

Model-Based Verification & Validation

From Research to Practice

Workshop in conjunction with the QRS Conference

Goals and Description

Costs entailed by software failures demonstrate that the systematic development of software in a certain quality is still a challenge, even after decades of research. A reason for this can certainly be found within the individual projects. Often, known techniques of quality assurance are not well understood and properly used due to deadline and budget restrictions. However, another reason is also the lack of techniques for quality assurance for specific types of software and software developed according to specific programming and modeling techniques.

Many ad-hoc security specifications, models, and protocols, which were implemented in software components in the past, turned out to be vulnerable to some extent. Formal verification and validation methodologies have the potential to increase user confidence in software artifacts. Therefore, theoretical foundations for security assurance should be investigated to discover new methods that will bring high certainty to the trustworthiness of software entities.

Verification and validation (V&V) methods, especially testing, deliver important analytical techniques for quality assurance. In model-based V&V, the software under consideration is considered by means of a model that focuses on certain aspects, often on the behavior of the software. Models frequently used are finite state machines and flow graphs. Testing techniques based on such models are, for instance, formal verification, control and data flow analysis, test case generation, and model checking.

This workshop aims at giving researchers and practitioners a platform to present their results and experience to a broader audience.

The topics of interest include, but are not limited to:

- Formal methods and theories in model-based V&V
- Simulation by models, forecasts of behavior and properties by models
- Models and modeling notations for programming and V&V
- Tools for model-based V&V
- Model-based security evaluation
- V&V of security specifications, models, and protocols
- Theoretical foundations of security analysis and design
- Formal models for security testing
- Testing with software usage models
- Test case generation based on formal and semi-formal models
- Test coverage metrics and criteria for model-based testing
- Models as test oracles, test validation with models
- Application of model checking in testing
- Model-based V&V of reactive and object-oriented systems
- Model-based verification and validation of tests
- Experience reports and requirements from model-based V&V and model-based development in practice

Desired length of the workshop

A one-day workshop held before the main conference.

Important dates

April 15: submission deadline (**extended**)

May 25: notification date

June 5: camera-ready

Workshop Proceedings, Paper Presentation

Accepted submissions will be published by IEEE Press and available in the IEEE digital library. For this, one of the authors needs to register and present the accepted submission. During the workshop, each paper will have a slot of 30 minutes, with 20-25-minute presentation.

Organizers

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