Overview:

Testing is one of the most frequently used techniques in practice to assure the quality and the reliability of software systems. It is used both during the development and the operation of such systems. Last years, new technologies appeared for checking not only functional but also non-functional requirements. Application areas include but are not restricted to communicating systems such as protocols, middleware, networks, web services, cloud computing systems, wireless applications, control systems, business information systems, embedded and real-time software, software product lines, etc. Despite the decades of research and practical experience on software testing, the underlying theory, methods and tools, industrial use, and in its systematic combined application with other verification techniques are still very challenging. In order to perform testing and evaluate the quality of testing, a number of techniques and metrics have been proposed. As testing techniques we can mention active and passive testing (monitoring) techniques, and as metrics we can consider fault coverage, complexity, performance, etc. These techniques and metrics allow to perform testing and to estimate the testing quality as well as the quality of different test derivation methods.

Topics of interests include but are not limited to:

- Aspects of testing: test derivation, test selection, test coverage, test implementation and execution, test result analysis, test oracles, test management, monitoring and runtime verification, test frameworks.

- Model-based testing: Formal models and modeling languages such as automata, state machines, process algebra, logics, UML, HOL, Markov-chains, test generation from models, model coverage

- Combination of techniques: Techniques that demonstrate how to combine testing and formal (model-based) verification and analysis to improve quality and reduce effort

- Quality aspects: Functional, interoperability, performance, conformance, security, reliability, robustness, etc.

- Application areas: Communicating systems such as protocols, middleware, networks, web services, cloud computing systems, wireless applications, control systems, business information systems, embedded and real-time software, software product lines, etc.

- Communicating systems such as protocols, middleware, networks, web services, wireless applications, control systems, business information systems, embedded and real-time software, etc.

- Combinations of different testing techniques: In particular combination of techniques for the automated generation of test data
Tools and methods: Automated support of any of the testing activities, rigid testing processes, test-driven development, sound metrics and measurements

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

Guest Editor(s):
- Nina Yevtushenko, Tomsk State University, Russia
- Ana R. Cavalli, MinTelecom/Montimage, France
- Husnu Yenigun, Sabanci University, Turkey

Requirements for Submission:

Original, high quality contributions that are not yet published or that are not currently under review by other journals or peer-reviewed conferences are sought. In addition, high-quality papers from the “ICTSS 2017: International Conference on Testing Software and Systems” will be invited to this special issue, which will need to be significantly updated and extended. Papers invited from ICTSS2017 must have at least 30% new content compared to the original conference version.

All submissions must be in PDF format and conform, at time of submission, to the Springer formatting guidelines.

Authors should prepare their manuscript according to the Guide for Authors available from the online submission page of the Software Quality at http://link.springer.com/journal/11219. Authors should select “SI: Software Testing” when they reach the “Article Type” step in the submission process.

Reviewing details:

Both the papers from ICTSS2017 and the independent papers will be peer reviewed by reviewers and selected based on originality, scientific quality and relevance to this Special Issue. The special issue editors will make final decisions on the acceptance of the papers.

Paper submission deadline: November 15, 2017