

Preface

Increasing the designer's confidence that a piece of software or hardware is compliant with its specification has become a key objective in the design process for software and hardware systems. Many approaches to reaching this goal have been developed, including rigorous specification, formal verification, automated validation, and testing. Finite-state model checking, as it is supported by the explicit-state model checker SPIN, is enjoying a constantly increasing popularity in automated property validation of concurrent, message based systems. SPIN has been in large parts implemented and is being maintained by Gerard Holzmann, and is freely available via ftp from `netlib.bell-labs.com` or from URL `http://cm.bell-labs.com/cm/cs/what/spin/Man/README.html`.

The beauty of finite-state model checking lies in the possibility of building "push-button" validation tools. When the state space is finite, the state-space traversal will eventually terminate with a definite verdict on the property that is being validated. Equally helpful is the fact that in case the property is invalidated the model checker will return a counterexample, a feature that greatly facilitates fault identification. On the downside, the time it takes to obtain a verdict may be very long if the state space is large and the type of properties that can be validated is restricted to a logic of rather limited expressiveness. However, looking at the number and type of practical applications it seems that finite-state model checking technology is moving towards becoming engineering practice. This development can largely be attributed to the relative ease of handling and the potential for automation of the validation process which makes this technology accessible to the software designer and even the domain expert.

The SPIN workshop series was initiated by Jean-Charles Grégoire who hosted the first SPIN workshop in October 1995 at INRS Télécommunications in Montréal. Its success led to subsequent SPIN workshops held in New Brunswick (August 1996), Enschede (April 1997) and Paris (November 1998). At a time when the number of formal methods events is increasing, two conferences expressed interest in hosting SPIN workshops in 1999: the Federated Logic Conference (FLoC'99) held in Trento in June/July, and the World Congress on Formal Methods in the Development of Computing Systems (FM'99) held in Toulouse in September. In order to give SPIN-related research an exposure at both events it was decided to organize two SPIN workshops in 1999. However, both events were to focus on different aspects. The *5th International SPIN Workshop on Theoretical Aspects of Model Checking (5thSPIN99)* was held on July 5, 1999 as a satellite workshop of FLoC'99, while the *6th International SPIN Workshop on Practical Aspects of Model Checking (6thSPIN99)* was held as a user group meeting within FM'99 on September 21 and 24, 1999.

5thSPIN99 featured an invited talk by John Rushby, 6 research paper presentations that were selected out of 12 submitted papers, an overview of SPIN release 3.3.0 by Gerard Holzmann, an invited tutorial by Kousha Etessami, and

a panel discussion. 6thSPIN99 offered a keynote address by Dan Craigen, an invited tutorial by Rob Gerth, 12 research paper presentations that were selected out of 25 submitted papers, and two tool demonstrations. Papers presented at both workshops are included in this volume.

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Organization of 5thSPIN99

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