

Message from the Chairs

ASE 2025

We welcome you to the proceedings of the 40th edition of IEEE/ACM International Conference on Automated Software Engineering, ASE 2025, in Seoul, Republic Korea. The ASE conference series is the premier research forum for automated software engineering research and practice. Each year it brings together researchers and practitioners from academia and industry to discuss foundations, techniques, and tools for automated analysis, design, implementation, testing, and maintenance of large software systems.

ASE 2025 was held from November 16th to November 20th, 2025 in Grand Walkerhill Seoul Hotel, a splendid location in the heart of Seoul. ASE 2025 was primarily in-person, though we accommodated virtual presentations for the participants who were not able to attend in person for various reasons.

This publication contains the proceedings of ASE 2025. The first and the last days of the conference were reserved for workshops, tutorials, and the new faculty symposium. The main conference was held from November 17th to 19th and featured three keynotes, as well as technical, experience, new idea, journal-first, tool demo, and industry showcase papers.

The goal of ASE is to support developers with automated solutions for the construction and evolution of modern, ever more complex and critical software systems. The conference technical program features the latest development in the area of automated software engineering, including, but not limited to, research on applications of language models to automated software engineering, automated program synthesis and repair, mobile application development, verification and validation, debugging, program analysis, performance testing, green software, security, quality assurance, and, of course, different types of software tools. ASE 2025 has been supported by many organizing committee members, to whom we send our deepest gratitude.

The program included three exceptional keynote talks given by Prof. Thomas Reps of University of Wisconsin-Madison, Dr. Cristina Cifuentes of Oracle Labs, and Prof. Taesoo Kim of Georgia Institute of Technology. All three chairs express our deepest gratitude for the invited keynote speakers for sharing their experiences and insights.

We are pleased to report that a record number of submissions has been received for ASE 2025, with a total of 1,552 papers submitted across all tracks. This includes 1,136 papers submitted (after desk-rejects) to the main research track, 99 papers submitted to the NIER track, 99 to Tool Demonstrations, 153 to Industry Showcase, and 65 to Journal-First.

The research track initially received a record number of 1190 submissions. Nine of these were withdrawn, while 45 of these submissions were desk-rejected due to major violations of double-blind and formatting regulations. The remaining 1136 submissions went through a double-anonymous review process: Each submission was reviewed by at least three Program Committee members and assigned an area chair. After a two-stage review quality check, the authors were offered to respond to these reviews. During the subsequent discussion period, the designated discussion lead and an area chair sought to ensure that each paper was properly discussed and the authors' response was properly

taken into account. At the end of the discussion period, 113 submissions were accepted while 140 were given a chance to revise based on reviewers' comments. After the major revision round, 134 additional papers were accepted, bringing the total number of accepted papers in the research track to 247. We sincerely thank our area chairs, who helped us with the huge amount of reviews and discussions: Sven Apel, Alberto Bacchelli, Cristian Cadar, Marsha Chechik, Jane Cleland-Huang, Lars Grunske, Dan Hao, Mark Harman, Jie M. Zhang, Darko Marinov, Sarah Nadi, Shiva Nejati, Justyna Petke, Michael Pradel, Julia Rubin, Jun Sun, Zhenchang Xing, Yingfei Xiong, Andreas Zeller, and Hongyu Zhang. We also extend our gratitude to our PC members, too many to name, without whom the review and selection of submissions for our program would not be possible, including those who answered our call for additional reviewers to cater for the record number of submissions.

The journal-first track for ASE 2025 accepted 48 ASE-relevant papers from several top Software Engineering journals, including Automated Software Engineering Journal, IEEE Transaction of Software Engineering, ACM Transactions on Software Engineering and Methodology, Empirical Software Engineering Journal, and Journal of Systems and Software. This is a new record number, and we hope the journal-first track will continue the growth. We thank the track chairs, Jula Lawall and Jooyong Yi, as well as the committee members.

ASE takes pride in its tool demo track, and we have received 99 submissions this year, out of which 38 papers were accepted. Many thanks to the track chairs, Shiva Nejati and Justyna Petke, and the committee members.

The industry showcase track aims to exhibit the top quality practical applications of automated software engineering in the real world context. We have accepted 61 papers out of 153 submissions, both of which are record numbers. The track had three co-chairs, Seonah Lee, Nico Rosner, and Xin Xia, whose hard work we greatly appreciate. We also thank all of the committee members for their work reviewing the record number of papers.

The New Ideas and Emerging Results (NIER) track solicited three types of submissions: groundbreaking research, reflections, and late-breaking advances. The NIER track also received a record number of 99 submissions, out of which we accepted 37 papers. We thank Sankil Cha and Xusheng Xiao, the track chairs, and the committee members for their work on this track.

The doctoral symposium at ASE aims to provide PhD students with opportunities to present their work and get feedback from community members. We have selected six high quality submissions, whose authors participated in a lively symposium. Many thanks to Ben Hermann and Xiaoyuan Xie for organising the doctoral symposium for ASE 2025.

ASE 2025 featured eight workshops and one open competition, which were held before, during, and after the main conference:

- The 8th International Workshop on Advances in Mobile App Analysis (A-Mobile)
- The International Workshop on Autonomous Agents in Software Engineering (AgenticSE)
- The International Workshop on AI for Software Modernization (AISM)
- ASE 2025 Workshop and Challenge on Code Completion Context Collection Optimization
- The 1st International Workshop on Explainable Automated Software Engineering: Exploring Theory, Adaptation, Needs, Challenges, and Ethics (Ex-ASE)
- The International Workshop on Intelligent Software Engineering (ISE)

- The 1st International Workshop on Multi-Agent Systems using Generative Artificial Intelligence for Automated Software Engineering (MAS-GAIN)
- The 3rd International Workshop on Virtual and Augmented Reality Software Engineering (VARSE)

We thank the workshop organizers and the track chairs, Yunja Choi and Shane McIntosh, for all of their efforts in facilitating these co-located events.

ASE 2025 featured four tutorials, held before and after the main conference:

- A Tutorial on Software Engineering for FMware by Keheliya Gallaba
- Basics of Static Analysis using SootUp by Jonas Klauke, Stefan Schott, Markus Schmidt, and Eric Bodden
- Bridging the Gap between Causal Inference and Software Engineering by Pingchuan Ma, Zhenlan Ji, Li Zongjie, and Shuai Wang
- Quantum Artificial Intelligence for Software Engineering by Shaukat Ali and Xinyi Wang

We thank the tutorial organizers and the track chairs, Eunkyung Jee and Yasutaka Kamei, for all of their efforts in organising these tutorial sessions.

ASE 2025 conducted an interesting experiment with the conference format. The large volume of accepted papers, which exceeded our wildest expectation, meant that the traditional presentation-based conference format was not physically feasible within the constraints of venue space and time. After consulting the steering committee, we decided that we would try posters as the main presentation channel: all accepted papers were given a chance to do a poster presentation, as well as a short teaser talk slot. The continuing growth of the community means that we will have to be open to trying out new formats. We hope future editions of ASE can build on our experience to further improve our gatherings, which is essential to great research.

Finally, we would like to thank all our sponsors for their support of the conference.

General Chair

Shin Yoo, *Korea Advanced Institute of Science and Technology, Republic of Korea*

Program Chairs

Marcel Böhme, *Max-Planck Institute for Security and Privacy, Germany*

Lingming Zhang, *University of Illinois Urbana-Champaign, United States of America*