



Lecture Notes in Business Information Processing

446

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Research Challenges in Information Science

16th International Conference, RCIS 2022
Barcelona, Spain, May 17–20, 2022
Proceedings

Editors

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Enschede, The Netherlands

Jolita Ralyté 
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Xavier Franch 
Polytechnic University of Catalonia
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ISSN 1865-1348 ISSN 1865-1356 (electronic)
Lecture Notes in Business Information Processing
ISBN 978-3-031-05759-5 ISBN 978-3-031-05760-1 (eBook)
<https://doi.org/10.1007/978-3-031-05760-1>

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The registered company address is: Gewerbestrasse 11, 6330 Cham, Switzerland

Preface

We are pleased to welcome you to the proceedings of the 16th edition of the International Conference on Research Challenges in Information Science (RCIS 2022), which took place in Barcelona from May 17–20, 2022.

RCIS aims to bring together scientists, researchers, engineers and practitioners from a wide range of information science fields and to provide opportunities for knowledge sharing and dissemination. This year, RCIS 2022 has chosen the theme “Ethics and Trustworthiness in Information Science” be at the center of its reflections and discussions. The way information is captured, interpreted, transformed and used raises important ethical issues, such as who can access the information and to what extent, how bias can be avoided when interpreting and using information, and how fair are decisions made based on particular information artifacts. Moreover, trust is crucial in such contexts, as people become increasingly dependent on how information is handled. The more we need information to make critical decision, the greater the need to develop ethical and trustworthy information systems and services.

The conference program included three engaging keynote speeches. “The FAIR Guiding Principles in Times of Crisis”, by Prof. Dr. Barend Mons, from the Human Genetics Department of Leiden University Medical Center, in the Netherlands; “We Are Open. The Door Is Just Very Heavy: New Challenges in Information Science or How Can IS Help with Fairness, Diversity, Non-discrimination?”, by Prof. Dr. Florence Sèdes, from IRIT—Université Toulouse III—Paul Sabatier, France; and “Engineering the New Fabric of the Information Infrastructure—IoT, Edge, and Cloud”, by Prof. Dr. Schahram Dustdar, from the Distributed Systems Group, TU Wien, Austria.

A total of 100 papers were submitted to the main track of the conference, from which 35 have been accepted as full papers and included in these proceedings. For paper review and selection, we relied on a Program Committee composed of 58 members, in addition to a Program Board of 15 members. Each of the submitted papers went through a thorough review process with at least three reviews from the Program Committee. The papers with no clear decision were discussed online. The discussions were moderated by Program Board members, who concluded by writing meta-reviews. The final decisions were taken during the Program Board meeting. We are deeply thankful to the Program Committee and Program Board for their fair, competent and active contribution in selecting papers for publication in the RCIS 2022 proceedings.

Besides the main track, RCIS 2022 hosted three other tracks accepting short papers: Forum (presenting research challenges, novel ideas, and tool demonstrations), Research Projects (presenting initial or intermediate project results), and Doctoral Consortium (describing PhD research projects).

The Forum track, chaired by Estefanía Serral Asensio and Marcela Ruiz, received 11 submissions from which 5 were accepted. Furthermore, 13 additional papers were accepted from the papers invited from the main conference track, leading to a total of 18 forum papers. The Doctoral Consortium track, chaired by Andreas Lothe Opdahl

and Marko Bajec, attracted 10 submissions out of which 6 were accepted. Finally, the Research Projects track, chaired by Alessandra Bagnato and Lidia López, received 16 submissions, which are published in an online volume of CEUR-WS proceedings. We express our warm thanks to the track chairs for their involvement in soliciting and selecting papers for each of these tracks.

In addition, RCIS 2022 Program also included the presentation of three interesting tutorials: “Information Security & Risk Management: Trustworthiness and Human Interaction”, by Nicholas Fair, Stephen Phillips, Gencer Erdogan and Ragnhild Halvorsrud; “The Challenge of Collecting and Analyzing Information from Citizens and Social Media in Emergencies: The Crowd4sdg Experience and Tools”, by Barbara Pernici, Carlo Alberto Bono, Mehmet Oguz Mulayim and Jose Luis Fernandez-Marquez; and “Information Science Research with Machine Learning: Best Practices and Pitfalls” by Andreas Vogelsang. We thank the Tutorial chairs, Cinzia Cappiello and Paola Spoletini, for their great work in attracting and selecting the tutorials.

This year, for the first time, RCIS invited workshop submissions. Three exciting workshops have been selected, namely: “The 3rd International Workshop on Quality and Measurement of Software Model-Driven Development” (QUAMES 2022), organized by Beatriz Marín, Giovanni Giachetti and Estefanía Serral Asensio; “The 1st International Workshop on Cyber-Physical Social Systems for Sustainability: Challenges and Opportunities”, organized by Isabel Sofia Sousa Brito, Nelly Condori-Fernandez and Leticia Duboc; and “Ethical, Social and Environmental Accounting of Conferences: the Case of RCIS”, organized by Sergio España, Vijanti Ramautar and Quang Tan Le. We are very grateful to the Workshop chairs, João Araújo and Jose Luis de la Vara, for their work in attracting and selecting the workshops.

Overall, organizing RCIS 2022 was a great pleasure, since we had an exceptional organizing committee chaired by Carme Quer. We thank them for their engagement and support. We are also grateful to our publicity chairs Joaquim Motger, Tiago Sales, and Ben Roelens, and the webmaster Carles Farré who ensured the visibility of the conference. Special thanks go to the Proceedings chair, Rébecca Deneckère, who carefully managed the proceedings preparation process, and Christine Reiss and Ralf Gerstner from Springer who assisted us in its production.

Finally, we thank all the authors for sharing their work and findings in the field of Information Science and all the attendees for their lively participation and constructive feedback to the authors. We hope you will enjoy reading this volume.

April 2022

Renata Guizzardi
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Keynotes

Engineering the New Fabric of the Information Infrastructure - IoT, Edge, and Cloud

Schahram Dustdar 

Distributed Systems Group, TU Wien, Vienna, Austria
dustdar@dsg.tuwien.ac.at

Keynote Abstract

As humans, things, software and AI continue to become the entangled fabric of distributed systems, systems engineers and researchers are facing novel challenges. In this talk, we analyze the role of IoT, Edge, and Cloud, as well as AI in the co-evolution of distributed systems for the new decade. We identify challenges and discuss a roadmap that these new distributed systems have to address. We take a closer look at how a cyber-physical fabric will be complemented by AI operationalization to enable seamless end-to-end distributed systems.

“We Are Open. The Door is Just Very Heavy”: New Challenges in Information Science or How can IS Help with Fairness, Diversity, Non-Discrimination?

Florence Sèdes 

IRIT, Paul Sabatier University, Toulouse, France
florence.sedes@irit.fr

Keynote Abstract

Laws and administrative rules have been addressing disability and accessibility, through quotas and financial penalties, or students' social criteria assessment on French national ranking platforms. Such official measures enable minorities and other discriminated groups to be represented.

As half of the humanity does not constitute a minority, no quota policy is supposed to be applied, leaving gender imbalance as a potential issue. Academics have launched various inquiries and studies on this issue (Mothers in Science, UNESCO I'd Blush if I Could, etc.), that is crucial because of the female under-representation in scientific fields in STEM (Science, Technology, Engineering, and Mathematics).

“Gender equality paradox” names the observation that the under-representation of women in scientific fields (in particular, those related to STEM) is stronger in the most developed countries. As one says: “We are open. The door is just very heavy”¹. The door is not closed but women must get a foot in the door to be invited, integrated, accepted, and hired. Women fight to break the glass ceiling in many professions. At the same time, as they can encounter obstacles, the sticky floor restricts them to relative non-strategic positions and prevents their scientific career from really taking off.

The tooth paste tube phenomenon is also invoked as a metaphor that illustrates how few female colleagues must assume the committees and representations for the community to comply with F/M quotas when required for hiring or mediating, for instance. The consequence can be an over-solicitation and over-impact on the communities. The facts are horrendous, and actions have hence to be taken to reach a global balance with diversity, inclusiveness and fair cohabitation without discrimination. All the launched initiatives testify this awareness. As a warning underlies the need to support these actions, one must take care of a negative effect on under-represented members by (unfairly) reinforcing their impostor syndrome.

¹ <https://me.me/i/we-are-open-the-door-is-just-very-heavy-when-20430464>.

Inside the science itself, and not only in terms of population or scientometrics, but a new phenomenon also arises with the evolution of topics, technics, and tools. One striking example is the risk with gender and minority “invisibilization” in AI, as the social representation biases are emphasized (few entries in Wikipedia, Matilda effect, lack of historical figures and illustration, rare “role models” in science,...) with unbalanced learning data. The dual issue is how rule-based systems and by whom, if any bias here also, are encoded to be aware of all the diversity any decision implies.

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