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Quality of Information and Communications Technology

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Editors


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Proceedings

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Preface

The International Conference on the Quality of Information and Communications Technology (QUATIC) is a forum for disseminating advanced methods, techniques, and tools to support quality ICT engineering and management approaches. Practitioners and researchers meet at the conference to exchange ideas and approaches on how to adopt a quality culture in ICT process and product improvement and to provide practical studies in varying contexts.

QUATIC 2024 was held on September 11–13, 2024, in Pisa, Italy. The organizing chairs of this 17th edition of QUATIC were Antonia Bertolino (ISTI-CNR, Pisa, Italy) and Laura Semini (University of Pisa, Italy), who hosted it locally at the Department of Computer Science of the University of Pisa. The program chairs were Patricia Lago (Vrije Universiteit Amsterdam, The Netherlands) and João Pascoal Faria (University of Porto, Portugal). Alexandra Mendes (University of Porto, Portugal) was the proceedings chair.

This volume collates the papers selected by the members of the Program Committee to be presented at the conference and published in the conference proceedings. QUATIC 2024 attracted many submissions from different areas spanning several thematic tracks proposed in the call for papers in various cutting-edge technologies of specialized focus.

The following ten Thematic Tracks (together with their track chairs) were considered in QUATIC 2024:

- Innovative Strategies for Total Quality in Business Processes and Software (Mohamad Kassab and Phillip LaPlante, Pennsylvania State University, USA)
- ICT Process Improvement, Organization, and Governance (Gleison Santos, UNIRIO, Brazil; Edna Dias Canedo, UnB, Brazil)
- Emerging Topics and Technologies in Requirements Engineering (Sallam Abualhaija, University of Luxembourg, Luxembourg; Alessio Ferrari, CNR, Italy)
- Verification, Validation, and Testing (Mercedes G. Merayo, Universidad Complutense de Madrid, Spain; Filippo Ricca, University of Genoa, Italy)
- Quality Aspects of Services and Cloud Computing (Vasilios Andrikopoulos, University of Groningen, The Netherlands; Elisabetta Di Nitto, Politecnico di Milano, Italy)
- Quality in Adaptive Software (Claudia Raibulet, Università degli Studi di Milano-Bicocca, Italy; Karthik Vaidhyanathan, International Institute of Information Technology, Hyderabad, India)
- Human Factors for Quality Software (Rodrigo Santos, UNIRIO, Brazil; Xiaofeng Wang, Free University of Bozen-Bolzano, Italy)
- Quality Aspects of Empirical Studies (Marcos Kalinowski, PUC-Rio, Brazil; Roberto Verdecchia, University of Florence, Italy)
- Quality in the Age of AI (Grace A. Lewis, Carnegie Mellon Software Engineering Institute, USA; Domenico Bianculli, University of Luxembourg, Luxembourg)
- Sustainability as a Quality Concern (Luis Cruz, Delft University of Technology, The Netherlands; Maja Hanne Kirkeby, Roskilde University, Denmark)

Main Conference Program

The Technical Program Committee of QUATIC 2024 comprised 137 international academic and industrial domain experts from organizations in 26 different countries on six continents. The best-quality papers were identified for presentation and publication based on a rigorous peer review process by the Thematic Tracks Program Committee members as reviewers. The review was carried out in a double-blind process, with at least three reviews per submission. The submitted papers came from 23 countries and the accepted papers came from 17 countries. After a discussion period and confirmation with the reviewers, out of the 50 completed submissions, 20 (40%) were accepted as full papers and 9 (18%) were accepted as short papers. While the former report novel and scientifically rigorous research contributions or relevant industrial case studies, the latter describe innovative and exploratory approaches at an early stage of investigation.

Authors of the best papers from QUATIC 2024 will be invited to submit an extended version of their work to a Special Issue on Quality Assurance in ICT-based Systems to be published in the Elsevier Journal of Systems and Software.

Invited Talks

The conference this year included two outstanding keynote speakers.

The first keynote speaker was Letizia Jaccheri. She is a Professor at the Department of Computer Science of the Norwegian University of Science and Technology, Norway. Jaccheri has been teaching courses in software engineering at various levels and acted as one of the independent directors of Reply S.p.A. From 2013 to 2017, she was the department head for the Computer Science department at NTNU. She is an ACM Distinguished Speaker since 2018. She is the recipient of two gender equality prizes for her work to attract and retain women in computer science. Letizia Jaccheri has a long record of research leadership in interdisciplinary projects with a focus on gender and software engineering. She is involved in several research projects and leads the CA19122 COST Action Gender Balance in Informatics EUGAIN with 155 members from 39 European countries. In her talk titled “For Quality in Software Engineering, We Should All Be Feminists,” Letizia provided a clear definition and understanding of Software Engineering and of the role that intersectionality (interconnectedness of social differences, including gender, class, ethnicity, sexuality, and nationality) plays in improving the quality of software products and processes.

The second keynote speaker was Sigrid Eldh. She is a software industry veteran with 40 years in the field. She currently leads research in software engineering and testing at Ericsson in Stockholm (Sweden), where she has worked for 30 years. Sigrid is passionate about software quality and ways to automate software, testing, and validation, while keeping humans in charge. Her key interest is how software, which is everywhere, can aid humanity and be used in a variety of ways to solve challenging problems and improve lives. She received a PhD “On Test Design” from Mälardalen University, where she also works as a senior lecturer. She is also an adjunct professor at Carleton University in Ottawa, Canada. Sigrid served as a chair of many conferences, including ICSE-SEIP, NEXTA, AST, A-MOST, and A-Test; she has been industrial chair for ISSRE and ICST;

and she has served as a reviewer for numerous program committees and journals. She is now the Editor-in-Chief of IEEE Software Magazine. In her talk “How to Achieve System Quality in 10 Easy Steps” she built upon her experience to illustrate how to achieve quality, and provided participants with a clear strategy and a way to champion their own goals and describe what they need to overcome challenges, exploit novel technologies, and consider financial constraints. She relied on a lifetime of transforming and improving systems quality to exemplify the journey, including the best know-how from research and practice in areas from, e.g., quality metrics and automation to AI-augmentation to lead the audience to clear improvements and success.

SEDES Doctoral Symposium

In line with previous editions of the conference, there was a co-located doctoral student symposium chaired by Catia Trubiani (Gran Sasso Science Institute, L’Aquila, Italy) and Alessio Bucaioni (Mälardalen University, Sweden). They received five submissions, which were all accepted for discussion at the symposium after a double-blind review process by the SEDES Program Committee. We are particularly pleased to support this event, as doctoral students represent much of the future of our community.

Poster Track

The conference program was complemented with a special call for poster contributions, with the goal of giving researchers and colleagues the opportunity to discuss their work in progress in the community. The Poster Chairs were Guglielmo De Angelis (IASI-CNR, Rome, Italy) and José Pereira dos Reis (ISCTE-IUL, Lisbon, Portugal). Four posters were accepted for presentation during the event.

As editors of these proceedings, we thank all the people and organizations that directly or indirectly supported this event. A multi-track event such as QUATIC is the result of the coordinated efforts of many people who generously provide their expertise and time. In particular, we should mention the Thematic Track chairs, the SEDES chairs and the Posters chairs, who worked with us in coordinating the calls and review process. Also we are grateful to all members of the respective Program Committees for their thorough and constructive reviews that guaranteed the quality of the QUATIC 2024 conference. Alexandra Mendes has been extremely professional and accurate in following the complex procedures for preparing the proceedings and bridging between Springer and authors. Cristian Augusto has been quickly responsive and proactive in managing the web pages. Stefano Forti and Giovanna Broccia have been our heroes for publicity and social media.

We thank our colleagues at the University of Pisa and at ISTI-CNR for the detailed organizational support required to host the conference, as well as many colleagues at different levels in its organization. Also, special thanks to all the organizations involved in this conference, including supporters at the Vrije Universiteit Amsterdam and the University of Porto. We appreciate the generous support from Registro .it (the Registry of .it Internet domains). We also thank the Comune di Pisa for their prestigious endorsement.

Thanks to the Steering Committee members, and especially to the SC chair Fernando Brito e Abreu, for trusting us to organize the conference and for their guidance and support throughout this process. Thanks to the Comissão Setorial para as Tecnologias da Informação e Comunicações (Cs/03) from the Instituto Português da Qualidade, which has been supporting and promoting QUATIC since its inception.

Finally, a warm and kind mention to all the authors and participants of QUATIC 2024! Organizing the conference and producing these proceedings would have been impossible without their efforts and contributions. Thank you for contributing to the critical mass of researchers that keep QUATIC's history alive for what we expect to be many years to come.

September 2024

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