Sara Rodríguez · Javier Prieto · Pedro Faria
Sławomir Kłos · Alberto Fernández
Santiago Mazuelas
M. Dolores Jiménez-López
María N. Moreno · Elena M. Navarro   *Editors*

Distributed Computing and Artificial Intelligence, Special Sessions, 15th International Conference

Springer

Advances in Intelligent Systems and Computing

Volume 801

The series "Advances in Intelligent Systems and Computing" contains publications on theory, applications, and design methods of Intelligent Systems and Intelligent Computing. Virtually all disciplines such as engineering, natural sciences, computer and information science, ICT, economics, business, e-commerce, environment, healthcare, life science are covered. The list of topics spans all the areas of modern intelligent systems and computing such as: computational intelligence, soft computing including neural networks, fuzzy systems, evolutionary computing and the fusion of these paradigms, social intelligence, ambient intelligence, computational neuroscience, artificial life, virtual worlds and society, cognitive science and systems, Perception and Vision, DNA and immune based systems, self-organizing and adaptive systems, e-Learning and teaching, human-centered and human-centric computing, recommender systems, intelligent control, robotics and mechatronics including human-machine teaming, knowledge-based paradigms, learning paradigms, machine ethics, intelligent data analysis, knowledge management, intelligent agents, intelligent decision making and support, intelligent network security, trust management, interactive entertainment, Web intelligence and multimedia.

The publications within "Advances in Intelligent Systems and Computing" are primarily proceedings of important conferences, symposia and congresses. They cover significant recent developments in the field, both of a foundational and applicable character. An important characteristic feature of the series is the short publication time and world-wide distribution. This permits a rapid and broad dissemination of research results.

More information about this series at http://www.springer.com/series/11156

Sara Rodríguez · Javier Prieto
Pedro Faria · Sławomir Kłos
Alberto Fernández · Santiago Mazuelas
M. Dolores Jiménez-López
María N. Moreno · Elena M. Navarro
Editors

Distributed Computing and Artificial Intelligence, Special Sessions, 15th International Conference

Springer

Editors
Sara Rodríguez
BISITE Digital Innovation Hub
University of Salamanca
Salamanca, Spain

Javier Prieto
BISITE Digital Innovation Hub
University of Salamanca
Salamanca, Spain

Pedro Faria
GECAD - Instituto Superior de Engenharia
Porto, Portugal

Sławomir Kłos
Department of Computer Science and
    Production Management
University of Zielona Góra
Zielona Góra, Poland

Alberto Fernández
Computing Science and Artificial
    Intelligence
Rey Juan Carlos University
Móstoles, Madrid, Spain

Santiago Mazuelas
Basque Center for Applied Mathematics
Bilbao, Spain

M. Dolores Jiménez-López
Basque Center for Applied Mathematics
Universidad de Alcalá
Alcalá de Henares, Spain

María N. Moreno
Departamento de Informática y Automática
University of Salamanca
Salamanca, Spain

Elena M. Navarro
Departamento de Sistemas Informáticos
University of Castilla-La Mancha
Albacete, Spain

Preface

The 15th International Conference on Distributed Computing and Artificial Intelligence 2018 is an annual forum that will bring together ideas, projects, and lessons associated with distributed computing and artificial intelligence, and their application in different areas. Artificial intelligence is changing our society. Its application in distributed environments, such as the Internet, electronic commerce, environment monitoring, mobile communications, wireless devices, distributed computing, to mention only a few, is continuously increasing, becoming an element of high added value with social and economic potential, in industry, quality of life, and research. These technologies are changing constantly as a result of the large research and technical effort being undertaken in both universities and businesses. The exchange of ideas between scientists and technicians from both the academic and industry sector is essential to facilitate the development of systems that can meet the ever-increasing demands of today's society.

The present edition brings together past experience, current work, and promising future trends associated with distributed computing, artificial intelligence, and their application in order to provide efficient solutions to real problems. This conference is a stimulating and productive forum where the scientific community can work toward future cooperation in distributed computing and artificial intelligence areas. Nowadays, it is continuing to grow and prosper in its role as one of the premier conferences devoted to the quickly changing landscape of distributed computing, artificial intelligence, and the application of AI to distributed systems.

This year's technical program will present both high quality and diversity, with contributions in well-established and evolving areas of research. More than 120 papers were submitted to main and special sessions' tracks from over 20 different countries (Algeria, Angola, Austria, Brazil, Colombia, France, Germany, India, Italy, Japan, Netherlands, Oman, Poland, Portugal, South Korea, Spain, Thailand, Tunisia, UK and USA), representing a truly "wide area network" of research activity.

Moreover, DCAI'18 Special Sessions have been a very useful tool in order to complement the regular program with new or emerging topics of particular interest to the participating community. The DCAI'18 Special Sessions technical program

has selected 64 papers and, as in past editions, it will be special issues in JCR-ranked journals such as Neurocomputing, and International Journal of Knowledge and Information Systems. Special Sessions that emphasize on multi-disciplinary and transversal aspects, such as Advances on Demand Response and Renewable Energy Sources in Smart Grids (ADRESS), AI–driven methods for Multimodal Networks and Processes Modeling (AIMPM), Social Modelling of Ambient Intelligence in Large Facilities (SMAILF), Communications, Electronics and Signal Processing (CESP), Complexity in Natural and Formal Languages (CNFL), Web and Social Media Mining (WASMM), have been especially encouraged and welcome.

This symposium is organized by the University of Castilla-La Mancha, the Osaka Institute of Technology, and the University of Salamanca. The present edition was held in Toledo, Spain, on June 20–22, 2018.

Sara Rodríguez
Javier Prieto
Pedro Faria
Sławomir Kłos
Alberto Fernández
Santiago Mazuelas
M. Dolores Jiménez-López
María N. Moreno
Elena Navarro

Organization

Honorary Chairman

Masataka Inoue   President of Osaka Institute of Technology, Japan

Program Committee Chairs

Sigeru Omatu   Osaka Institute of Technology, Japan
Sara Rodríguez   University of Salamanca, Spain
Fernando De la Prieta   University of Salamanca, Spain

Local Committee Chairs

Antonio Fernández   University of Castilla-La Mancha, Spain
Elena Navarro   University of Castilla-La Mancha, Spain
Pascual González   University of Castilla-La Mancha, Spain

Scientific Committee

Silvana Aciar   Instituto de Informática, Universidad Nacional de
       San Juan, Argentina
Naoufel Khayati   COSMOS Laboratory, ENSI, Tunisia
Miguel A. Vega-Rodríguez   University of Extremadura, Spain

Zita Vale   GECAD—ISEP/IPP, Portugal
Paulo Mourao   University of Minho, Portugal
Egons Lavendelis   Riga Technical University, Latvia
Mina Sheikhalishahi   Consiglio Nazionale delle Ricerche, Italy
Patricia Jiménez   Universidad de Huelva, Spain
Volodymyr Turchenko   Research Institute for Intelligent Computing
                                   Systems, Ternopil National Economic
                                   University, Ucrania
Olfa Belkahla Driss   University of Manouba, Tunisia
Amel Borgi   ISI/LIPAH, Université de Tunis El Manar,
                                   Tunisia
Heman Mohabeer   Charles Telfair Institute, Mauritius
Toru Fujinaka   Hiroshima University, Japan
Reza Abrishambaf   Miami University, EE.UU.
Luiz Romao   Univille, Brazil
Abdallah Ghourabi   Higher School of Telecommunications SupCom,
                                   Tunisia
Susana Muñoz Hernández   Universidad Politécnica de Madrid, Spain
Fabio Marques   University of Aveiro, Portugal
Ramdane Maamri   LIRE Laboratory UC Constantine2-Abdelhamid
                                   Mehri Algeria, Algeria
Julio Cesar Nievola   Pontifícia Universidade Católica do Paraná—
                                   PUCPR Programa de Pós Graduação em
                                   Informática Aplicada, Brazil
Reyes Pavón   University of Vigo, Spain
Raffaele Dell'Aversana   Research Center for Evaluation
                                   and Socio-Economic Development, Italy
Daniel López-Sánchez   BISITE, Spain
Emilio Serrano   Universidad Politécnica de Madrid, Spain
Amin Khan   INESC-ID, Instituto Superior Técnico,
                                   Universidade de Lisboa, Portugal
Daniel Hernández de La   University of Salamanca, Spain
   Iglesia
Alberto López Barriuso   USAL, Spain
Eleni Mangina   UCD, Ireland
Diego Hernán   Yachay Tech, Ecuador
   Peluffo-Ordoñez
Alberto Fernandez   CETINIA, Rey Juan Carlos University, Spain
Angel Martin Del Rey   Department of Applied Mathematics,
                                   University of Salamanca, Spain
María Navarro   BISITE, Spain
Muhammad Marwan   Aarhus University, Denmark
   Muhammad Fuad
Ichiro Satoh   National Institute of Informatics, Japan
Horacio Gonzalez-Velez   National College of Ireland, Ireland

Svitlana Galeshchuk   Nova Southeastern University, EE.UU.
Michal Wozniak   Wroclaw University of Technology, Poland
Florentino Fdez-Riverola   University of Vigo, Spain
Pedro Faria   Polytechnic of Porto, Portugal
Tiago Pinto   University of Salamanca, Spain
Jorge Morais   Universidade Aberta, Portugal
Andrzej Zbrzezny   Institute of Mathematics and Computer Science,
                                     Jan Dlugosz University in Czestochowa,
                                     Poland
Youcef Djenouri   LRIA_USTHB, Denmark
Johannes Fähndrich   Technische Universität Berlin/DAI Labor,
                                     Germany
Manuel Resinas   University of Sevilla, Spain
Mauricio Orozco-Alzate   Universidad Nacional de Colombia Sede
                                     Manizales, Colombia
Moamin Mahmoud   Universiti Tenaga Nasional, Malaysia
Pedro Sousa   University of Minho, Portugal
Paulo Moura Oliveira   UTAD University, Spain
Juan Gomez Romero   University of Granada, Spain
Carlos Alejandro De   Universidad Politecnica de Aguascalientes,
   Luna-Ortega   Mexico
Mar Pujol   University of Alicante, Spain
Paweł Sitek   Kielce University of Technology, Poland
Felipe Hernández Perlines   Universidad de Castilla-La Mancha, Spain
Mohamed Arezki Mellal   M'Hamed Bougara University, Algeria
Miguel Angel Patricio   Universidad Carlos III de Madrid, Spain
Evelio Gonzalez   Universidad de La Laguna, Spain
Gustavo Isaza   University of Caldas, Colombia
Goreti Marreiros   ISEP/IPP—GECAD, Portugal
Ivan Lopez-Arevalo   Cinvestav Tamaulipas, Mexico
Francisco Javier Calle   Departamento de Informática, Universidad
                                     Carlos III de Madrid, Spain
Jose Neves   University of Minho, Portugal
Isabel Praça   GECAD—ISEP, Portugal
Benedita Malheiro   Instituto Superior de Engenharia do Porto,
                                     Portugal
Juan Pavón   Universidad Complutense de Madrid, Spain
Gustavo Almeida   Instituto Federal do Espírito Santo, Brazil
André Zúquete   University of Aveiro, Portugal
Miguel Molina-Solana   Department of Computing, Imperial College
                                     London, UK
Miguel Rebollo   Universitat Politècnica de València, Spain
Radu-Emil Precup   Politehnica University of Timisoara, Romania
Davide Carneiro   University of Minho, Portugal
Rafael Corchuelo   University of Sevilla, Spain

Takuya Yoshihiro	Faculty of Systems Engineering, Wakayama University, Japan
Julio Ponce	Universidad Autónoma de Aguascalientes, Mexico
Antonio Pereira	Escola Superior de Tecnologia e Gestão do IPLeiria, Portugal
Jaime A. Rincon	Universitat Politècnica de València, Spain
Ali Selamat	Universiti Teknologi Malaysia, Malaysia
Ana Faria	ISEP, Portugal
José Luis Oliveira	University of Aveiro, Portugal
Shimpei Matsumoto	Hiroshima Institute of Technology, Japan
Masaru Teranishi	Hiroshima Institute of Technology, Japan
Sigeru Omatu	Osaka Institute of Technology, Japan
Paulo Vieira	Insituto Politécnico da Guarda, Portugal
Giner Alor Hernandez	Instituto Tecnologico de Orizaba, Japan
Michifumi Yoshioka	Osaka Prefecture University, Japan
Mohd Saberi Mohamad	Universiti Teknologi Malaysia, Malaysia
Jose M. Molina	Universidad Carlos III de Madrid, Spain
David Griol	Universidad Carlos III de Madrid, Spain
Vicente Julian	Universitat Politècnica de València, Spain
Zbigniew Banaszak	Warsaw University of Technology, Faculty of Management, Department of Business Informatics, Poland
Araceli Queiruga-Dios	Department of Applied Mathematics, University of Salamanca, Spain
Angélica González Arrieta	University of Salamanca, Spain
Stefania Costantini	Dipartimento di Ingegneria e Scienze dell'Informazione e Matematica, Univ. dell'Aquila, Italy
Juan Carlos Burguillo	University of Vigo, Spain
Álvaro Lozano Murciego	USAL, Spain
Elisa Huzita	State University of Maringa, Brazil
Rui Camacho	University of Porto, Portugal
Friederike Wall	Alpen-Adria-Universitaet Klagenfurt, Austria
Stefan-Gheorghe Pentiuc	University Stefan cel Mare Suceava, Romania
Zhu Wang	XINGTANG Telecommunications Technology Co., Ltd., China
Adel Boukhadra	National High School of Computer Science (Oued Smar, Algeria), Algeria
Carina Gonzalez	ULL, Spain
Francisco Garcia-Sanchez	University of Murcia, Spain
Irina Georgescu	Academy of Economic Studies, Romania
Ana Belén Gil González	University of Salamanca, Spain
Mariano Raboso Mateos	Facultad de Informática, Universidad Pontificia de Salamanca, Spain

Fábio Silva	University of Minho, Portugal
Li Weigang	University of Brasilia, Brazil
Nadia Nouali-Taboudjemat	CERIST, Algeria
Bozena Wozna-Szczesniak	Institute of Mathematics and Computer Science, Jan Dlugosz University in Czestochowa, Poland
Javier Bajo	Universidad Politécnica de Madrid, Spain
Gustavo Santos-Garcia	University of Salamanca, Spain
Jose-Luis Poza-Luján	Universitat Politècnica de València, Spain
Jacopo Mauro	University of Oslo, Norway
Worawan Diaz Carballo	Thammasat University, Thailand
Paulo Novais	University of Minho, Portugal
Peter Forbrig	University of Rostock, Germany
Nuno Silva	DEI & GECAD—ISEP/IPP, Portugal
Rafael Valencia-Garcia	Departamento de Informática y Sistemas, Universidad de Murcia, Spain
Yann Secq	Université Lille I, France
Tiago Oliveira	National Institute of Informatics, Japan
Rene Meier	Lucerne University of Applied Sciences, Switzerland
Aurélie Hurault	IRIT, ENSEEIHT, France
Fidel Aznar	University of Alicante, Spain
Paulo Cortez	University of Minho, Portugal
Leandro Tortosa	University of Alicante, Spain
Carmen Benavides	University of Leon, Spain
Rosalia Laza	Universidad de Vigo, Spain
Francisco A. Pujol	Specialized Processor Architectures Lab, DTIC, EPS, University of Alicante, Spain
Ângelo Costa	University of Minho, Portugal
Carlos Carrascosa	GTI-IA DSIC Universidad Politecnica de Valencia, Spain
Ana Almeida	ISEP/IPP, Portugal
Luis Antunes	GUESS/LabMAg/Universidade de Lisboa, Portugal
Ester Martinez-Martin	Universitat Jaume I, Spain
José Ramón Villar	University of Oviedo, Spain
Faraón Llorens-Largo	University of Alicante, Spain
Fernando Diaz	University of Valladolid, Spain
Jesus Martin-Vaquero	University of Salamanca, Spain
Maria João Viamonte	Instituto Superior de Engenharia do Porto, Portugal
Cesar Analide	University of Minho, Portugal
Pierre Borne	Ecole Centrale de Lille, France
Johan Lilius	Åbo Akademi University, Finland
Camelia Chira	Technical University of Cluj-Napoca, Romania

Organization of Special Session on Advances on Demand Response and Renewable Energy Sources in Smart Grids (ADRESS)

Smart grid concepts are rapidly being transferred to the market and huge investments have already been made in renewable-based electricity generation and in rolling out smart meters. However, the present state of the art does not ensure neither a good return of investment nor a sustainable and efficient power system. The work so far involves mainly larger stakeholders, namely power utilities and manufacturers, and their main focus has been on the production and grid resources. This vision is missing a closer attention to the demand side and especially to the interaction between the demand side and the new methods for smart grid management.

Efficient power systems require, at all moments, the optimal use of the available resources to cope with demand requirements. Demand response programs framed by adequate business models will play a key role in more efficient systems by increasing demand flexibility both on centralized and distributed models, particularly for the latter as renewable energy generation and storage are highly dependable of uncontrolled factors (such as wind and solar radiation) for which anticipated forecasts are subjected to significant errors.

The complexity and dynamic nature of these problems require the application of advanced solutions to enable the achievement of relevant advancements in the state of the art. Artificial intelligence and distributed computing systems are, consequently, being increasingly embraced as a valuable solution. ADRESS aims at providing an advanced discussion forum on recent and innovative work in the fields of demand response and renewable energy sources integration in the power system. Special relevance is indorsed to solutions involving the application of artificial intelligence approaches, including agent-based systems, data mining, machine learning methodologies, forecasting, and optimization, especially in the scope of smart grids and electricity markets.

Organizing Committee

Kumar Venayagamoorthy	Clemson University, USA
Zita Vale	Polytechnic of Porto, Portugal
Pedro Faria	Polytechnic of Porto, Portugal
Juan M. Corchado	University of Salamanca, Spain
Tiago Pinto	University of Salamanca, Spain

Program Committee

Bo Norregaard Jorgensen	University of Southern Denmark, Denmark
Carlos Ramos	Polytechnic of Porto, Portugal
Cătălin Buiu	Politehnica University Bucharest, Romania
Cédric Clastres	Institut National Polytechnique de Grenoble, France
Dante I. Tapia	Nebusens, Spain
Frédéric Wurtz	Institut National Polytechnique de Grenoble, France
Georg Lettner	Vienna University of Technology, Austria
Germano Lambert-Torres	Dinkart Systems, Brazil
Gustavo Figueroa	Instituto de Investigaciones Eléctricas, Mexico
Ines Hauer	Otto von Guericke University Magdeburg, Germany
Isabel Praça	Polytechnic of Porto, Portugal
István Erlich	University of Duisburg-Essen, Germany
Jan Segerstam	Empower IM Oy, Finland
José Rueda	Delft University of Technology, The Netherlands
Juan Corchado	University of Salamanca, Spain
Juan F. De Paz	University of Salamanca, Spain
Kumar Venayagamoorthy	Clemson University, USA
Lamya Belhaj	l'Institut Catholique d'Arts et Métiers, France
Nikolaus Starzacher	Discovergy, Germany
Nikos Hatziargyriou	National Technical University of Athens, Greece
Marko Delimar	University of Zagreb, Croatia
Nouredine Hadj-Said	Institut National Polytechnique de Grenoble, France
Pablo Ibarguengoytia	Instituto de Investigaciones Eléctricas, Mexico
Paolo Bertoldi	European Commission, Institute for Energy and Transport, Belgium
Pedro Faria	Polytechnic of Porto, Portugal
Peter Kadar	Budapest University of Technology and Economics, Hungary

Pierre Pinson   Technical University of Denmark, Denmark
Rodrigo Ferreira   Intelligent Sensing Anywhere, Portugal
Stephen McArthur   University of Strathclyde, Scotland, UK
Tiago Pinto   Polytechnic of Porto, Portugal
Tuukka Rautiainen   Empower IM Oy, Finland
Xavier Guillaud   École Centrale de Lille, France
Zbigniew Antoni Styczynski   Otto von Guericke University Magdeburg,
                                    Germany
Zita Vale   Polytechnic of Porto, Portugal

Organization of Special Session on AI–Driven Methods for Multimodal Networks and Processes Modeling (AIMPM)

The special session entitled AI–driven methods for Multimodal Networks and Processes Modeling (AIMPM 2018) is a forum that will share ideas, projects, researches results, models, experiences, applications, etc., associated with artificial intelligence solutions for different multimodal networks-born problems (arising in transportation, telecommunication, manufacturing, and other kinds of logistic systems).

Recently, a number of researchers involved in research on analysis and synthesis of multimodal networks devote their efforts to modeling different, real-life systems. The generic approaches based on the AI methods, highly developed in recent years, allow to integrate and synchronize different modes from different areas concerning: the transportation processes synchronization with concurrent manufacturing and cash ones or traffic flow congestion management in wireless mesh and ad hoc networks as well as an integration of different transportations networks (buses, rails, subway) with logistic processes of different character and nature (e.g., describing the overcrowded streams of people attending the mass sport and/or music performance events in the context of available holiday or daily traffic services routine). Due to the above-mentioned reasons, the aim of the workshop is to provide a platform for discussion about the new solutions (regarding models, methods, knowledge representations, etc.) that might be applied in that domain.

Organizing Committee

Chairs

Sławomir Kłos	University of Zielona Góra, Poland
Izabela E. Nielsen	Aalborg University, Denmark
Paweł Sitek	Kielce University of Technology, Poland
Grzegorz Bocewicz	Koszalin University of Technology, Poland

Co-chairs

Peter Nielsen	Aalborg University, Denmark
Zbigniew Banaszak	Koszalin University of Technology, Poland
Paweł Pawlewski	Poznan University of Technology, Poland
Mukund Nilakantan Janardhanan	University of Leicester, Leicester, UK
Robert Wójcik	Wrocław University of Technology, Poland
Marcin Relich	University of Zielona Gora, Poland
Arkadiusz Gola	Lublin University of Technology, Poland
Justyna Patalas-Maliszewska	University of Zielona Góra, Poland

Organization of Special Session on Social Modelling of Ambient Intelligence in Large Facilities (SMAILF)

Ambient Intelligence (AmI) is intended to provide users with systems tightly integrated with their everyday environment and activities. The goal is minimizing the need of explicit actions by users, through the continuous and distributed orchestration of information and actuation devices. With the advances in the field, AmI is pursuing growingly ambitious goals in terms of the size and integration of its smart spaces, the number of served users, and the level of adaptation to them.

This special session was focused on the challenges and potential solutions that appear when AmI moves to Large Premises (LP). In this context, new requirements consider big groups of people moving in premises that fall beyond the classical closed and controlled environments of most AmI systems. The ways of interaction, the expected services, and the behavior of people acquire a new dimension and variability in those interconnected smart spaces. AmI systems need to adapt to the crowds using large numbers of multiple and heterogeneous AmI resources in distributed and frequently uncontrollable environments that cause unexpected dynamic changes in the system topology.

Organizing Committee

Alberto Fernandez	Rey Juan Carlos University
Jorge J. Gómez	Universidad Complutense de Madrid
Ramón Alcarria	Universidad Politécnica de Madrid
Álvaro Carrera	Universidad Politécnica de Madrid

Program Committee

Carlos A. Iglesias	Universidad Politécnica de Madrid, Spain
Geylani Kardas Ege	University International Computer Institute, Turkey
Gianluca Rizzo	HES SO Valais, Switzerland
Holger Billhardt	Rey Juan Carlos University, Spain
Iván García-Magariño	University of Zaragoza, Spain
Juan Pavón	Universidad Complutense de Madrid, Spain
Juergen Dunkel	FH Hannover, University for Applied Sciences and Arts, Germany
Marin Lujak	IMT Lille Douai, France
Paulo Novais	University of Minho, Portugal
Rubén Fuentes-Fernández	Universidad Complutense de Madrid, Spain
Sascha Ossowski	Rey Juan Carlos University, Spain
Tomás Robles	Universidad Politécnica de Madrid, Spain

Organization of Special Session on Communications, Electronics and Signal Processing (CESP)

Today's digital revolution, with millions of connected devices providing real-time information about cities, homes, buildings, vehicles, etc., would not have been possible without the great advances in communications, electronics, and signal processing of the last decades. This special session covers all aspects related with these three pillars: new communication approaches such as 5G, massive MIMO, network function virtualization (NFV), software-defined networks (SDN), or millimeter wave communications; novel results in the field of electronics such as new antennas design, emerging Li-Fi devices, micro-electromechanical systems, or nano-electronics devices; and prevalent signal processing methodologies such as adaptive filtering approaches, fusion techniques, navigation systems, or image and video processing.

Organizing Committee

Moe Win	MIT
Andrea Conti	University of Ferrara
Santiago Mazuelas	Basque Center for Applied Mathematics
Marco Chiani	University of Bologna
Javier Prieto	University of Salamanca
Soumya Prakash Rana	London South Bank University

Organization of Special Session on Complexity in Natural and Formal Languages (CNFL)

Complexity has become an important concept in several scientific disciplines. There has been a lot of research on complexity and complex systems in natural sciences, economics, and social sciences. Complexity has always been a central topic in area of formal languages and now also increasingly in natural language research. The main objective of this special session is to bring together researchers from different areas that have in common their interest on linguistic complexity, regarding formal and/or natural languages. We want to boost the interchange of knowledge and methods between specialists that have approached linguistic complexity from different viewpoints. In order to promote interdisciplinarity among researchers that are dealing with any type of linguistic (natural or formal) complexity, this special session was focused in contributions introducing methods, models, definitions, and measures to assess complexity.

Organizing Committee

M. Dolores Jiménez-López	Universitat Rovira i Virgili, Spain
Leonor Becerra-Bonache	University of Saint-Etienne, France
Adrian-Horia Dediu	Universitat Rovira i Virgili, Spain
Adrià Torrens-Urrutia	Universitat Rovira i Virgili, Spain

Organization of Special Session on Web and Social Media Mining (WASMM)

The Web has become an indispensable instrument in the daily life for business activities, learning, entertainment, communication, etc. Offer of products and services to Internet users is practically unlimited; nevertheless, this apparent advantage is also a great drawback due to the fact that the Web provides from multiple sources a great quantity of heterogeneous information difficult to handle and interpret. In this context, data mining methods arise as efficient tools for helping users in the recovery of suitable information, products, or services from the Web. For that reason, recommender systems have become very popular in recent years, mainly in the e-commerce sites, although they are increasing in importance in other areas such as e-learning, tourism, news pages.

Nowadays, social networks are big sources of data, from which valuable information can be extracted by means of data mining algorithms. Social media mining allows us to explore a wide range of aspects regarding users, communities, networks structures, information diffusion, and so on.

WASMM aims at providing a forum for the presentation and discussion of the advances achieved in the Web mining field.

Organizing Committee

María N. Moreno García	University of Salamanca, Spain
Ana María Almeida de Figueiredo	Polytechnic Institute of Engineering of Porto, Portugal

Program Committee

Harshavardhan Achrekar	University of Massachusetts Lowell, USA
Yolanda Blanco	University of Vigo, Spain
Rafael Corchuelo	University of Sevilla, Spain
Chris Cornelis	Ghent University, Belgium
María José del Jesús	University of Jaen, Spain
Anne Laurent	University of Montpellier 2, France
Vivian López Batista	University of Salamanca, Spain
Joel Pinho Lucas	Tail Target, Brazil
Constantino Martins	Institute of Engineering of Porto, Portugal

Organization of Doctoral Consortium Sessions

The aim of the Doctoral Consortium is to provide a frame where students can present their ongoing research work and meet other students and researchers, and obtain feedback on future research directions. The Doctoral Consortium is intended for students who have a specific research proposal and some preliminary results, but who are still far from completing their dissertation.

All proposals submitted to the Doctoral Consortium underwent a thorough reviewing process with the aim to provide detailed and constructive feedback.

The submissions should identify:

- Problem statement
- Related work
- Hypothesis
- Proposal
- Preliminary results and/or Evaluation plan
- Reflections

Doctoral Consortium Organizer

Antonio Fernández-Caballero   University of Castilla-La Mancha, Spain

Contents