

Seminar

A Survey on Hardware Monitoring Systems for Runtime Verification

The continuously increasing functionality of embedded systems has resulted in an enormous growth of the design complexity. As a result, traditional verification methods such as testing and model checking reach their limits.

In order to address this problem, additional methods are required to monitor embedded systems at runtime. Those techniques are typically summarized under the term Runtime Verification (RV). Generally, RV is a light-weight verification technique to verify the execution behavior of a system against a set of runtime requirements. In this process, the system of interest is to extract events of the system. This trace of events is then analyzed by a runtime monitor, which infers a positive verdict while the trace fulfills all runtime requirements and a negative verdict once a requirement is violated. RV can be used in a pre-deployment stage for deadline analysis and for integration testing of software components.

Example Paper:

A Distributed Hardware Monitoring System for Runtime Verification on Multi-tile MPSoCs

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