

Functional Verification of Hardware Designs

http://forge.ispras.ru/projects/cpptesk-toolkit

C++TESK Toolkit

C++TESK is an open-source toolkit based on C++ and aimed to facilitate functional verification of RTL and systemlevel hardware designs. The core of the toolkit is a library of classes and macros defining the means for creating reference models (formal specifications), RTL adapters, random and FSM-based test scenarios, and test coverage metrics. Besides, the toolkit includes the report generator and tools for dynamic test parallelization on computer clusters and networks.

Advantages of C++TESK

- · High level testbench automation
- Applicability on early hardware design stages
- Support of hardware-software systems verification
- Balance between labor costs and verification thoroughness
- Possibility of test parallelization on clusters and networks
- Usage of C++ language
- Integration into Eclipse IDE



Why C++?

- It is widely spread among hardware designers
- It is actively used in the architectural design of microprocessors
- It is supplied with a number of tools (like, GCC) and libraries (STL, Boost)

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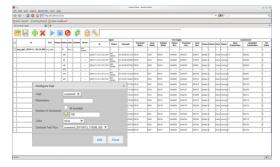
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C++ programs are easily integrated with hardware simulators (via interfaces VPI and DPI)

Testbench Development Stages

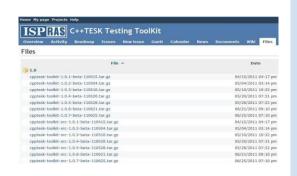
- · Development of reference models
- Automated creation of RTL adapters
- Description of test coverage metrics
- Automated development of test scenarios
- Tests execution with possibility of test parallelization on a computer cluster
- · Report generation and test result analysis

Coverage report: coverage :: Coverage of bank numbers Generated: Tue Oct 18 12:17:42 MSD 2011 Summary Details Requirements Reports Fault reports Report Page cycle=8) A Failure #2: [INCORRECT] (iface=iface_oucycle=11) A Failure #3: Total leaf coverage: 1 / 4 Hits: 1



Testbench Functionality

- · Automated stimulus generation (based on FSM-models or in a random way)
- Automated reaction checking (matching and comparison of design reactions with expected results)
- Automated diagnostics of incorrect behavior (analysis of relations between incorrect reactions)
- Automated estimation of test coverage



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participating in projects of autor
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User Support: cpptesk-support@ispras.ru

Toolkit's Web Page:

Support and Feedback

Mailing List:

http://groups.google.com/group/cpptesk-toolkit-users

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