wide set of features from Android applications with the goal of deeply characterizing their behavior and in second place the OmniDroid dataset, a comprehensive dataset of features from Android benign and malicious applications.

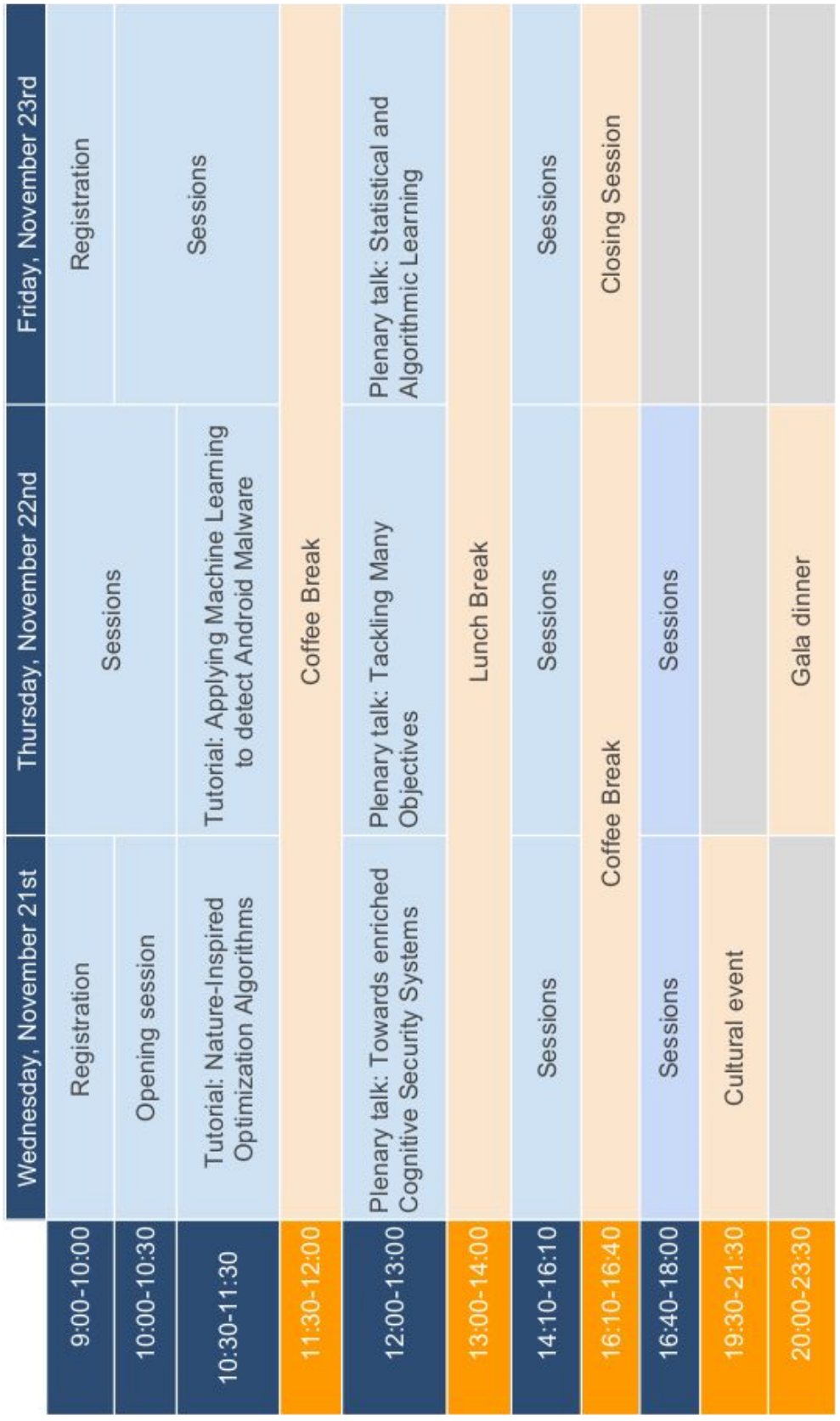
Intended audience
Open to all audiences interested in malware detection and machine learning.

Tutorial format
Mainly practical

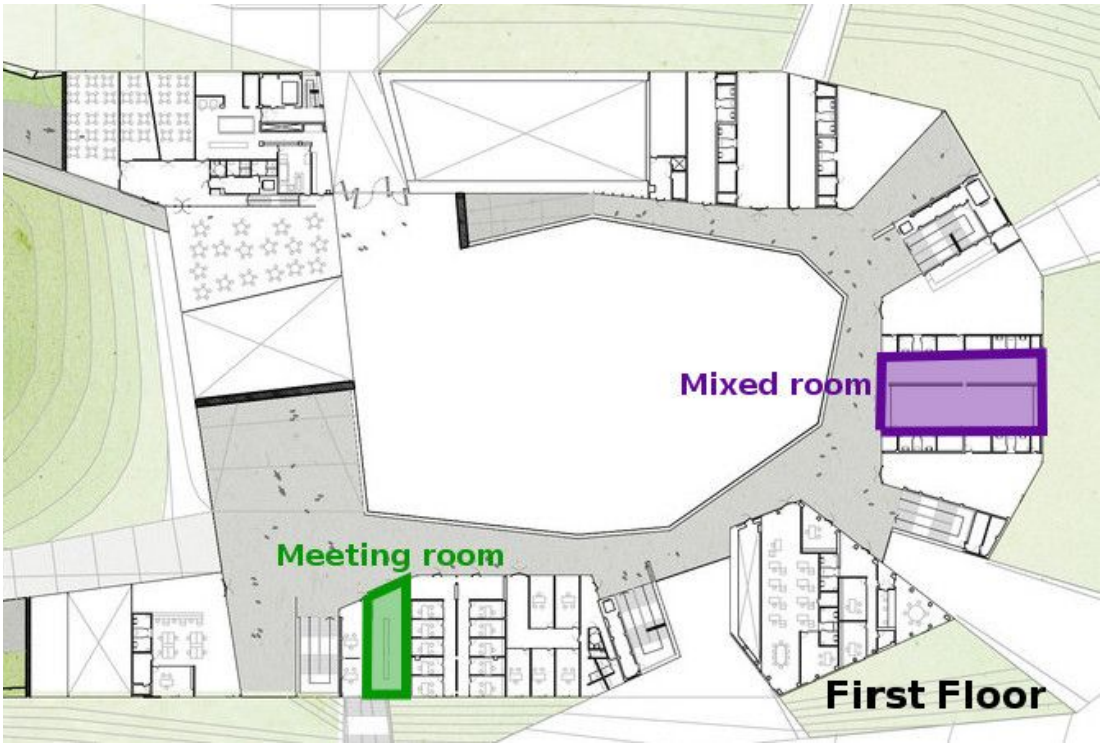
WiFi Connection

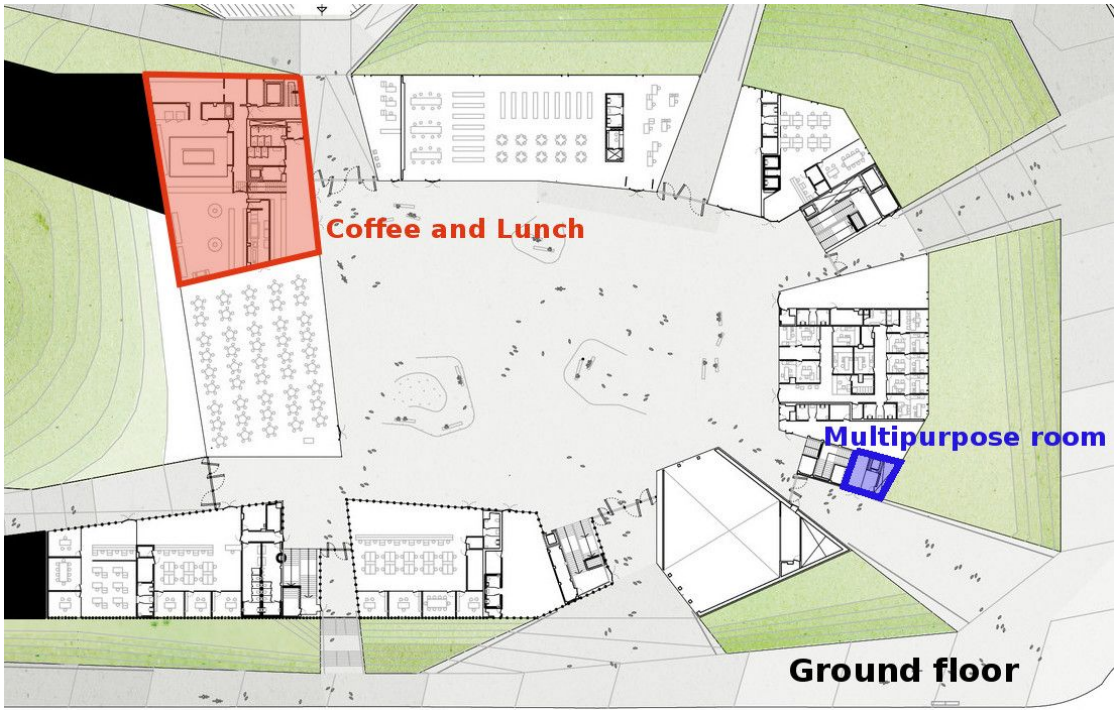
Eduroam network is available for all attendees. Attendees can also get access to the free WiFI service through the **UAM_Visitantes** network. Shortly after filling out a short form, credentials will be sent via SMS to the phone number provided. Two devices with the same credential can be connected simultaneously.

Conference Overview



Locations


Mixed room
Meeting room
First Floor


Coffee and Lunch
Multipurpose room
Ground floor

Register

Location: Entrance of the Multipurpose room

Desk hours	
9:00-16:00	Wednesday, November 21st
9:00-16:00	Thursday, November 22nd
09:45-15:00	Friday, November 23rd

Wednesday Program Overview

Wednesday, November 21st	
9:00-10:00	Registration
10:00-10:30	Opening session
10:30-11:30	Session 1: Tutorial
11:30-12:00	Coffee Break
12:00-13:00	Session 2: Plenary talk
13:00-14:00	Lunch Break
14:10-16:10	Session 3A: Artificial Intelligence & Machine Learning: Theory
14:10-16:10	Session 3B: Artificial Intelligence & Machine Learning: Applications
14:10-16:10	Session 3C: Workshop on Methods for Interpretation of Industrial Event Logs (MIEL)
16:10-16:40	Coffee Break
16:40-18:00	Session 4A: Machine Learning: Theory & Applications
16:40-18:00	Session 4B: Artificial Intelligence & Applied Mathematics
16:40-18:00	Session 4C: Special Session on Data Selection in Machine Learning (DSML 1)
19:30-21:30	Cultural event

Wednesday Detailed Program

Wednesday, November 21st	
09:00-10:00	Registration
LOCATION	Multipurpose room
10:00-10:30	Opening Session
CHAIRS	David Camacho and Hujun Yin
LOCATION	Multipurpose room
10:20-11:30	Session 1: Tutorial
CHAIR	David Camacho
LOCATION	Multipurpose room
10:30	Xin-She Yang Tutorial: Nature-Inspired Optimization Algorithms
11:30-12:00	Coffee Break
12:30-13:00	Session 2: Plenary talk
CHAIR	David Camacho
LOCATION	Multipurpose room
12:00	Vincenzo Loia Towards enriched Cognitive Security Systems
13:00-14:00	Lunch Break

14:10-16:10	Session 3A: Artificial Intelligence & Machine Learning: Theory
CHAIRS	Antonio J. Tallón-Ballesteros and Xin-She Yang
LOCATION	Multipurpose room
14:10	Sinan Zhu and Caiyan Jia General Structure Preserving Network Embedding
14:25	Enrique González Rodrigo, Juan A. Aledo and Jose Gamez CGLAD: using GLAD in crowdsourced large datasets
14:40	F. J. Pulgar, F.Charte, A.J.Rivera and M. J. Del Jesus A first approach to face dimensionality reduction through denoising autoencoders
14:55	Tsung-Yu Hsieh, Yasser El-Manzalawy, Yiwei Sun and Vasant Honavar Compositional Stochastic Average Gradient for Machine Learning and Related Applications
15:10	Miroslaw Kordos, Łukasz Czepielik and Marcin Blachnik Data Set Partitioning in Evolutionary Instance Selection
15:25	Yassine Baghoussi and Joao Mendes-Moreira Instance-based stacked generalization for transfer learning
15:40	Santiago Gil-Begue, Pedro Larrañaga and Concha Bielza Multi-Dimensional Bayesian Network Classifier Trees
15:55	Átilla Maia, Madson Dias, João Gomes and Ajalmar Rocha Neto Optimally Selected Minimal Learning Machine

14:10-16:10	Session 3B: Artificial Intelligence & Machine Learning: Applications
CHAIR	Ricardo Aler
LOCATION	Mixed room
14:10	Paul Stefan Popescu, Costel Ionascu and Cristian Mihaescu Exploring the Perceived Usefulness and Attitude Towards using Tesys e-Learning Platform
14:25	Mohamed Ata Radu Abu-Ras, Gabriel Turcu, Ilkka Kosunen and Marian Cristian Mihaescu Peak Alpha Based Neurofeedback Training within Survival Shooter Game
14:40	Katleho Moloi, Jaco Jordaan and Yskandar Hamam Support Vector Machine Based Method For High Impedance Fault Diagnosis in Power Distribution Networks
14:55	Peter Drotár, Martin Zoricak, Peter Gnip and Vladimír Gazda Single-class bankruptcy prediction based on the data from annual reports
15:10	Worapol Alex Pongpech On Application of Learning to Rank for Assets Management: Warehouses Ranking
15:25	Michał Pawlak, Aneta Poniszewska-Maranda and Jakub Guziur Towards the intelligent agents for blockchain e-voting system
15:40	Jaime Pérez, Sergio Pérez, José M. Moya and Patricia Arroba Thermal Prediction for Immersion Cooling Data Centers Based on Recurrent Neural Networks
15:55	Eduardo C. Garrido-Merchán and Alejandro Albarca-Molina Suggesting Cooking Recipes Through Simulation and Bayesian Optimization

14:10-16:10	Session 3C: Workshop on Methods for Interpretation of Industrial Event Logs (MIEL)
CHAIR	Grzegorz J. Nalepa
LOCATION	Meeting room
14:10	Martin Atzmueller Introductory talk: Computational Sensemaking in Industry 4.0: From Analysis to Interpretation
14:25	Wolfgang Koehler and Yanguo Jing Automated, Nomenclature Based Data Point Selection For Industrial Event Log Generation
14:40	Martin Atzmueller and Benjamin Klöpper Mining Attributed Interaction Networks on Industrial Event Logs
14:55	Felix Mannhardt, Riccardo Bovo, Manuel Oliveira and Simon Julier A Taxonomy for Combining Activity Recognition and Process Discovery in Industrial Environments
15:10	Grzegorz J. Nalepa, Edyta Brzychczy and Szymon Bobek On the Opportunities for Using Mobile Devices for Activity Monitoring and Understanding in Mining Applications
15:25	Szymon Bobek and Kamil Jurek Causal rules detection in streams of unlabeled, mixed type values with finit domains
15:40	Edyta Brzychczy and Agnieszka Trzcionkowska Creation of an event log from machinery monitoring system on a selected example
15:55	Slawomir Nowaczyk, Anita Sant'Anna, Ece Calikus and Yuantao Fan Monitoring Equipment Operation through Model and Event Discovery
16:10-16:40	Coffee Break

16:40-18:00	Session 4A: Machine Learning: Theory & Applications
CHAIR	Alejandro Martín
LOCATION	Multipurpose room
16:40	Guilherme Aguiar and Patrícia Vilain A framework for form applications that use machine learning
16:55	Pattaramon Vuttipittayamongkol, Eyad Elyan, Andrei Petrovski and Chrisina Jayne Overlap-Based Undersampling for Improving Imbalanced Data Classification
17:10	Zoila Ruiz-Chavez, Jaime Salvador-Meneses and Jose Garcia-Rodriguez Machine Learning Methods based Preprocessing to improve Categorical Data Classification
17:25	Paweł Ksieniewicz Combined classifier based on quantized subspace class distribution
17:40	Kemilly Dearo Garcia, André C.P.L.F. De Carvalho and João Mendes-Moreira A cluster-based prototype reduction for online k-NN classification
16:40-17:40	Session 4B: Artificial Intelligence & Applied Mathematics
CHAIR	Cristian Ramírez-Atencia
LOCATION	Mixed room
16:40	Carlo Blundo, Stelvio Cimato and Luisa Siniscalchi PostProcessing in Constrained Role Mining
16:55	Hisashi Koga, Satoshi Suzuki, Taiki Itabashi, Gibran Fuentes-Pineda and Takahisa Toda Extended Min-Hash Focusing on Intersection Cardinality
17:10	Rodrigo Naranjo and Matilde Santos New Fuzzy Singletons Distance Measure by Convolution
17:25	Irene Córdoba, Gherardo Varando, Concha Bielza and Pedro Larrañaga A fast Metropolis-Hastings method for generating random correlation matrices

16:40-18:00	Session 4C: Special Session on Data Selection in Machine Learning (DSML 1)
CHAIR	Antonio J.Tallón-Ballesteros
LOCATION	Meeting room
16:40	Maciej Grzenda Semi-Supervised Learning to Reduce Data Needs of Indoor Positioning Models
16:55	Souad Taleb Zouggar and Abdelkader Adla EMnGA : Entropy Measure and Genetic Algorithms Based Method for Heterogeneous Ensembles Selection
17:10	Gonçalo Sousa Mendes and Susana Nascimento A Study of Fuzzy Clustering to Archetypal Analysis
17:25	Svetlana Simić, Zorana Banković, Dragan Simić and Svetislav D. Simić Different Approaches of Data and Attribute Selection on Headache Disorder
17:40	Antonio J. Tallón-Ballesteros, Milan Tuba, Bing Xue and Takako Hashimoto Feature selection and interpretable feature transformation: a preliminary study on feature engineering for classification algorithms
19:30-21:30	Cultural event

Thursday Program Overview

Thursday, November 22nd	
9:30-10:30	Session 5A: Evolutionary Computation
9:30-10:30	Session 5B: Time Series analysis
9:30-10:30	Session 5C: Special Session on Data Selection in Machine Learning (DSML 2)
10:30-11:30	Session 6: Tutorial
11:30-12:00	Coffee Break
12:00-13:00	Session 7: Plenary talk
13:00-14:00	Lunch Break
14:10-16:10	Session 8A: Anomaly Detection and Trust Management
14:10-16:10	Session 8B: Medical Applications of Artificial Intelligence
14:10-15:25	Session 8C-I: Special Session on Machine Learning for Renewable Energy applications (MLRE)
15:25-16:10	Session 8C-II: Special Session on Evolutionary Computing Methods for Data Mining: Theory and Applications (ECMD)
16:10-16:40	Coffee Break
16:40-18:00	Session 9A: Image Analysis
16:40-18:00	Session 9B: Natural Language Processing & Computational Linguistics
16:40-18:00	Session 9C: Special Session on Intelligent Techniques for the Analysis of Scientific Articles and Patents (ITASAP)
20:00-23:30	Gala Dinner

Thursday Detailed Program

Thursday, November 22nd	
9:30-10:30	Session 5A: Evolutionary Computation
CHAIR	Pablo García Sánchez
LOCATION	Multipurpose room
9:30	Krzysztof Michalak Knowledge-based Solution Construction for Evolutionary Minimization of Systemic Risk
9:45	Krzysztof Michalak Crossover Operator using Knowledge Transfer for the Firefighter Problem
10:00	I. Jr. Fister, A. Iglesias, A. Galvez-Tomida, J. Del Ser, E. Osaba and I. Fister Differential evolution for association rule mining using categorical and numerical attributes
10:15	M M Manjurul Islam, Alexander Prosvirin and Jong-Myon Kim Intelligent Rub-Impact Fault Diagnosis based on Genetic Algorithm-based IMF Selection in Ensemble Empirical Mode Decomposition and Diverse Features Models
9:30-10:30	Session 5B: Time Series analysis
CHAIR	Cesar Hervás-Martínez
LOCATION	Mixed room
9:30	Marek Lóderer, Peter Pavlík and Viera Rozinajova Improving Time Series Prediction via Modification of Dynamic Weighted Majority in Ensemble Learning
9:45	Fabian Kai-Dietrich Noering, Konstantin Jonas and Frank Klawonn Assessment and Adaption of Pattern Discovery Approaches for Time Series under the Requirement of Time Warping
10:00	Hasan Ogul ALoT: A time-series similarity measure based on alignment of textures
10:15	Stefan Meyer, Olivier Bertrand, Martin Egelhaaf and Barbara Hammer Inferring Temporal Structure from Predictability in Bumblebee Learning Flight

9:30-10:30	Session 5C: Special Session on Data Selection in Machine Learning (DSML 2)
CHAIR	Michal Wozniak
LOCATION	Meeting room
9:30	Mikhail Petrovskiy, Maria Kazachuk, Igor Mashechkin and Oleg Gorokhov Novelty Detection using Elliptical Fuzzy Clustering in a Reproducing Kernel Hilbert Space
9:45	Eva Tuba, Raka Jovanovic, Marko Beko, Antonio J. Tallon-Ballesteros and M. Tuba Bare Bones Fireworks Algorithm for Medical Image Compression
10:00	Z. Ruiz-Chavez, J. Salvador-Meneses, J. Garcia-Rodriguez and A. J. Tallón-Ballesteros Data Pre-processing to apply Multiple Imputation techniques: A case study on real-world census data
10:15	Paweł Ksieniewicz and Michal Wozniak Imbalanced data classification based on feature selection techniques
10:30-11:30	Session 6: Tutorial
LOCATION	Multipurpose room
10:30	Alejandro Martin-Garcia, Raul Lara-Cabrera and David Camacho Tutorial: Applying Machine Learning to detect Android Malware
11:30-12:30	Coffee Break
12:30-13:00	Session 7: Plenary talk
CHAIR	Hujun Yin
LOCATION	Multipurpose room
12:00	Xin Yao Tackling Many Objectives
13:00-14:00	Lunch Break

14:10-16:10	Session 8A: Anomaly Detection and Trust Management
CHAIR	Mahmoud Barhamgi
LOCATION	Multipurpose room
14:10	Hela Maddar, Wafa Kammoun and Habib Youssef Effective centralized trust management model for Internet of Things
14:25	Minh Nguyen and Doina Logofatu Applying Tree Ensemble to Detect Anomalies in Real-World Water Composition Dataset
14:40	Zirije Hasani, Boro Jakimovski, Goran Velinov and Margita Kon-Popovska An Adaptive Anomaly Detection Algorithm for Periodic Real Time Data Streams
14:55	Roongtawan Laimek, Natsuda Kaothanthong and Thepchai Supnithi ATM Fraud Detection using Outlier Detection
15:10	Marie Kiermeier, Sebastian Feld, Thomy Phan and Claudia Linnhof-Popien Anomaly Detection in Spatial Layer Models of Autonomous Agents
15:25	Roja Ahmadi, Robert Macredie and Allan Tucker Intrusion Detection Using Transfer Learning in Machine Learning Classifiers Between Non-cloud and Cloud Datasets
15:40	Nadia Masood Khan and Gul Muhammad Khan Signal Reconstruction using Evolvable Recurrent Neural Networks
15:55	R.Blanco, J.J.Cilla, S.Briongos, P.Malagón and J.M. Moya Applying cost-sensitive classifiers with reinforcement learning to IDS

14:10-16:10	Session 8B: Medical Applications of Artificial Intelligence
CHAIR	Paulo Novais
LOCATION	Mixed room
14:10	Xiaowei Kortum, Lorenz Grigull, Urs Muecke, Werner Lechner and Frank Klawonn Improving the Decision Support in Diagnostic Systems using Classifier Probability Calibration
14:25	Figlu Mohanty, Suvendu Rup and Bodhisattva Dash Compound local binary pattern and enhanced Jaya optimized extreme learning machine for digital mammogram classification
14:40	Chinmayee Dora and Pradyut Kumar Biswal An ELM based Regression Model for ECG Artifact Minimization from Single Channel EEG
14:55	Jaime Andres Rincon Arango, Angelo Costa, Paulo Novais, Vicente Julian and Carlos Carrascosa Intelligent wristbands for the automatic detection of emotional states for the elderly
15:10	Cristiana Silva, Adrián Colomer and Valery Naranjo Deep Learning-based Approach for the Semantic Segmentation of Bright Retinal Damage
15:25	Pedro Silva, Adriano Rivolli, Pedro Rocha, Francisco Correia and Carlos Soares Machine Learning for drugs prescription
15:40	J.G.García, A.Colomer, V.Naranjo and F.Peñaranda Identification of individual glandular regions using LCWT and machine learning techniques
15:55	A. Lobantsev, A.Vatian, N.Dobrenko, A.Stankevich, A.Kaznacheeva, V.Parfenov... Specifics Analysis of Medical Communities in Social Network Services

14:10-15:25	Session 8C-I: Special Session on Machine Learning for Renewable Energy applications
CHAIR	Sancho Salcedo
LOCATION	Meeting room
14:10	M.Dorado-Moreno, P.A.Gutiérrez, S. Salcedo-Sanz, L. Prieto and C. Hervás-Martínez Wind power ramp events ordinal prediction using minimum complexity echo state networks
14:25	D.Guijo-Rubio, A. M.Durán-Rosal, A.M.Gómez-Orellana, P. A.Gutiérrez, C.Hervás-Martínez Distribution-based discretisation and ordinal classification applied to wave height prediction
14:40	L.Cornejo-Bueno, C.Casanova-Mateo, J.Sanz-Justo, S.Salcedo-Sanz Merging ELMs with Satellite Data and Clear-sky models for Effective Solar Radiation Estimation
14:55	Rubén Martín-Vázquez, Javier Huertas-Tato, Ricardo Aler and Inés M. Galván Studying the effect of measured solar power on evolutionary multi-objective prediction intervals
15:10	Víctor De la Pompa, Alejandro Catalina Feliu and Jose Dorronsoro Gaussian Process Kernels for Support Vector Regression in Wind Energy Prediction
15:25-16:10	Session 8C-II: Special Session on Evolutionary Computing Methods for Data Mining: Theory and Applications (ECMD)
CHAIRS	Javier Del Ser and Eneko Osaba
LOCATION	Meeting room
15:25	Nohora Mercado and Amelec Viloria Hospital admission and risk assessment associated to exposure of fungal bioaerosols at a municipal landfill using statistical models
15:40	P. Suarez, A. Galvez-Tomida, I. Fister, I. Jr. Fister, E. Osaba, J. Del Ser, A. Iglesias Prieto Bat algorithm swarm robotics approach for dual non-cooperative search with self-centered mode
15:55	Muhammad Adil Raja and Conor Ryan GELAB – A Matlab Toolbox for Grammatical Evolution

16:10-16:40	Coffee Break
16:40-18:10	Session 9A: Image Analysis
CHAIR	Valery Naranjo
LOCATION	Multipurpose room
16:40	Félix Fuentes-Hurtado, Sandra Morales, Jose Manuel Mossi and Valery Naranjo Deep-Learning-based Classification of Rat OCT images after Intravitreal Injection of ET-1 for Glaucoma Understanding
16:55	Won-Sup Shin and Sung-Bae Cho CCTV Image Sequence Generation and Modeling Method for Video Anomaly Detection using Generative Adversarial Network
17:10	A. Diaz-Pinto, A. Colomer, V. Naranjo, S. Morales, Y. Xu and A. F. Frangi Retinal Image Synthesis for Glaucoma Assessment using DCGAN and VAE Models
17:25	Joana Pereira, Adrián Colomer and Valery Naranjo Comparison of Local Analysis Strategies for Exudate Detection in Fundus Images
17:40	Marius Andrei Ciurez and Cristian Mihaescu Improved Architectural Redesign of MTree Clusterer in the Context of Image Segmentation
17:55	Yao Peng, Mengyu Liu and Hujun Yin Deep Neural Networks with Markov Random Field Models for Image Classification

16:40-18:10	Session 9A: Image Analysis
CHAIR	Valery Naranjo
LOCATION	Multipurpose room
16:40	Félix Fuentes-Hurtado, Sandra Morales, Jose Manuel Mossi and Valery Naranjo Deep-Learning-based Classification of Rat OCT images after Intravitreal Injection of ET-1 for Glaucoma Understanding
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17:55	Yao Peng, Mengyu Liu and Hujun Yin Deep Neural Networks with Markov Random Field Models for Image Classification

16:40-18:10	Session 9B: Natural Language Processing & Computational Linguistics
CHAIR	Raúl Lara-Cabrera
LOCATION	Mixed room
16:40	Sattam Almatarneh and Pablo Gamallo Linguistic Features to Identify Extreme Opinions: An Empirical Study
16:55	P. Inkeaw, J.Bootkrajang, T.Gonçalves and J.Chaijaruwanich Handwritten Character Recognition using Active Semi-Supervised Learning
17:10	Fei Wang, Robert J. Ross and John D. Kelleher Exploring Online Novelty Detection Using First Story Detection Models
17:25	Hao Zhang and Jie Wang Semantic WordRank: Generating Finer Single-Document Summarizations
17:40	Carlotta Orsenigo, Carlo Vercellis and Claudia Volpetti Concatenating or Averaging? Hybrid Sentence Representations for Sentiment Analysis
17:55	Smiljana Petrovic, Ivan Petrovic, Ileana Palesi and Anthony Calise Weighted Voting and Meta-Learning for Combining Authorship Attribution Methods

16:40-17:55	Session 9C: Special Session on Intelligent Techniques for the Analysis of Scientific Articles and Patents (ITASAP)
CHAIR	Manuel Jesus Cobo Martin
LOCATION	Meeting room
16:40	Pablo García Sánchez and Manuel Jesús Cobo Measuring the impact of the international relationships of the Andalusian universities using Dimensions database
16:55	Verónica Duarte, Antonio Lopez-Herrera and Manuel Jesus Cobo Martin Constructing bibliometric networks from Spanish doctoral Theses
17:10	Chaker Jebari, Manuel Jesus Cobo and Enrique Herrera Viedma A new approach for implicit citation extraction
17:25	J.R.López-Robles, J.R.Otegi-Olaso,I.P.Gómez, H.Gamboa-Rosales,N.K.Gamboa-Rosales... Bibliometric network analysis to identify the intellectual structure and evolution of the Big Data research field
17:40	I.Ruiz-Rube, T.Person, J.M.Mota, J.M.Dodero and A.R.González-Toro Evidence-based Systematic Literature Reviews in the Cloud
20:00-23:00	Gala Dinner

Friday Program Overview

Friday, November 23rd	
10:00-11:30	Session 10C: Workshop on RiskTrack: Analyzing radicalization in Online Social Networks
10:30-11:30	Session 10A: Workshop on the Interplay between Human-Computer Interaction and Data Science (HCI-DS)
10:30-11:30	Session 10B: Big Data: Theory and applications
11:30-12:00	Coffee Break
12:00-13:00	Session 11: Plenary talk
13:00-14:00	Lunch Break
14:10-16:10	Session 12A: Social and Human Applications of Artificial Intelligence
14:10-16:10	Session 12B: Deep learning & Neural Networks
14:10-15:10	Session 12C-I: Special Session on New Models of Bio-inspired computation for Massive Complex Environments (NMBC)
15:10-16:10	Session 12C-II: Recommender Systems
16:10-16:30	Closing session

Friday Detailed Program

Friday, November 23rd	
10:00-11:30	Session 10C: Workshop on RiskTrack: Analyzing radicalization in Online Social Networks
CHAIR	Javier Torregrosa
LOCATION	Meeting room
10:00	David Camacho Introductory talk: Present and future perspectives on radicalization tracking
10:15	Mourad Oussalah On Detecting Online Radicalization Using Natural Language Processing
10:30	Javier Torregrosa and Angel Panizo RiskTrack: assessing the risk of Jihadi radicalization on Twitter using linguistic factors.
10:45	Joshua Thorburn, Javier Torregrosa and Angel Panizo Measuring Extremism: Validating an Alt-Right Twitter Accounts Dataset
11:00	Mahmoud Barhamgi, Raúl Lara-Cabrera, Djamal Benslimane and David Camacho ONTOLOGY USES FOR RADICALISATION DETECTION on Social Networks
11:15	Ariadna Trespaderne and David Garriga Guitart Jihadi radicalized women in Spain: a profile

10:30-11:30	Session 10A: Workshop on the Interplay between Human-Computer Interaction and Data Science (HCI-DS)
CHAIR	Cristian Mihaescu
LOCATION	Mixed room
10:30	Cristian Mihăescu and Ilkka Kosunen Introductory talk: Clustering and visualization of high-dimensional and complex data
10:45	M.A.Becerra, C.Duque, J.C.Zapata, L.Serna, D.H.Peluffo-Ordoñez, E. Delgado-Trejos... Exploratory study of the effects of cardiac murmurs on electrocardiographic-signal-based biometric systems
11:00	Alejandro Baldominos, Yago Saez and Pedro Isasi Model Selection in Committees of Evolved Convolutional Neural Networks using Genetic Algorithms
11:15	Diogo Duque, José Cruz, Henrique Lopes Cardoso and Eugénio Oliveira Optimizing Meta-Heuristics for the Time-Dependent Traveling Salesman Problem Applied to Air Travels
10:30-11:30	Session 10B: Big Data: Theory and applications
CHAIR	Jason Jung
LOCATION	Multipurpose room
10:30	Barbara Bobowska and Dariusz Jankowski MapReduce model for Random Forest algorithm: experimental studies
10:45	Reuben Borrison, Benjamin Kloepper, Marcel Dix, Moncef Chioua and Barbara Sprick Reusable Big Data System for Industrial Data Mining - A case study on Anomaly Detection in Chemical Plants
11:00	Anton Agafonov and Alexander Yumaganov Spatial-Temporal K Nearest Neighbors Model on MapReduce for Traffic Flow Prediction
11:15	Jaime Salvador-Meneses, Zoila Ruiz-Chavez and Jose Garcia-Rodriguez Low Level Big Data Processing

11:30-12:00	Coffee Break
12:00-13:00	Session 11: Plenary talk
CHAIR	Matilde Santos
LOCATION	Multipurpose room
12:00	Alexander Gammerman Statistical and Algorithmic Learning
13:00-14:00	Lunch Break
14:10-16:10	Session 12A: Social and Human Applications of Artificial Intelligence
CHAIR	Pedro Antonio Gutierrez
LOCATION	Multipurpose room
14:10	Félix Fuentes-Hurtado, Jose Antonio Diego-Mas, Valery Naranjo and Mariano Alcañiz Finding the Importance of Facial Features in Social Trait Perception
14:25	Jason Jung and Hoang Long Nguyen Extending Independent Component Analysis on Online Social Media for Event Detection
14:40	Francisco Supino Marcondes, Jose Joao Almeida and Paulo Novais Chatbot Theory: A Naïve and Elementary Theory for Dialogue Management
14:55	Alya Itani, Laurent Brisson and Serge Garlatti Understanding Learner's Drop-out in MOOCs
15:10	Paulo Barbosa, Kemilly Dearo Garcia, João Mendes-Moreira and Andre de Carvalho Unsupervised Domain Adaptation for Human Activity Recognition
15:25	A.Pardo-Pertierra, A.B.Gil-González, J.Teira-Lafuente and A. de Luis Reboredo Communication Skills Personal Trainer based on Viola-Jones object detection algorithm
15:40	Michela Fazzolari, Marinella Petrocchi and Angelo Spognardi Predicting Online Review Scores Across Reviewer Categories
15:55	J. A.Salazar-Castro, D.F.Peña-Unigarro, L.D.Cruz, E.J.Revelo-Fuelagán, X. P. Blanco ... Generalized low-computational cost Laplacian eigenmaps

14:10-16:10	Session 12B: Deep learning & Neural Networks
CHAIR	Hujun Yin
LOCATION	Mixed room
14:10	Jaume Manero Font, Javier Béjar and Ulises Cortés Deep Learning applied to Wind Energy Forecasting
14:25	D.Trujillo, A.J.Rivera, F.Charte and M.J. Del Jesus An approximation to Deep Learning touristic-related time series forecasting
14:40	Richard Hankins, Yao Peng and Hujun Yin Towards Complex Features: Competitive Receptive Fields in Unsupervised Deep Networks
14:55	J.Muñoz-Ordóñez, C.Cobos, M.Mendoza, E.Herrera-Viedma, F.Herrera and S.Tabik Framework for the Training of Deep Neural Networks in TensorFlow using Metaheuristics
15:10	Abel Zacarias and Luís Alexandre Improving SeNA-CNN by Automating Task Recognition
15:25	Seok-Jun Bu and Sung-Bae Cho Learning Optimal Q-function using Deep Boltzmann Machine for Reliable Trading of Cryptocurrency
15:40	Jin-Young Kim and Sung-Bae Cho Detecting Intrusive Malware with a Hybrid Generative Deep Learning Model
15:55	Tae-Young Kim and Sung-Bae Cho Predicting the Household Power Consumption using CNN- LSTM Hybrid Networks

14:10-15:10	Session 12C-I: Special Session on New Models of Bio-inspired computation for Massive Complex Environments (NMBC)
CHAIR	Antonio Gonzalez-Pardo
LOCATION	Meeting room
14:10	Sergio Pérez-Peló, Jesús Sánchez-Oro and Abraham Duarte A metaheuristic approach for the α-separator problem
14:25	E. Osaba, J.Del Ser, D.Camacho, A.Galvez-Tomida, A.Iglesias, I.Fister and I.Jr. Fister Community Detection in Weighted Directed Networks using Nature-inspired Heuristics
14:40	A.Panizo, M.Carnero, G.Bello-Orgaz, J.Hernández, D.Camacho and M.Sánchez An Artificial Bee Colony algorithm for optimizing the design of sensor networks
14:55	Antonio Gonzalez-Pardo and David Camacho Design of Japanesse Tree Frog algorithm for Community Finding Problems
15:10-16:10	Session 12C-II: Recommender Systems
CHAIR	Jesús Sánchez-Oro
LOCATION	Meeting room
15:10	Oana Maria Teodorescu, Paul Stefan Popescu and Cristian Mihaescu Taking e-Assessment Quizzes - A Case Study with an SVD Based Recommender System
15:25	A.Martins, F.H. Da Silva, A.K. Ramos and S.Marques Exploring coclustering for serendipity improvement in content-based recommendation
15:40	Asgarali Bouyer An Improved Fuzzy Logic Based Recommender System by Integrating Social Tags and Social Networks' Information
15:55	J. A. Gomez-Pulido, E.Cortés, A.Durán, B.Crawford and R.Soto Novel and Classic Metaheuristics for Tunning a Recommender System for Predicting Student Performance in Online Campus
16:10-16:30	Closing session
LOCATION	Multipurpose room

Cultural Event

Madrid center tour

Time: 19:50-22:30

Meeting point: Plaza del Rey

A beautiful walk through the Austrias quarter and the monuments erected during the Habsburg dynasty. Know the center of Madrid, the oldest part of the city, it's lovely monuments and ancient history. After the tour we will go to *"Mercado of San Miguel"* to have some drinks and eat some *tapas*, bite-sized snacks served for free with a drink.

Gala Dinner

La cocina de san Antón

Time: 20:00-23:00
Meeting point: C/ de Augusto Figueroa, 24
website: www.lacocinadesananton.com/en

The gala dinner will be hosted at “La cocina de san antón” in the heart of Madrid city near the *Chueca* metro station. Before the dinner a cocktail will be served at the spectacular roof terrace of San Antón market. Then, naturally, we will enjoy their cuisine, “typical Spanish” dishes enlivened with international touches, made with the freshest ingredients.

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