

5th International Workshop on Automated and verifiable Software sYstem DEvelopment (ASYDE 2023)

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I. WORKSHOP OBJECTIVES AND THEMES

During the last three decades, automation in software development has gone mainstream. Software development teams strive to automate as much of the software development activities as possible, spanning requirements specification, system modeling, code generation, testing, deployment, verification, as well as release phases, project status reporting and system maintenance. Automation helps to reduce development time and cost, as well as to concentrate knowledge by bringing quality into every step of the development process.

Realizing high-quality software systems requires producing software that is efficient, error-free, cost-effective, and that satisfies evolving requirements. Thus, one of the most crucial factors impacting software quality concerns not only the automation of the development process but also the ability to verify the outcomes of each process activity and the goodness of the resulting software product as well. This becomes particularly true these days when we are, and will be, increasingly surrounded by a virtually infinite number of software artifacts – often underspecified – that can be composed to build new applications. This situation radically changes the way software will be produced and used: (i) software is increasingly produced according to a certain goal, that can change during the system's execution, and by integrating existing software; (ii) the focus of software production is then on the ability to perform automated reasoning to achieve software integration and development that can be kept always correct-by-construction via static and dynamic verification.

This calls for automated software development methods and techniques, compositional verification theories, integration architectures, as well as, automated flexible and dynamic composition, and development mechanisms.

Despite great interest in automated and verifiable software system development, no common formal aspects and software

engineering approaches have been fully established yet. Developing software systems via an automated generation and verification method encompasses a variety of foundational principles and practical aspects, ranging from modeling and analysis issues to model-checking, from model-driven development techniques and code synthesis to run-time management issues and machine learning tools. ASYDE 2023 provided a forum to share and discuss innovative contributions to research and practice related to novel software engineering approaches to automated and verifiable development of software systems.

II. RELEVANCE TO THE ASE'23 CONFERENCE

The interplay between software engineering and foundational principles, as well as practical and formal aspects, is by nature tightly intertwined with automated and verifiable software system development. That is, in order to make software system development effective and elevate its maturity to the “readiness level” required for its adoption in practical software engineering contexts, novel formally grounded software engineering approaches, methods and tools are required, especially when automation of the system production and correctness of the system despite possible changes in the execution environment is of paramount importance. With this in mind, during the previous 4 years, ASYDE has been consolidating and strengthening its focus on automated software development.

For the above reasons, the IEEE/ACM International Conference on Automated Software Engineering (ASE) represented the most natural venue to host the 5th edition of ASYDE, a venue where researchers and practitioners had the possibility to meet, disseminate and exchange ideas, challenges and problems, further identifying and discussing key issues, sharing knowledge and experiences towards devising together possible solutions, how to automate them and how to synchronize on coming future efforts from automated software engineering perspectives.

III. ASYDE'23: THE 5TH EDITION

The fifth edition of the International Workshop on Automated and verifiable Software sYstem DEvelopment took place on September 11, 2023 in Kirchberg, Luxembourg. Notably, this marked the inaugural co-location of ASYDE with the IEEE/ACM International Conference on Automated Software Engineering (ASE). A sum of 18 submissions was received for ASYDE 2023. Following an extensive peer-review process, which engaged three members from the program committee for each submission, a total of eight submissions were successfully selected for publication.

ASYDE 2023 welcomed research papers, experience papers and tool presentations; nevertheless, papers describing novel research contributions and innovative applications were of particular interest.

- Regular papers (up to 10 pages): In this category fell those contributions which proposed novel research contributions, addressed challenging problems with innovative ideas, or offered practical contributions (e.g., industrial experiences and case-studies) in the application software engineering approaches for building software systems via automated development and verification. Regular papers clearly describe the situation or problem tackled, the relevant state of the art, the position or solution suggested and the potential benefits of the contribution. Authors of papers reporting industrial experiences were strongly encouraged to make their experimental results available for use by the reviewers and other researchers.
- Short papers (up to 5 pages): This category included tool demonstrations, position papers, well-pondered and sufficiently documented visionary papers. Tool demonstration papers explain enhancements made in comparison to previously published work.

ASYDE'23 ORGANIZATION

Workshop Chairs

- Marco Autili, University of L'Aquila, Italy;
- Alessio Bucaioni, Mälardalen University, Sweden;
- Gianluca Filippone, University of L'Aquila, Italy;
- Farnaz Fotrousi, Chalmers University, Sweden;
- Rim Saddem, Aix Marseille University France;
- Gian Luca Scoccia, Gran Sasso Science Institute, Italy.

Steering Committee

The 5th Edition of the ASYDE workshop is the result of a follow-up action, being supported by the Steering Committee members listed below, bringing together and consolidating the following previous events: OrChor at IEEE SERVICES'14, SCFI at IEEE SERVICES'15, SCART at SEFM'15, VeryComp at STAF'16, as well as the previous four editions of ASYDE at SEFM'19 to SEFM'22, three of which occurred during the COVID-19 pandemic.

- Marco Autili (Steering Committee Chair), University of L'Aquila, Italy;
- Federico Ciccozzi (Steering Committee Vice-Chair), Mälardalen University, Italy;
- Farhad Arbab, Centre for Mathematics and Computer Science, The Netherlands;
- Dimitra Giannakopoulou, Automated Reasoning Group, Amazon Web Services, US;
- Pascal Poizat, Paris Nanterre University, France;
- Massimo Tivoli, University of L'Aquila, Italy.

Program committee

- Luciano Baresi, Politecnico di Milano, Italy;
- Steffen Becker, University of Stuttgart, Germany;
- Antonio Brogi, University of Pisa, Italy;
- Antinisca Di Marco, University of L'Aquila, Italy;
- Daniele Di Pompeo, University of L'Aquila, Italy;
- Giovanni Denaro, University of Milano-Bicocca, Italy;
- Predrag Filipovikj, Scania Group, Sweden;
- Francesco Flammini, Mälardalen University, Sweden;
- Abel Gómez, Universitat Oberta de Catalunya, Spain;
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- Bilal Said, Softeam, France;
- Cristina Secoleanu, Mälardalen University, Sweden;
- Marjan Sirjani, Mälardalen University, Sweden;
- Manuel Wimmer, JKU Linz, Austria;
- Luca Berardinelli, JKU Linz, Austria;
- Amleto Di Salle, European University of Rome, Italy;
- Apostolos Zarras, University of Ioannina, Greece.
- Damien Jaime, Paris Nanterre University, France.

IV. ACKNOWLEDGMENTS

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