

BEARS 2006 Chess Open House

CENTER FOR
HYBRID & EMBEDDED
SOFTWARE SYSTEMS

<http://chess.eecs.berkeley.edu>

Posters (by topic)

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.

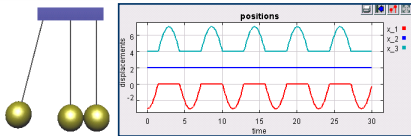
Embedded and Autonomous Systems

- "Codegen" *Gang Zhou, Jackie Leung, [Prof. Edward A. Lee](#), [Christopher Brooks](#)*
- "The Berkeley AeRobots Project: BEAR" *David Shim, et al.*
- "Autonomous Rotorcraft Landing Using Computer Vision", *Todd Templeton, [Christopher Geyer](#), [J. Mikael Eklund](#), [David H.C. Shim](#), [Jonathan Sprinkle](#), [Prof. Shankar Sastry](#)*
- "The Embedded Open Control Platform" *Jonathan Sprinkle, [J. Mikael Eklund](#), [David H.C. Shim](#), [Christopher Brooks](#), [Prof. Shankar Sastry](#)*
- "Group Pursuit Evasion Games of Unmanned Underwater Vehicles" *Jongho Lee, [J. Mikael Eklund](#), [Prof. Shankar Sastry](#)*

Industrial Applications

- "Optimal Gear Shift Pattern Scheduling and Smooth Gear Shifting Control for Automatic Transmissions", *Takashi Nagata, Hwan 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](#)*

Demonstrations



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

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Gabor Karsai, Vanderbilt, ECE
T. John Koo, Vanderbilt, ECE
Bella Bollobas, Univ. of Memphis, Mathematics



Hybrid Systems

- "HyVisual: a Hybrid System Visual Modeler", *[Haiyang Zheng](#), [Prof. Edward A. Lee](#)*
- "Is There Life After Zeno?", *[Aaron D. Ames](#), [Robert D. Gregg](#), [Haiyang Zheng](#), [Prof. Shankar Sastry](#)*
- "Reachability Analysis for Discrete Time Stochastic Hybrid Systems", *[Alessandro Abate](#), [Saurabh Amin](#), [Prof. Shankar Sastry](#)*



Simulation and Verification

- "A First Look at Ptolon", *[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 Necula](#)*
- "Ellipsoidal Toolbox", *[Alexander Kurzhanskiy](#), [Prof. Pravin Varaiya](#)*
- "Fault Tree Generation for Distributed Fault Tolerant Systems", *[Mark L. McKelvin Jr.](#), [Claudio Pinello](#), [Sri Kanajan](#), [Prof. Alberto Sangiovanni-Vincentelli](#)*
- "Learning Nonlinear Dynamical Models for Human Motion Modeling", *[Sumitra Ganesh](#), [Aaron D. Ames](#), [Prof. Ruzena Bajcsy](#)*

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. Henzinger](#)*
- "Behavioral Types for Open Software Systems", *[Dirk Beyer](#), [Arindam Chakrabarti](#), [Luca de Alfaro](#), [Prof. Thomas A. Henzinger](#), [Marcin Jurdzinski](#), [Freddy Mang](#), and [Marielle Stoelinga](#)*
- "Hierarchical Timing Language", *[Arkadeb Ghosal](#), [Prof. Alberto Sangiovanni-Vincentelli](#)*