

Preface

The International Workshop on Complex Networks & their Applications was first held in 2012. It was initially conceived as a forum to bring together researchers from a wide variety of fields ranging from Computational Social Science, to Economic Complexity, up to Bioinformatics to review current scientific work and formulate new directions in network science. The tradition has continued with an annual single-track meeting that has become one of the leading international events in the field. Fuelled by the skills and expertise of participants from these diverse research fields, this workshop allows for cross-fertilization between fundamental and applied research. It offers a unique opportunity for reflection on the current state of the field, unanswered but critical questions, and potential future directions.

This volume of proceedings provides an opportunity for readers to engage with a selection of papers presented during the Fifth edition, hosted by the University of Milan (Italy), from November 30 to December 02, 2016. Although, they do not provide a fully comprehensive coverage of the field, the 65 papers selected by the Scientific Committee reflect the interdisciplinary nature of the scientific areas covered by the workshop. They have been organized in 11 sections reflecting multiple aspects of complex network research:

- Network models
- Network measures
- Community structure
- Network dynamics
- Diffusion, epidemics and spreading processes
- Resilience and control
- Network visualization
- Social and political networks
- Networks in finance and economics
- Biological and ecological networks
- Network analysis

A very encouraging response has been received by COMPLEX NETWORKS 2016 in terms of submissions. The 204 contributions that we received from 47 countries

around the world reflect the great vitality and diversity of the complex network community. All the submissions have been peer reviewed from at least 3 independent reviewers from our strong international program committee in order to ensure high quality of contributed material as well as adherence to the conference topics. After the review process, 65 papers were selected to be included in the proceedings.

Each edition of the workshop represents a challenge that cannot be successfully achieved without the deep involvement of numerous people and institutions. We address sincere thanks to all of them for their support, and to the University of Milan for making us so welcome.

We are very grateful to our keynote speakers for their plenary lectures covering different areas of the conference. The talk of Guido Caldarelli (IMT Lucca - Italy) focused on the origins of instability in financial networks. The presentation given by Raissa D'Souza (U. C. Davis - USA) dealt with the steering and controlling systems of interdependent networks. Renaud Lambiotte (University of Namur -Belgium) gave a talk on "Burstiness and spreading on networks: models and predictions" and Yamir Moreno (University of Zaragoza - Spain) presented the talk "On the structure and dynamics of multilayer networks". The talk given by Eiko Yoneki (University of Cambridge - UK) was about "Efficient large-scale graph processing" and Ben Y. Zhao (U. C. Santa-Barbara - USA) covered the link prediction issue from an empirical perspective. Their support of the workshop is without a doubt one of the reasons of the success of COMPLEX NETWORKS 2016.

Two speakers gave very illuminating tutorials that drew many conference participants. These talks, held on November 29, 2016 were accessible to a general audience of graduate students. Ernesto Estrada (University of Strathclyde Glasgow - UK) gave a lecture on "Consensus dynamics on networks. Theory and applications" and Bruno Gonçalves (New York University - USA) delivered a practical introduction to machine learning (with Python).

We record our thanks to our fellow members of the Organizing Committee: Chantal Cherifi (University of Lyon2 - France) and Antonio Scala (CNR - Italy), the poster chairs, for arranging the poster session program and the editing of the book of abstracts; Bruno Gonçalves (New York University - USA), the publicity chair, for his work in securing a substantial input of papers from both Asia and America and in encouraging participation from those areas; and all the session chairs for their outstanding participation. We would also like to record our appreciation for the work of the Local Arrangement Committee. In particular, Carlo Piccardi (Politecnico di Milano - Italy) and Fabio Della Rossa (Politecnico di Milano - Italy) in making all the excellent logistical arrangements for the conference. We also acknowledge the important contributions of the members of the Computer Science Department of the University of Milan. In particular, the team of the NPTLab (University of Milan) led by Gian Paolo Rossi. We thank him for his unwavering support. Many thanks to its junior members, Matteo Zignani and Christan Quadri for the incredible work they have done in the organization and the editing of the proceeding. We extend our thanks to Matteo Re and Giorgio Valentini, their efforts made a great contribution to the success of the workshop.

We are also indebted to our partners, Alessandro Fellegara and Alessandro Egro along with their team (Tribe Communication) for their passion and patience in designing the visual identity of the workshop. Our gratitude must also be extended to our sponsors, Blogmeter, Celi and Shaman, for supporting the workshop.

We would also like to express our deepest appreciation to all those who have helped us for the success of this meeting. Sincere thanks to the contributors, the success of the technical program would not be possible without their creativity. Finally, we would like to express our most sincere thanks to the Program Committee members who have so generously volunteered their precious time to support the peer review process.

We hope that this volume makes a useful contribution to issues surrounding the fascinating world of complex networks and that you enjoy the papers as much as we enjoyed organizing the conference and putting this collection of papers together.

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