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SPIN Model Checking and Software Verification

7th International SPIN Workshop
Stanford, CA, USA, August 30 – September 1, 2000
Proceedings

Volume Editors

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Preface

The SPIN workshop is a forum for researchers interested in the subject of automata-based, explicit-state model checking technologies for the analysis and verification of asynchronous concurrent and distributed systems. The SPIN model checker (http://netlib.bell-labs.com/netlib/spin/whatispin.html), developed by Gerard Holzmann, is one of the best known systems of this kind, and has attracted a large user community. This can likely be attributed to its efficient state exploration algorithms. The fact that SPIN's modeling language, Promela, resembles a programming language has probably also contributed to its success.

Traditionally, the SPIN workshops present papers on extensions and uses of SPIN. As an experiment, this year's workshop was broadened to have a slightly wider focus than previous workshops in that papers on software verification were encouraged. Consequently, a small collection of papers describe attempts to analyze and verify programs written in conventional programming languages. Solutions include translations from source code to Promela, as well as specially designed model checkers that accept source code. We believe that this is an interesting research direction for the formal methods community, and that it will result in a new set of challenges and solutions. Of course, abstraction becomes the key solution to deal with very large state spaces. However, we also see potential for integrating model checking with techniques such as static program analysis and testing. Papers on these issues have therefore been included in the proceedings.

The workshop featured 17 refereed papers selected from 31 submissions, three invited talks, and three invited tutorials about commercial testing and formal methods tools, represented by three additional papers. Each refereed paper was reviewed by three reviewers. The three invited talks were as follows. Leslie Lamport (Compaq Systems Research Center) talked about model checking specifications; Bill Roscoe (Oxford University Computing Laboratory) talked about the FDR model checker and the verification of scalable real-life systems; and Peter Gluck (NASA's Jet Propulsion Laboratory) talked about testing of the Deep-Space 1 spacecraft software architecture. The three invited tutorials about commercial tools were as follows. Doron Drusinsky (Time Rover) presented the Temporal Rover tool, which performs temporal logic testing; Philippa Broadfoot and Bill Roscoe (Oxford University Computing Laboratory) presented the FDR model checker (developed by Formal Systems, of which Bill Roscoe was one of the founders); and Jerry Harrow (Compaq) presented the Visual Threads tool, which performs runtime analysis of multi-threaded programs.

The first SPIN workshop was held in October 1995 in Montréal. Subsequent workshops were held in New Brunswick (August 1996), Enschede (April 1997), Paris (November 1998), Trento (July 1999), and Toulouse (September 1999). This year's workshop ran for three days and was therefore the longest workshop to date.

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August 2000

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John Penix
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SPIN 2000 was organized by the Automated Software Engineering Group within the Computational Sciences Division at the NASA Ames Research Center, California, USA.

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Table of Contents

Papers

Tool Tutorials