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Mission
The goal of the Center is to provide an environment for graduate research on the design issues necessary for supporting next-generation embedded software systems. The research focus is on developing model-based and tool-supported design methodologies for real-time fault-tolerant software on heterogeneous distributed platforms.

Demonstrations
HyVisual: Hybrid System Visual Modeler
(Haiyang Zheng, Prof. Edward A. Lee)

HyVisual: a Hybrid System Visual Modeler
Haiyang Zheng, Prof. Edward A. Lee

Is There Life After Zeno?
Aaron D. Ames, Robert D. Gregg

Reachability Analysis for Discrete Time Stochastic Hybrid Systems
Alessandro Abate, Saurabh Amin, Prof. Shankar Sastry

Simulation and Verification
A First Look at Ptalon
Adam Cataldo, Thomas Feng, Prof. Edward A. Lee

Communication & Co-Simulation Infrastructure in Heterogeneous System Integration
Guang Yang, Prof. Alberto Sangiovanni-Vincentelli
Xi Chen, Harry Hsieh (UC Riverside), Felice Balarin (Cadence Berkeley Labs)

Verifying Safety Properties in Assembly Code
Matt Harren, Prof. George Nectula

Ellipsoid Toolbox
Alexander Kurzhanskiy, Prof. Pravin Varaiya

Fault Tree Generation for Distributed Fault Tolerant Systems
Mark L. McKeel Jr., Claudio Pinello, Sri Kanajan, Prof. Alberto Sangiovanni-Vincentelli

Learning Nonlinear Dynamical Models for Human Motion Modeling
Simritra Ganesh, Aaron D. Ames, Prof. Ruzena Bajcsy

Embedded and Autonomous Systems
Codegen
Gang Zhou, Jackie Leung, Prof. Edward A. Lee, Christopher Brooks

The Berkeley AeRobots Project: BEAR
David Shin, et al.

Autonomous Rotorcraft Landing Using Computer Vision
Todd Templeton, Christopher Geyer, I. Mikhail Eklund, David H.C. Shin, Jonathan Sprinkle, Prof. Shankar Sastry

The Embedded Open Control Platform
Jonathan Sprinkle, I. Mikhail Eklund, David H.C. Shin, Christopher Brooks, Prof. Shankar Sastry

Group Pursuit Evasion Games of Unmanned Underwater Vehicles
Jongho Lee, I. Mikhail Eklund, Prof. Shankar Sastry

HyVisual: Hybrid System Visual Modeler

Industrial Applications
Optimal Gear Shift Pattern Scheduling and Smooth Gear Shifting Control for Automatic Transmissions
Takashi Nagata, Huan Hur, Tomoyuki Kaga, Prof. Masayoshi Tomizuka

Time Triggered Scheduling of Architecture Exploration for Automotive Application
Wei Zheng, Prof. Alberto Sangiovanni-Vincentelli

Automotive Engine Hybrid Modeling and Control of Hydrocarbon Emissions
Pannag Sanketi, Carlos Zavala, Prof. Karl Hedrick

Automotive Architecture Exploration in Metropolis
Haibo Zheng, Prof. Alberto Sangiovanni-Vincentelli

Distributed Systems and Sensor Networks
Modeling a Heterogeneous Multiprocessor for Software Defined Radio
Trevor Meyerowitz, Rong Chen, Jens Harnisch, Prof. Alberto Sangiovanni-Vincentelli

Viptos: A Graphical Development and Simulation Environment for TinyOS-based Wireless Sensor Networks
Elaine Cheong, Prof. Edward A. Lee, Yang Zhao, Christopher Brooks

Synthesis Methodology for Concurrent Communicating Processes
Gerald Wang, Prof. Alberto Sangiovanni-Vincentelli

Theoretical Developments
Causality Interfaces and Compositional Causality Analysis
Rachel Zhou, Haiyang Zheng, Prof. Edward A. Lee

An Interface Algebra for Real-Time Components
Slobodan Matic, Prof. Thomas A. Henziger

Behavioral Types for Open Software Systems
Dirk Beyer, Arindam Chakrabarti, Luca de Alfaro, Prof. Thomas A. Henziger, Marcin Jurdzinski, Freddy Mang, and Marielle Stoelinga

Hierarchical Timing Language
Arkadeb Ghosal, Prof. Alberto Sangiovanni-Vincentelli

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