Among the verification and validation (V&V) strategies software testing methods are the ones most commonly used in industry. Software testing can be very effective both in revealing failures and assessing functional correctness, however, testing cannot provide evidence of the absence of faults. More rigorous and effective strategies to reason about correctness range from model checking to model-based software testing methods. These V&V methods are typically applied at design time. Therefore, the assessment of system properties occurring during system execution for reassuring these system properties after adaption requires not only traditional V&V methods to be applied at runtime but also the adoption of novel ones to be applied in the various adaption phases. For example, the system may be adapted and reach a state that was unforeseen at design time, thus the system has not been verified for that state. Therefore, the following questions arise:

➢ Which properties can be exclusively verified/tested at design time?
➢ Which properties can be verified/tested at time of system configuration?
➢ Which properties need to be verified/tested at runtime?
➢ Which properties can be verified/tested either at design time, configuration time, or run-time?

The topics relevant to this special issue include, but are not restricted to, the following:

◆ Simulation and continuous experimentation
  □ Simulation environments
  □ Context dependent requirements
  □ Program/model abstractions and analysis
  □ Feedback-loops to handle uncertainties
  □ Explicit boundaries for adaptive behavior
  □ Model evolution

◆ SELF.* and runtime monitoring
  □ Run-time verification
  □ V&V monitors
  □ (Re)configuration
  □ Adaption properties such as stability, robustness, consistency, security or safety
  □ Context monitoring
  □ Context-dependent properties
  □ Automated software evolution

◆ Testing methods for adaptive systems
  □ Test case derivation
  □ Test case selection
  □ Test execution
  □ Test oracles
  □ Model-based testing

◆ Use cases
  □ Fail-safe, fail-silent systems
  □ Fail-operational systems
  □ Safety of intended functionality: ISO 26262, ISO/WD PAS 21448
  □ Adaption mechanisms
  □ Elastic computing
- Machine-learning based adaptive mechanisms
- Models at runtime
- Case studies from domains such as autonomous driving, advanced driver assistance systems, robotics, industrial automation

We seek high quality original submissions that have not been previously published and that are actually not under consideration for publication elsewhere as well as extended versions of selected papers of the IEEE QRS 2018 Workshop on Verification and Validation of Adaptive Software Systems (VVASS 2018).

Important dates:

Submission: October 31, 2018

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