


The FMCAD 2022 Student Forum

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Abstract—The Student Forum at the International Conference on Formal Methods in Computer-Aided Design (FMCAD) gives undergraduate and graduate students the opportunity to introduce their research to the Formal Methods community and receive feedback. In 2022, the event took place in Trento, Italy. Twenty one students were invited to give a short talk and present a poster of their work.

Since 2013, the FMCAD Student Forum provides a platform for undergraduate and graduate students at any career stage to present their research to the audience of the FMCAD conference. The 2022 edition of the FMCAD Student Forum follows the tradition of its predecessors, which took place in:

- Portland, Oregon, USA in 2013 [1]
- Lausanne, Switzerland in 2014 [2]
- Austin, Texas in 2015 [3] and 2018 [4]
- Mountain View, California, USA in 2016 [5]
- Vienna, Austria in 2017 [6]
- San Jose, California, USA in 2019 [7]
- Virtual in 2020 [8] and 2021 [9]

FMCAD 2022 hosted the tenth edition of the Student Forum. Graduate and undergraduate students were invited to submit two-page reports of their current research and ongoing work in the scope of the FMCAD conference. The Student Forum program committee reviewed 25 submissions out of which 21 were accepted. One submission was withdrawn by the student after acceptance resulting in 20 accepted submissions in total. The reviews were based on the overall quality, novelty of the work, its potential impact on the Formal Methods community, as well as the potential positive impact on the student to have the opportunity to participate in the forum. The accepted submissions covered a wide range of topics relevant to the FMCAD community, from foundational aspects of automated reasoning, to analysis and verification of software, hardware, and neural networks, as well as applications of formal methods to security and biology. The following contributions have been accepted¹:

- Guy Amir: *Verification-Driven Ensemble Selection*
- Levente Bajczi: *Axiomatic Analysis of Distributed Systems*
- Mihály Dobos-Kovács: *Lazy abstraction for time in eager CEGAR*
- Bernhard Gstrein: *Tuning the Learning of Circuit-Based Classifiers*
- Ondřej Huvar: *Symbolic Coloured Model Checking for HCTL*

- Omri Isac: *Proof Production for Neural Network Verification*
- Dominik Klumpp: *Commutativity in Concurrent Program Verification*
- Pankaj Kumar Kalita: *GAMBIT: An Interactive Playground for Concurrent Programs Under Relaxed Memory Models*
- Hanna Lachnitt: *Fine-Grained Reconstruction of cvc5 Proofs in Isabelle/HOL*
- Tobias Paxian: *Trading Accuracy For Smaller Cardinality Constraints*
- Siddharth Priya: *SEAURCHIN: Bounded Model Checking for Rust*
- Sarah Sallinger: *A Formalization of Heisenbugs and Their Causes*
- Tiago Soares: *Formal Verification of Algebraic Effects*
- Dániel Szekeres: *Lazy Abstraction for Probabilistic Systems*
- Csanád Telbisz: *Partial Order Reduction for Abstraction-Based Verification of Concurrent Software*
- Muhammad Usama Sardar: *Understanding Trust Assumptions for Attestation in Confidential Computing*
- Daniella Vo: *Formal Approach to Identifying Genes and Microbes Significant to Inflammatory Bowel Disease*
- Amalee Wilson: *Strategies for Parallel SMT Solving*
- Suwei Yang: *Incremental Weighted Sampling*
- Tom Zelazny: *On Optimizing Back-Substitution Methods for Neural Network Verification*

Unlike previous editions of the FMCAD student forum, which invited a subset of the FMCAD program committee to review student submissions, this year's edition nominated an independent program committee (including some members of the FMCAD PC). The 2022 FMCAD Student Forum program committee consisted of *Mathias Preiner (Chair)*, *Armin Biere*, *Martin Blicha*, *Rayna Dimitrova*, *Rohit Dureja*, *Mathias Fleury*, *Aman Goel*, *Stéphane Graham-Lengrand*, *Antti Hyvärinen*, *Ahmed Irfan*, *Martin Jonáš*, *Daniela Kaufmann*, *Daniel Larraz*, *Makai Mann*, *Alexander Nadel*, *Andres Noetzli*, *Mark Santolucito*, *Nestan Tsiskaridze*, *Tom van Dijk*, and *Florian Zuleger*.

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