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Preface

It is the tenth edition of the “International Conference on Complex Networks & their Applications”, one of the major international events in network science. Every year, it brings together researchers from a wide variety of scientific backgrounds ranging from finance, medicine and neuroscience, biology and earth sciences, sociology and politics, computer science and physics, and many others to review the field’s current state and formulate new directions. The great diversity of the attendees is an opportunity for cross-fertilization between fundamental issues and innovative applications.

The proceedings of this edition, hosted by the Polytechnic University of Madrid in Spain from November 30 to December 02, 2021, contains a good sample of high-quality contributions to the multiple issues of complex networks research.

This edition attracted authors from all over the world, with 424 submissions from 56 countries. Each submission has been peer-reviewed by at least three independent reviewers from the international program committee. The 137 papers included in the proceedings are the results of this rigorous selection process. The challenges for a successful edition are undoubtedly related to the quality of the contributors. The success also goes to the fascinating plenary lectures of the key-note speakers.

- Marc Barthélémy (CEA, France): “Challenges in Spatial Networks”
- Ginestra Bianconi (Queen Mary University of London, UK): “Higher-Order Networks and their Dynamics”
- João Gama (University of Porto, Portugal): “Mining Evolving Large-Scale Networks”
- Dirk Helbing (ETH Zürich, Switzerland): “How Networks Can Change Everything for Better or for Worse”
- Yizhou Sun (UCLA, USA): “Graph-based Neural ODEs for Learning Dynamical Systems”
- Alessandro Vespignani (Northeastern University, USA): “Computational Epidemiology at the time of COVID-19”

Our thanks also go to the speakers of the traditional tutorial sessions for delivering insightful talks on November 29, 2021.

- Elisabeth Lex (Graz University of Technology, Austria) and Markus Schedl (Johannes Kepler University, Austria): “Psychology-informed Recommender Systems”
- Giovanni PETRI (ISI Foundation, Italy): “A crash-course in TDA and higher-order dynamics”

This edition during a pandemic has been quite challenging. The deep involvement of many people, institutions, and sponsors is the key to its success.

We sincerely gratify the advisory board members, Jon Crowcroft (University of Cambridge), Raissa D’Souza (University of California, Davis, USA), Eugene Stanley (Boston University, USA), and Ben Y. Zhao (University of Chicago, USA), for inspiring the essence of the conference.

We record our thanks to our fellow members of the organizing committee: José Fernando Mendes (University of Aveiro, Portugal), Jesús Gomez Gardeñes (University of Zaragoza, Spain), and Huijuan Wang (TU Delft, Netherlands), the lightning sessions chairs, Manuel Marques Pita (Universidade Lusófona, Portugal), José Javier Ramasco (IFISC, Spain), and Taha Yasseri (University of Oxford, UK), the poster sessions chairs, Luca Maria Aiello (ITU Copenhagen, Denmark) and Leto Peel (Université Catholique de Louvain, Belgium) the tutorial chairs, Sabrina Gaito (University of Milan, Italy) and Javier Galeano (Universidad Politécnica de Madrid, Spain) the satellite chairs, Benjamin Renoust (Osaka University, Japan), Xiangjie Kong (Dalian University of Technology, China), the publicity chairs, Regino Criado (Universidad Rey Juan Carlos, Spain) and Roberto Interdonato (CIRAD - UMR TETIS, Montpellier, France) the sponsor chairs. Our profound thanks go to Matteo Zignani (University of Milan, Italy), publication chair, for the tremendous work at managing the submission system and the proceedings publication process. Thanks to Stephany Rajeh (University of Burgundy, France), Web chair, for maintaining the website.

We would also like to record our appreciation for the work of the local committee chair, Juan Carlos Losada (Universidad Politécnica de Madrid, Spain), and all the local committee members, David Camacho (UPM, Spain), Fabio Revuelta (UPM, Spain), Juan Manuel Pastor (UPM, Spain), Francisco Prieto (UPM, Spain), Leticia Perez Sienes (UPM, Spain), Jacobo Aguirre (CSIC, Spain), Julia Martinez-Atienza (UPM, Spain), for their work in managing the sessions. They intensely participated to the success of this edition.

We are also indebted to our partners, Alessandro Fellegara and Alessandro Egro from Tribe Communication, for their passion and patience in designing the conference’s visual identity.

We would like to express our gratitude to our partner journals involved in sponsoring keynote talks: Applied Network Science, EPJ Data Science, Social Network Analysis and Mining, and Entropy.

We are thankful to all those who have contributed to the success of this meeting. Sincere thanks to the authors for their creativity. Finally, we would like to express our most sincere thanks to the program committee members for their considerable efforts in producing high-quality reviews in a minimal time.

These volumes make the most advanced contribution of the international community to the research issues surrounding the fascinating world of complex networks. Their breath, quality, and novelty demonstrate the profound contribution of complex networks in understanding our world. We hope you will enjoy reading the papers as much as we enjoyed organizing the conference and putting this collection of articles together.

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