

Conference Report

The 28th IEEE European Test Symposium

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■ **THE 28TH IEEE** European Test Symposium (ETS) was held in Venice, Italy, 22–26 May 2023, in a hybrid format. This was the second hybrid venue for ETS since the COVID-19 pandemic. ETS is Europe's premier forum in the area of electronic-based circuits and system testing, reliability, security, and validation. ETS'23 was arranged in five days and the program consisted of keynotes, scientific paper presentations, panels, workshops, highlights/demos from the industry, a PhD forum, and a McCluskey contest. It also included the Test Spring School (TSS). A total of 238 attendees (including both in-person and virtual) registered for the conference from 36 countries among which 102 were from industry and 135 were affiliated with academia (including 53 students).

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ETS'23 captured the fun spirit of Venice with a high-quality scientific program and extensive industrial sessions. The 28th ETS received the abstract for 142 scientific papers and a total of 111 full paper submissions. Moreover, 41 industrial papers and six late industrial contributions that were focusing on industry-related works were submitted. Indeed, 559 authors from 35 countries contributed to this ETS venue where the top five contributing countries in terms of submissions were Germany, the United States, Italy, China, and France. Eventually, 25 papers were selected for oral presentation and another 29 papers for poster presentation among all 111 submissions.

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In ETS'23, 141 reviewers were involved in the paper selection process including experts from 28 companies and six external reviewers. A total of 523 reviews were entered where 95% of submissions received four or more reviews and the rest were assessed by three reviewers.

This ETS venue had a very extensive program. On top of the research paper and poster presentations, the symposium included two keynote talks, one industry track with industrial and vendor presentations, three hyperpanels discussing the future of testing, one special track discussing the safety, security, and challenges around open-source hardware and RISC-V, one session on autonomous systems and their testing and reliability issues, one special track on European projects focusing on emerging technologies and the related reliability and security issues, a PhD forum, and the McCluskey doctoral thesis contest which is the Europe semifinal competition whose final will be held in the International Test Conference (ITC) 2023 in Anaheim, CA, USA, in October 2023.

The symposium started with the TSS tutorials on May 22 followed by the main program between May 23 and 25 and was wrapped up by the Fringe workshops on May 26. This year TSS's focus was on the "Selected Topics in the Test and Dependability Community." Totally, 28 students and six professors attended TSS. The lectures by world-renowned experts in the field provided a challenging and exciting learning experience for TSS attendees.

The two featured keynote talks on May 23 and 24 addressed the main test challenges in the latest

technology nodes, safety-critical applications, and future computing hardware. In particular, the first keynote was given by Dr. Janusz Rajski, the vice president of Siemens on “Silicon lifecycle redefines design for test.” The second keynote featured University of Michigan’s (UMICH’s) Dr. Valeria Bertacco, who gave a talk on “Beyond neural networks, exploring the future of computing hardware (and its implication on testing).”

ETS’23 included hyperpanels with a focus on the future of testing. In particular, the panels targeted the future of silicon lifecycle management, challenges of metaverse hardware, and the future design for test strategies. Each of the three included daily panels produced a chart based on the individuals’ discussions. A wrap-up panel was held during the final plenary session where the individual charts were discussed.

Finally, the Fringe workshops on May 25th and 26th concluded this chapter of ETS. The 28th ETS organized three workshops in parallel with a total of 80 attendees for the three workshops altogether. These workshops were:

- AI-TREATS Workshop on AI hardware: Test, Reliability, and Security;
- eARTS Workshop on European Automotive, Reliability, Test, and Safety; and
- IMTR Workshop on Intelligent Methods for Test and Reliability.

In the ETS semifinal of the E. J. McCluskey TTTC best doctoral thesis contest, three PhD students presented their doctoral research from which one was selected for the next round of competition being held at ITC’23. These students were affiliated with Rennes University, Politecnico di Torino, and Tallinn University of Technology and had been initially selected from a pool of applicants who submitted their applications in January 2023 to participate in the contest.

The success of the 28th ETS could not be achieved without the dedication of many volunteers. A team of 150 individuals serving as steering committee members, program and organizing committee

members, topic chairs, regional contacts, industrial board members (composed of 33 renowned experts from the industry), and student volunteers made such success possible together. ETS’23 thanks the corporate supporters including INFINEON (main supporter), TECHNOPROBE, SIEMENS, SYNOPSYS, ARM, ELMOS, PROTEANTECS, ROGUEVATION, EDA INDUSTRIES, and TERADYNE.

The best paper award of the ETS’22 as well as the distinguished service award of ETS’23, which is given to the individuals who have made long-lasting and distinguished services and contributions to the ETS, were announced in the opening session of this venue. The award committee will select the ETS’23 best paper based on the reviewers’ comments, the quality of the presentation, the follow-up online discussions, the ratings provided by the attendees, and the best student presentation based on the presentation quality and audience feedback after the event. These awards will be given during the opening ceremony of ETS’24.

THE 29TH ETS will be held in Hague, The Netherlands, 27–31 May 2024. ■

Naghmeh Karimi is an associate professor at the University of Maryland Baltimore County, Baltimore, MD 21250 USA. She leads the SECure, RELiable and Trusted Systems (SECRETS) research Lab. She serves as an associate editor of *Springer Journal of Electronic Testing: Theory and Applications (JETTA)* and *IEEE Design&Test*. She has been the corresponding guest editor of *IEEE JOURNAL ON EMERGING AND SELECTED TOPICS IN CIRCUITS AND SYSTEMS (JETCAS)*; Special Issue on Hardware Security in Emerging Technologies in 2021. Her current research interests include hardware security, VLSI testing, design-for-trust, design-for-testability, and design-for-reliability. Karimi has a PhD in computer engineering from the University of Tehran, Tehran, Iran. She is a Senior Member of IEEE.

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