

The FMCAD 2019 Student Forum

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Abstract—The Student Forum at the International Conference on Formal Methods in Computer-Aided Design (FMCAD) provides a platform for (under-)graduate students to introduce their research to the Formal Methods community and solicit feedback. In 2019, the event took place in San Jose, California. Twenty three students were invited to give a short talk and present a poster illustrating their work. The presentations covered a broad range of topics in the fields of verification and synthesis.

I. INTRODUCTION

Introduced in 2013, the Student Forum gives an opportunity for students at any career stage to introduce their research to the audience of the FMCAD conference. In 2019, it follows the tradition of its predecessors, which took place in:

- Portland, Oregon, USA in 2013 [1],
- Lausanne, Switzerland in 2014 [2],
- Austin, Texas, USA in 2015 [3] and 2018 [4],
- Mountain View, CA, USA in 2016 [5], and
- Vienna, Austria in 2017 [6].

Graduate and undergraduate¹ students were invited to submit reports describing their ongoing research in the scope of the FMCAD conference. The subset of the programming committee of FMCAD reviewed and accepted 23 submissions. The reviews evaluated the novelty of the work, its potential impact on the Formal Methods community, the quality, and soundness of the presentation. The presentations covered a wide range of topics, from foundational aspects of automated reasoning to applications of Formal Methods to biology, networking, and cryptocurrency. The following contributions have been accepted²:

- Sahar Badihi: *Pruning Unaffected Code in Equivalence Checking of Program Versions*
- Mahdi Behroozikhah: *Deep-learning approaches to validate formal models of biological systems*
- Martin Blicha: *Opening the Black Box of Interpolation in SMT-Based Model Checking*
- Maryam Dabaghchian: *Towards Liveness Verification of Quasi-Periodic Distributed Systems Using a Timeless Model*
- Rohit Dureja: *Scalable Verification of Designs with Multiple Properties*
- Hadar Frenkel: *Learn Your Program*
- Pamina Georgiou: *Trace Reasoning for Formal Verification using the First-Order Superposition Calculus*
- Andreas Katis: *Formal Techniques and Extensions for Infinite State Reactive Synthesis*

- Daniela Kaufmann: *Influence of the Reduction Order in Multiplier Verification using Computer Algebra*
- Matteo Marescotti: *SMT-based Gas Consumption Computation for Smart Contracts*
- Mudathir Mohamed: *A new relational solver for the Alloy Analyzer*
- Sujit Muduli: *Towards Scalable SoC Security Validation*
- Lauren Pick: *Call-Graph-Guided Verification*
- Aellison Cassimiro Teixeira Dos Santos: *An SMT-based Tool for Automatic Schedule Generation for Time Sensitive Networking*
- Ankit Shukla: *Improving Reasoning on DQBF*
- Saeed Taheri: *Floating Point Debugging via Basic Block Tracing*
- Sahar Taheri: *A Novel Formal Method to Discover Cancer biomarkers*
- Arjun Viswanathan: *Verifying Bit-vector Invertibility Conditions in Coq*
- Daniella Vo: *Boolean Analysis Unveils Universal Rules in the Microbiome Data*
- Andrew Walter: *A Reasoning Engine for the Gamification of Loop-Invariant Discovery*
- Justin Wong: *PrograMet: Designing a Program Similarity Metric*
- Anton Xue: *Towards a Self-Certifying Compiler for WebAssembly*
- Yiji Zhang: *Replacing Equivalence with Equality for Interprocedural Optimizations (in Translation Validation)*

The 2019 Student Forum also featured the Best Contribution Award, announced during the conference and publicized on the FMCAD website³. The Student Forum would not have been possible without the excellent contributions of the student authors. We would also like to express our gratitude to all the reviewers of the FMCAD Student Forum for their help.

REFERENCES

- [1] T. Wahl, “The FMCAD graduate student forum,” in *FMCAD*, pp. 16–17, IEEE, 2013.
- [2] R. Piskac, “The FMCAD 2014 graduate student forum,” in *FMCAD*, p. 13, IEEE, 2014.
- [3] G. Weissenbacher, “The FMCAD 2015 graduate student forum,” in *FMCAD*, p. 8, IEEE, 2015.
- [4] D. Jovanovic and A. Reynolds, “The FMCAD 2018 graduate student forum,” in *FMCAD*, p. 6, IEEE, 2018.
- [5] H. Hojjat, “The FMCAD 2016 graduate student forum,” in *FMCAD*, p. 8, IEEE, 2016.
- [6] K. Heljanko, “The FMCAD 2017 graduate student forum,” in *FMCAD*, p. 10, IEEE, 2017.

¹Allowing undergraduate participants was new in 2019. We received and accepted two such submissions.

²Only the first authors are listed for brevity.

³<https://fmcad.forsyte.at/FMCAD19/student-forum/>.