Sharon Shoham
Yakir Vizel (Eds.)

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Preface

It was our privilege to serve as the program chairs for CAV 2022, the 34th International Conference on Computer-Aided Verification. CAV 2022 was held during August 7–10, 2022. CAV-affiliated workshops were held on July 31 to August 1 and August 11 to August 12. This year, CAV was held as part of the Federated Logic Conference (FLoC) and was collocated with many other conferences in software/hardware verification and logic for computer science. Due to the easing of COVID-19 travel restrictions, CAV 2022 and the rest of the FLoC were in-person events.

CAV is an annual conference dedicated to the advancement of the theory and practice of computer-aided formal analysis methods for hardware and software systems. The primary focus of CAV is to extend the frontiers of verification techniques by expanding to new domains such as security, quantum computing, and machine learning. This puts CAV at the cutting edge of formal methods research, and this year's program is a reflection of this commitment.

CAV 2022 received a high number of submissions (209). We accepted nine tool papers, two case studies, and 40 regular papers, which amounts to an acceptance rate of roughly 24%. The accepted papers cover a wide spectrum of topics, from theoretical results to applications of formal methods. These papers apply or extend formal methods to a wide range of domains such as smart contracts, concurrency, machine learning, probabilistic techniques, and industrially deployed systems. The program featured a keynote talk by Ziyad Hanna (Cadence Design Systems and University of Oxford), a plenary talk by Aarti Gupta (Princeton University), and invited talks by Arie Gurfinkel (University of Waterloo) and Neha Rungta (Amazon Web Services). Furthermore, we continued the tradition of Logic Lounge, a series of discussions on computer science topics targeting a general audience. In addition to all talks at CAV, the attendees got access to talks at other conferences held as part of FLoC.

In addition to the main conference, CAV 2022 hosted the following workshops: Formal Methods for ML-Enabled Autonomous Systems (FoMLAS), On the Not So Unusual Effectiveness of Logic, Formal Methods Education Online, Democratizing Software Verification (DSV), Verification of Probabilistic Programs (VeriProP), Program Equivalence and Relational Reasoning (PERR), Parallel and Distributed Automated Reasoning, Numerical Software Verification (NSV-XV), Formal Reasoning in Distributed Algorithms (FRIDA), Formal Methods for Blockchains (FMBC), Synthesis (Synt), and Workshop on Open Problems in Learning and Verification of Neural Networks (WOLVERINE).

Organizing a flagship conference like CAV requires a great deal of effort from the community. The Program Committee (PC) for CAV 2022 consisted of 86 members – a committee of this size ensures that each member has a reasonable number of papers to review in the allotted time. In all, the committee members wrote over 800 reviews while investing significant effort to maintain and ensure the high quality of the conference program. We are grateful to the CAV 2022 PC for their outstanding efforts in evaluating the submissions and making sure that each paper got a fair chance. Like recent years in

CAV, we made the artifact evaluation mandatory for tool paper submissions and optional but encouraged for the rest of the accepted papers. The Artifact Evaluation Committee consisted of 79 reviewers who put in significant effort to evaluate each artifact. The goal of this process was to provide constructive feedback to tool developers and help make the research published in CAV more reproducible. The Artifact Evaluation Committee was generally quite impressed by the quality of the artifacts. Among the accepted regular papers, 77% of the authors submitted an artifact, and 58% of these artifacts passed the evaluation. We are very grateful to the Artifact Evaluation Committee for their hard work and dedication in evaluating the submitted artifacts.

CAV 2022 would not have been possible without the tremendous help we received from several individuals, and we would like to thank everyone who helped make CAV 2022 a success. First, we would like to thank Maria A Schett and Daniel Dietsch for chairing the Artifact Evaluation Committee and Hari Govind V K for putting together the proceedings. We also thank Grigory Fedyukovich for chairing the workshop organization and Shachar Itzhaky for managing publicity. We would like to thank the FLoC organizing committee for organizing the Logic Lounge, Mentoring workshop, and arranging student volunteers. We also thank Hana Chockler for handling sponsorship for all conferences in FLoC. We would also like to thank FLoC chair Alexandra Silva and co-chairs Orna Grumberg and Eran Yahav for the support provided. Last but not least, we would like to thank members of the CAV Steering Committee (Aarti Gupta, Daniel Kroening, Kenneth McMillan, and Orna Grumberg) for helping us with several important aspects of organizing CAV 2022.

We hope that you will find the proceedings of CAV 2022 scientifically interesting and thought-provoking!

June 2022

Sharon Shoham
Yakir Vizel

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