

Call for Papers: 20th International Conference on Software Engineering and Formal Methods (SEFM'22)

28-30 September 2022, Berlin, Germany

Overview and Scope

The 20th edition of the International Conference on *Software Engineering and Formal Methods* (SEFM'22) will be held Sept. 28 - 30, 2022, with workshops on Sept. 26 and 27 and a SEFM school Sept. 20-24. The conference aims to bring together researchers and practitioners from academia, industry and government, to advance the state of the art in formal methods, to facilitate their uptake in the software industry, and to encourage their integration within practical software engineering methods and tools.

Depending on the further development of the current pandemic, the conference will be either purely virtual or in-person-only at Humboldt University, Berlin. Authors should be prepared for both types; the decision will be communicated at the end of May 2022.

The topics of interest include, but are not limited to, the following aspects of software engineering and formal methods.

Software Development Methods

- Formal modeling, specification, and design
- Automated software engineering
- Software evolution, maintenance, re-engineering, and reuse

Design Principles

- Programming concepts
- Domain-specific languages
- Type theory
- Abstraction and refinement

Software Testing, Validation, and Verification

- Model checking, theorem proving, and decision procedures
- Testing and runtime verification
- Statistical and probabilistic analysis
- Software synthesis and repair
- Lightweight and scalable formal methods
- Analysis of dependability, performance and other non-functional properties
- Resilience, security, privacy, and trust
- Safety-critical, fault-tolerant, and secure systems
- Software assurance and certification
- Service-oriented and cloud computing systems, Internet of Things
- Component-based and multi-agent systems
- Real-time, hybrid, and cyber-physical systems

- Intelligent systems and machine learning
- HCI, interactive systems, and human error analysis

Applications and Technology Transfer

- Case studies
- Best practices
- Experience reports
- Educational topics

Special topic at SEFM'22:

"Software Engineering and Formal Methods for Intelligent and Learning Systems"

- Formal specification of tasks for ML
- Data management and data preparation
- Autonomous and self-adaptive systems
- Test generation for ML components
- Verification of safety and security for artificial intelligence
- Integration of conventional software and machine learning
- AI for the improvement of formal methods
- Use of AI in software engineering

Paper submission

We solicit three categories of papers:

- **Regular papers** describing original research results, case studies, or surveys. Regular papers should not exceed 15 pages, plus 2 pages of bibliography max.
- **Tool papers** that describe an operational tool and its contributions. Tool papers should be marked as such and should not exceed 6 pages (including bibliography) and should include the URL of the tool, which should contain an executable artifact for evaluation.
- **Industrial papers** that are mainly written by participants from industry and describe the usage of formal methods in industrial applications, case studies, best practices, or experience reports. Industrial paper should be marked as such, and are also limited to 6 pages (including bibliography).

All submissions must be original, unpublished, and not submitted concurrently for publication elsewhere.

Important dates:

- Abstract submission: Monday 20 Jun 2022 (AOE)
- Paper submission: Sunday 26 Jun 2022 (AOE)
- Author notification: Sunday 7 August 2022
- Camera-ready submission: Sunday 28 August 2022

Submission:

- Paper submission is done via EasyChair; submission site is <https://easychair.org/conferences/?conf=sefm22>
- More information can be found on the conference web site: <https://sefm-conference.github.io/2022/>

Papers must be formatted according to the [guidelines for Springer LNCS papers](#).

Publication

All accepted papers will appear in the proceedings of the conference, which will be published as a volume in Springer's Lecture Notes in Computer Science series.

Organization

SEFM'22 is jointly organized by the

- Institute of Computer Science of Humboldt University Berlin, Germany (Prof. Dr. Holger Schlingloff) and the
- School of Electronic and Information Engineering of Beijing Jiaotong University, China (Prof. Dr. Ming Chai)

The following reviewers have agreed to serve on the program committee:

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|--------------------------|------------------------------|
| • Jiri Barnat | • Claudio Menghi |
| • Dirk Beyer | • Peter Ölveczky |
| • Radu Calinescu | • Gordon Pace |
| • M.E. Cambonero | • Corina Pasareanu |
| • Ana Cavalcanti | • Violet Ka I Pun |
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| • Antonio Filieri | • Marjan Sirjani |
| • Mario Gleirscher | • Graeme Smith |
| • Marie-Christine Jakobs | • Silvia Lizeth Tapia Tarifa |
| • Raluca Lefticaru | • Elena Troubitsyna |
| • Antónia Lopes | • Marina Waldén |
| • Tiziana Margaria | • Heike Wehrheim |
| • Paolo Masci | • Gianluigi Zavattaro |