Call for Papers: 2nd RTAS Workshop on Model-Driven Embedded Systems (MoDES ‘04)

Integrating Models, Architectures, Patterns, Frameworks, and Analysis of Embedded Systems

Tuesday May 25, 2004

Overview

In the past several years, spurred by significant investment and effort by government agencies, industry, and academic research centers, several key areas of research and practice have begun to converge, and this convergence has gained increasing attention and importance in the domain of real-time and embedded systems. Key research areas include Model Driven Architectures, Model Integrated Computing, Distributed Real-Time and Embedded Middleware, Hybrid Control, and Aspect-based Composition of Embedded Systems.

While each of these areas has yielded promising results in its own particular direction, transitioning these results into practice and integrating research in these areas is essential. In particular, this workshop aims to bring together practitioners and researchers in these areas for discussions leading to a broader understanding of how complex large-scale embedded systems, operating in heterogeneous and time-varying environments can be

- modeled
- configured
- composed
- analyzed
- checked
- secured
- certified, and
- controlled

so that crucial system properties can be assured within tractable model-driven programming environments.

This workshop expands the scope of the first MoDES workshop at RTAS 2003 to bring an increased focus on crossing the chasm between research and practice. The goals of this workshop are to (1) review state-of-the-art research leading toward an integrated view of model-driven composition of systems with static and run-time assurances and/or control of real-time, fault-tolerance, security, footprint, and other crucial properties; and (2) capture real world challenges in these areas that hinder transition of recent related research to industrial practice.
Workshop Format

To achieve this expanded scope, the workshop will address three topics in sequence:

1. MoDES challenges in industrial practice,
2. Recent research advances in MoDES, and
3. Crossing the chasm between MoDES research and practice,

where Topic 3 is intended to put the “work” in “workshop” – time will be set aside during the afternoon for a guided discussion to identify relationships and remaining gaps between research results and industrial needs.

Submission Guidelines

Participants should submit an extended abstract of 2-6 pages in length in PDF, Postscript, or MS Word format that

- makes a position statement,
- describes current research problems and/or results, or
- reports practical experience

to the workshop co-chairs at david.sharp@boeing.com, edgill@cse.wustl.edu and wmilam@ford.com by April 16, 2004. Submitted abstracts will be reviewed for acceptance by the program committee. All accepted workshop abstracts will be available at the workshop website prior to the workshop date to give all participants the opportunity to read them before the workshop and to encourage discussion during the workshop. Final workshop results will be posted following the conference, and CDs containing the accepted abstracts will be made available to all registered workshop participants.

Each submission should clearly identify whether it addresses:

- Topic 1: MoDES challenges in industrial practice, or
- Topic 2: Recent research advances in MoDES

Topics of interest for this workshop include, but are not limited to the following:

- Empirical profiling and modeling of system properties
- Standardization efforts such as MDA and QoS-CCM
- Frameworks and tools for composition of multiple QoS properties
- Analysis, modeling and generation tools
- Applications of control theory to adaptive QoS management
- Techniques for representation and analysis of system properties
- Open research issues for model-driven composition of embedded systems
- Application scenarios and use cases for model-driven embedded systems
- Industry experience with modeling, analysis and control
- Architecture description languages and tools
- Model-based checking and certification of embedded systems
- Performance/efficiency of model-driven embedded systems
- Experiences implementing embedded systems with stringent QoS requirements
- Domain-specific requirements
- Integrating components, tools, and techniques from multiple sources
Important Dates

Paper submission                        Friday, April 16, 2004
Acceptance notification                  Monday, April 26, 2004
Final papers due                         Monday, May 10, 2004

Workshop Co-Chairs

David C. Sharp, The Boeing Company, USA
Christopher D. Gill, Washington University, USA
William P. Milam, Ford Motor Company, USA

Program Committee

Kenneth Butts, Toyota Technical Center, USA
David Cousins, BBN Technologies, USA
Lou DiPalma, Raytheon, USA
Lisa DiPippo, University of Rhode Island, USA
Nikil Dutt, University of California, Irvine, USA
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Gautam Thaker, Lockheed Martin, USA
Ben Watson, Lockheed Martin, USA
Lonnie Welch, Ohio University, USA