

Software Engineering Colloquium

November 3rd, 2006

Chair for Software Design and Quality (SDQ)
Institute for Program Structures and Data Organization (IPD)
Faculty of Computer Science, University of Karlsruhe, Germany

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Dr. Jiri Adamek:
"Behavior protocols of software components"

Barbora Zimmerova:
"Formal analysis of component-based systems in view of component interaction"

Dr. Chris Ling:
"Device Ecology: Programming and Analyzing a Collection of Smart Devices"

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Dr. Jiri Adamek, Charles University, Prague, Czech Republic

"Behavior protocols of software components"

Abstract

Behavior protocols are a formal component behavior specification language, similar to process algebra. It was originally developed for the SOFA component model, and also ported to the Fractal component model.

The topic of this talk are the verification problems that were formulated for behavior protocols, in particular the vertical compliance checking, the horizontal compliance checking, and the code compliance checking. Also, some advanced topics will be briefly presented (e.g. the method of reentrant component specification), as well as the projects where behavior protocols were used.

Education

Ph.D. in Computer Science (2006), Department of Software Engineering, Faculty of Mathematics and Physics, Charles University, Prague, Czech Republic; Thesis: Behavior Composition in Component Systems Mgr. (MS equivalent) in Computer Science (2001), Department of Software Engineering, Faculty of Mathematics and Physics, Charles University, Prague, Czech Republic; Thesis: Enhancing Behavior Protocols

Current Positions

Research Scientist, Distributed Systems Research Group, Department of Software Engineering, Faculty of Mathematics and Physics, Charles University, Prague, Czech Republic
Research Assistant, Institute of Computer Science, Academy of Sciences of the Czech Republic

Current Research Interests

Behavior compliance of software components
Composition errors in component-based systems
Model checking of software components
Behavior specification in UML 2.0

Automatic analysis of software component source-code Finite-state specification of reentrant software components

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Barbora Zimmerova, University of Brno, Czech Republic

**"Formal analysis of component-based systems
in view of component interaction"**

We sketch a new approach to component interaction specification and verification process which combines the advantages of both architecture description languages (ADLs) at the beginning of the process, and a general formal verification-oriented model connected to verification tools at the end. After examining current general formal models with respect to their suitability for description of component-based systems, we propose a new verification-oriented model, /Component-Interaction automata/, and discuss its features. The model is designed to preserve all the interaction properties to provide a rich base for further verification, and allows the system behaviour to be configurable according to the architecture description (bindings among components) and other specifics (type of communication used in the synchronization of components).

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Dr. Chris Ling, Monash University, Melbourne, Australia

**"Device Ecology: Programming and Analyzing
a Collection of Smart Devices"**

Abstract

Emerging in the 21st century computing is what we perceive as device ecologies, or collections of devices that can exhibit smart behaviour, automate tasks, interact synergistically with one another, with users and Internet resources, and provide aid and value in daily life and work. In this talk, I will described our project which aims to develop a model and language for analyzing and programming device ecologies in a framework. An overview of some student projects whose results contribute to the device ecology project will be provided. I will then draw from the experience some software engineering lessons learned from this project.

Bio

Chris Ling is a lecturer in Faculty of Information Technology, Monash University. In 2000, he attained his PhD and the thesis was on Petri net analysis of real-time systems. His research interests are Petri nets, object-oriented software engineering, enterprise systems, pervasive and ubiquitous computing. He is currently on sabbatical leave from the university.