

Call for Papers

Special Issue

“Testing of Software and Systems”

Software Quality Journal (SQJ)

Following the 31st IFIP International Conference on Testing Software and Systems (IFIP-ICTSS 2019), a Special Issue of Software Quality Journal (<https://link.springer.com/journal/11219>) is planned for extended versions of the conference papers. This SI is also welcomes external submissions.

Scope and topics:

The special issue will address the conceptual, theoretic, and practical problems of testing software systems, including communication protocols, services, distributed platforms, middleware, embedded and cyber-physical systems, and security infrastructures. It will allow researchers, developers, testers, and users to present or review new approaches, concepts, theories, methodologies, tools, and experiences in the field of testing of software and systems.

Topics of interest include, but are not limited to:

- * Aspects of testing: model-based testing, code-based testing, search-based testing, test derivation, test selection, test generation, test coverage, test concretization, test implementation and execution, test result analysis, test oracle, verdict computation, test management, active testing and passive testing, monitoring and runtime verification.
- * Theoretical approaches: formalisms (such as automata, state machines, process algebra, logics, Markov-chains...), testing frameworks, results for: compositionality, refinement, soundness and completeness, addressing complex systems, heterogeneous or hybrid systems.
- * Modelling languages (such as UML, MATLAB, Simulink, Modelica...) and associated tooling for model-based testing: test generation from models, model-based oracles. Scalability, traceability, quantification issues. Automated support of any parts of the testing activities, testing processes, test-driven development, sound metrics and measurements.
- * Quality aspects: Functional, interoperability, unit, integration, performance, load, conformance, non-regression, reliability, robustness, security, safety, privacy testing.

* Cross domains and combination of techniques: using other techniques such as proof, model-checking, symbolic execution, abstract interpretation, static analysis, simulation, model learning, machine learning, expert systems, neural networks, genetic algorithms... to improve quality and reduce effort in testing processes.

* Dedicated approaches to test control systems, AI applications, protocols, middleware, networks, wireless applications, software product lines etc.

* Application areas: Communicating systems such as cyberphysical systems, systems of systems, embedded systems, mobile and web systems, smart grids, cloud computing systems, business information systems, self-adaptative systems (cars, robots, ...), real-time systems, distributed and concurrent systems.

* Case studies: Case studies and industrial applications involving qualified empirical evaluations.

Guest editors:

Christophe Gaston, CEA List, France

Nikolai Kosmatov, CEA List, France

Pascale Le Gall, CentraleSupélec, France

Submission:

The special issue welcomes three kinds of submissions:

- **Industrial papers** describing testing processes, achievements and feedbacks on testing methods for industrial case studies and applications.
- **Full research** papers describing original research contributions with sufficient evidence for the interest of the proposed approach.
- **Surveys and position papers** giving a comprehensive overview of existing techniques or tools and remaining challenges in a particular area in the scope of the SI.

The authors of IFIP-ICTSS 2019 will be invited to submit extended versions of their papers to the SI. External submissions will be also welcome.

Regarding the extended versions of IFIP-ICTSS 2019, to comply with the goals of a journal publication, we ask to revise and substantially extend the original IFIP-ICTSS 2019 papers. Examples of possible extensions include adding additional evidence of practical applications determined through case studies or experiments, an additional empirical validation, systematic comparisons with other approaches, or a sound theoretical foundation. Revised papers should have at least 30% of new material and should explicitly mention in the introduction how they extend the original IFIP-ICTSS 2019 papers.

All papers for the SI should be submitted via the journal submission website at <https://www.editorialmanager.com/sqjo/Default.aspx> indicating the SI “Testing of Software and Systems (2019)” in the menu “Select Article Type”. This is an important step for the paper to be considered for the Special Issue.

Instructions for manuscript preparation (including a Latex style for papers) are available at https://www.springer.com/computer/swe/journal/11219?detailsPage=pltc_i_2530611.

Reviewing details:

All papers will go through a rigorous review procedure according to the journal standards. The co-editors will not be permitted to submit manuscripts for consideration in the special issue.

Important dates:

- January 31, 2020: Deadline for submissions of papers for the SI