Betreff: [gdr-im] Fwd: [Reliable_computing] NASA Formal Methods 1st CFP
Von: Jean-Michel Muller <jean-michel.muller@ens-lyon.fr>
Datum: 23/09/2020 à 08:17
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The Thirteenth NASA Formal Methods Symposium
https://shemesh.larc.nasa.gov/nfm2021/
24-28 May 2021
Norfolk, VA, USA
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The symposium will be held in an in-person/virtual hybrid format in Norfolk, VA, USA,
possibly transitioning to fully virtual depending on the COVID-19 situation.

Theme of the Symposium:

The widespread use and increasing complexity of mission-critical and safety-critical systems
at NASA and in the aerospace industry require advanced techniques that address these systems'
specification, design, verification, validation, and certification requirements.
The NASA Formal Methods Symposium (NFM) is a forum to foster collaboration between theoreticians
and practitioners from NASA, academia, and industry. NFM's goals are to identify challenges and
to provide solutions for achieving assurance for such critical systems.
New developments and emerging applications like autonomous software for Unmanned Aerial Systems
(UAS),
UAS Traffic Management (UTM), advanced separation assurance algorithms for aircraft, and the need for
system-wide fault detection, diagnosis, and prognostics provide new challenges for system
specification, development, and verification approaches. Similar challenges need to be addressed
during development and deployment of on-board software for both spacecraft and ground systems.
The focus of the symposium will be on formal techniques and other approaches for software assurance,
including their theory, current capabilities and limitations, as well as their potential application
to aerospace, robotics, and other NASA-relevant safety-critical systems during all stages of the
software life-cycle.

The NASA Formal Methods Symposium is an annual event organized by the NASA Formal Methods (NFM)
Research Group, comprised of researchers spanning six NASA centers. NFM2021 is being organized by
the NASA Langley Formal Methods Team.

Topics of Interest:

We encourage submissions on cross-cutting approaches that bring together formal methods and
techniques from other domains such as probabilistic reasoning, machine learning, control theory,
robotics, and quantum computing among others.
Topics of interest include, but are not limited to, the following aspects of formal methods:

- Advances in formal methods:
  - Formal verification, model checking, and static analysis techniques
  - Theorem proving: advances in interactive and automated theorem proving (SAT, SMT, etc.)
  - Program and specification synthesis, code transformation and generation

- Run-time verification
- Techniques and algorithms for scaling formal methods
- Test case generation
- Design for verification and correct-by-design techniques
- Requirements generation, specification, and validation

- Integration of formal methods techniques:
- Use of machine learning techniques in formal methods
- Integration of formal methods into software engineering practices
- Integration of diverse formal methods techniques
- Combination of formal methods with simulation and analysis techniques

- Formal methods in practice
- Experience report of application of formal methods in industry
- Use of formal methods in education
- Verification of machine learning techniques
- Applications of formal methods in the development of:
  - autonomous systems,
  - safety-critical systems,
  - concurrent and distributed systems,
  - cyber-physical, embedded, and hybrid systems
  - fault-detection, diagnostics, and prognostics systems
  - human-machine interaction analysis

Important Dates:

Abstract Submission: 27 November 2020
Paper Submission: 4 December 2020
Paper Notifications: 19 February 2021
Camera-ready Papers: 19 March 2021
Symposium: 24-28 May 2021

Submission Details:

There are two categories of submissions:
1. Regular papers describing fully developed work and complete results (maximum 15 pages);
2. Short papers on tools, experience reports, or work in progress with preliminary results (maximum 6 pages).

The submitted papers should not exceed 15 pages for regular papers and 6 pages for short papers, including tables and figures, but excluding bibliography and clearly marked appendices.
The papers should be self-contained, as appendices will not be included in the published proceedings.
In addition to appendices, authors are encouraged to make available any other supplementary material supporting the claims made in the paper, such as proof scripts or experimental data, as the availability and reproducibility of these artifacts may be considered by reviewers in scoring.
All papers must be in English and describe original work that has not been published or submitted elsewhere.
All submissions will be reviewed by at least three members of the Program Committee in a single-blind reviewing format.

Papers will appear in the Formal Methods subline of Springer's Lecture Notes in Computer Science (LNCS) and must use LNCS
style formatting (https://www.springer.com/gp/computer-science/lncs/conference-proceedings-guidelines).

Papers must be submitted in PDF format at the EasyChair submission site:
https://easychair.org/conferences/?conf=nfm2021

Authors of selected best papers will be invited to submit an extended version to a special issue in Springer's Innovations in Systems and Software Engineering: A NASA Journal (https://www.springer.com/journal/11334).

Organizers:

• Cesar Munoz, NASA, USA (General Co-Chair)
• Ivan Perez, National Institute of Aerospace, USA (General Co-Chair)
• Aaron Dutle, NASA, USA (PC Co-Chair)
• Mariano Moscato, National Institute of Aerospace, USA (PC Co-Chair)
• Laura Titolo, National Institute of Aerospace, USA (PC Co-Chair)

Program Committee:

Erika Abraham, RWTH Aachen University, Germany
Mauricio Ayala-Rincon, Universidade de Brasilia, Brazil
Julia Badger, NASA, USA
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Marielle Stoelinga, University of Twente, The Netherlands
Cesare Tinelli, University of Iowa, USA
Caterina Urban, INRIA, France
Virginie Wiels, ONERA / DTIM, France

Registration:

Registration is required and free of charge.

Contact:

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Web: https://shemesh.larc.nasa.gov/nfm2021/
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