

Fifth International Workshop on Specification and Verification of Component-Based Systems (SAVCBS 2006)



*ACM SIGSOFT/FSE-14
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Portland, Oregon, USA
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SAVCBS 2006 PROCEEDINGS

Specification and Verification of Component- Based Systems

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November 10-11, 2006
Portland, Oregon, USA

Workshop at ACM SIGSOFT/FSE-14
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TABLE OF CONTENTS

ORGANIZING COMMITTEE	vii
PROGRAM COMMITTEE	viii
WORKSHOP INTRODUCTION	ix
PAPERS	1
SESSION 1	
Performance Analysis Based upon Complete Profiles	3
<i>Joan Krone (Denison University),</i>	
<i>Murali Sitaraman (Clemson University), and</i>	
<i>William F. Ogden (Ohio State University)</i>	
Performance Modelling of a JavaEE Component Application using Layered Queuing Networks: Revised Approach and a Case Study	11
<i>Alexander Ufimtsev (University College Dublin) and</i>	
<i>Liam Murphy (University College Dublin)</i>	
SESSION 2	
Soundness and Completeness Warnings in ESC/Java2	19
<i>Joseph Kiniry (University College Dublin),</i>	
<i>Alan E. Morkan (University College Dublin), and</i>	
<i>Barry Denby (University College Dublin)</i>	
Early Detection of JML Specification Errors using ESC/Java2	25
<i>Patrice Chalin (Concordia University)</i>	
SESSION 3	
Experiments in the use of tau-simulations for the components-verification of real-time systems	33
<i>Francoise Bellegarde (LIFC),</i>	
<i>Jacques Julliand (LIFC),</i>	
<i>Hassan Mountassir (LIFC), and</i>	
<i>Emilie Oudot (LIFC)</i>	

JML-based Verification of Liveness Properties on a Class	41
<i>Julien Gros Lambert (LIFC), Jacques Julliand (LIFC), and Olga Kouchnarenko (LIFC)</i>	
SESSION 4	
Using Resemblance to Support Component Reuse and Evolution	49
<i>Andrew McVeigh (Imperial College), Jeff Kramer (Imperial College), and Jeff Magee (Imperial College)</i>	
Simplifying Reasoning about Objects with Tako	57
<i>Gregory Kulczycki (Virginia Tech), and Jyotindra Vasudeo (Virginia Tech)</i>	
CHALLENGE PROBLEM SOLUTIONS	65
VC Generation for Functional Behavior and Non-Interference of Iterators	67
<i>Bart Jacobs (K.U.Leuven), Frank Piessens (K.U.Leuven), and Wolfram Schulte (Microsoft Research)</i>	
Specifying Java Iterators with JML and Esc/Java2	71
<i>David R. Cok (Eastman Kodak Company)</i>	
SAVCBS 2006 Challenge: Specification of Iterators	75
<i>Bruce W. Weide (The Ohio State University)</i>	
Iterator Specification with Typestates	79
<i>Kevin Bierhoff (Carnegie Mellon University)</i>	
Reasoning About Iterators With Separation Logic	83
<i>Neelakantan R. Krishnaswami (Carnegie Mellon University)</i>	
POSTER ABSTRACTS	87
Automatic Data Environment Construction for Static Device Drivers Analysis	89
<i>Hendrik Post (University of Tübingen) Wolfgang Kuchlin (University of Tübingen)</i>	

SAVCBS ORGANIZING COMMITTEE

2006



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Gary T. Leavens is a professor of Computer Science at Iowa State University. His research interests include programming and specification language design and semantics, program verification, and formal methods, with an emphasis on the object-oriented and aspect-oriented paradigms. He received his Ph.D. from MIT in 1989.



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SAVCBS 2006 PROGRAM COMMITTEE



Jonathan Aldrich (School of Computer Science, Carnegie Mellon Univ., USA)

Jonathan Aldrich chaired the program committee for SAVCBS 2006. He is an assistant professor in the School of Computer Science at Carnegie Mellon University. His research interests are in lightweight software verification using programming language and program analysis techniques. He received his Ph.D. in Computer Science from the University of Washington in 2003.

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WORKSHOP INTRODUCTION

This workshop is concerned with how formal (i.e., mathematical) techniques can be or should be used to establish a suitable foundation for the specification and verification of component-based systems. Component-based systems are a growing concern for the software engineering community. Specification and reasoning techniques are urgently needed to permit composition of systems from components. Component-based specification and verification is also vital for scaling advanced verification techniques such as extended static analysis and model checking to the size of real systems. The workshop will consider formalization of both functional and non-functional behavior, such as performance or reliability.

This workshop brings together researchers and practitioners in the areas of component-based software and formal methods to address the open problems in modular specification and verification of systems composed from components. We are interested in bridging the gap between principles and practice. The intent of bringing participants together at the workshop is to help form a community-oriented understanding of the relevant research problems and help steer formal methods research in a direction that will address the problems of component-based systems. For example, researchers in formal methods have only recently begun to study principles of object-oriented software specification and verification, but do not yet have a good handle on how inheritance can be exploited in specification and verification. Other issues are also important in the practice of component-based systems, such as concurrency, mechanization and scalability, performance (time and space), reusability, and understandability. The aim is to brainstorm about these and related topics to understand both the problems involved and how formal techniques may be useful in solving them.

The goals of the workshop are to produce:

1. An outline of collaborative research topics,
2. A list of areas for further exploration,
3. An initial taxonomy of the different dimensions along which research in the area can be categorized. For instance, static/dynamic verification, modular/whole program analysis, partial/complete specification, soundness/completeness of the analysis, are all continuums along which particular techniques can be placed, and
4. A web site that will be maintained after the workshop to act as a central clearinghouse for research in this area.

We enthusiastically thank the authors of submitted papers; their quality contributions and participation are what make a workshop like SAVCBS successful. We thank the program committee for their careful reading and reviewing of the submissions. Our PC members have expertise in a wide variety of sub-disciplines related to specification and verification of component-based systems; they include established research leaders and promising recent Ph.D.s; they come from both industry and academia, and hail from all over the world.

We received 13 submissions, of which 3 were withdrawn, leaving 10 to be reviewed. All papers were reviewed by 3 PC members, with PC member papers were reviewed by 4 PC members and held to a higher-confidence standard. Ultimately 8 papers were accepted, after PC discussions via email. As in previous years, we accepted additional submissions as poster presentations, reflecting the role of SAVCBS to promote discussion and incubation of new ideas for which a full paper may be premature.

This year our program also includes solutions to a specification and verification challenge problem posed to workshop attendees. The problem focused on the specification of iterators in collection libraries such as those in Java or C#. In these systems multiple iterators can be created over a collection, and can access that collection simultaneously as long as it is modified. However, if the collection is modified, all iterators are invalidated (except—for Java—the iterator through which the change was made, if any). While familiar to many programmers, this problem poses real challenges for specification and verification systems such as state aliased between the iterators and the collection. Four-page challenge problem solutions were each read and reviewed by two members of the program committee, to ensure quality and help the authors improve their presentation; we accepted all 5 submissions.

This year we also were pleased to have an invited presentation by Josh Berdine of Microsoft Research titled “Variance Analyses from Invariance Analyses.”

Jonathan Aldrich (Program Committee Chair)

Mike Barnett (Organizing Committee)

Dimitra Giannakopoulou (Organizing Committee)

Gary T. Leavens (Organizing Committee)

Natasha Sharygina (Organizing Committee)