

# Validation with Code Introspection of a VirtualPlatform for Sandboxing and Security Analysis

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## Abstract

Validating the safety and security of software computing systems often involves testing code in computing system simulators called virtual platforms. Because security breaches often come from implementation details, the simulators must reach a high level of accuracy. Validating an instruction set simulator is a heavy development task involving large test campaigns. In this paper, we propose a novel technique to automatically generate and evaluate simulator tests. Using C++ polymorphism, we developed a code introspection software library allowing automatic test generation. Using this automated step, we were able to develop a self-testing simulator, providing a superior level of validation with minimal development overhead.

## Keywords:

virtualization, simulation, cybersecurity, validation, software validation, instruction sets, processors, introspection, polymorphism