



Hybrid Systems: Computation and Control (HSCC)

April 12-14, 2016, Vienna, Austria

2016.hscconference.org/

Technical Program (Draft)

Tuesday 12 April

7:45-8:15	Registration
8:15-9:30	Opening and Keynote Speaker Rajeev Alur, University of Pennsylvania, USA
9:30-10:00	Coffee Break
10:00-12:00	Temporal logic applications Chair: Sayan Mitra
10:00-10:30	A Decision Tree Approach to Data Classification using Signal Temporal Logic <i>Giuseppe Bombara, Cristian-Ioan Vasile, Francisco Penedo, Hirotoshi Yasuoka and Calin Belta</i>
10:30-11:00	Temporal Logic as Filtering <i>Alena Rodionova, Ezio Bartocci, Dejan Nickovic and Radu Grosu</i>
11:00-11:30	Directed Specifications and Assumption Mining for Monotone Dynamical Systems <i>Eric S. Kim, Murat Arcak and Sanjit A. Seshia</i>
11:30-12:00	Diagnosis and Repair for Synthesis from Signal Temporal Logic Specifications <i>Shromona Ghosh, Dorsa Sadigh, Pierluigi Nuzzo, Vasumathi Raman, Alexandre Donz�, Alberto Sangiovanni-Vincentelli, Shankar Sastry and Sanjit Seshia</i>
12:00-13:30	Lunch
13:30-15:30	Analysis of switched systems Chair: Maria Prandini
13:30-14:00	Computing the domain of attraction of switching systems subject to non-convex constraints <i>Nikolaos Athanasopoulos and Raphael Jungers</i>
14:00-14:30	Generating unstable trajectories for Switched Systems via Dual Sum-Of-Squares techniques <i>Benoit Legat, Raphael Jungers and Pablo A. Parrilo</i>
14:30-15:00	A Topological Method for Finding Invariant Sets of Switched Systems <i>Laurent Fribourg, Eric Goubault, Sameh Mohamed and Sylvie Putot</i>
15:00-15:30	Hybridization for Stability Analysis of Switched Linear Systems <i>Pavithra Prabhakar and Miriam Garcia Soto</i>
15:30-16:00	Coffee Break
16:00-18:00	Case studies and tool papers Chair: Akshay Rajhans
16:00-16:15	(Case study) Case Studies in Data-Driven Verification of Dynamical Systems <i>Alex Kozarev, John Quindlen, Jonathan How and Ufuk Topcu</i>
16:15-16:30	(Case study) Towards Model Checking of Implantable Cardioverter Defibrillators <i>Houssam Abbas, Kuk Jin Jang, Zhihao Jiang and Rahul Mangharam</i>
16:30-16:40	(Tool paper) SL2SX Translator: From Simulink to SpaceX Verification Tool <i>Stefano Minopoli and Goran Frehse</i>
16:40-16:50	(Tool paper) SCOTS: A Tool for the Synthesis of Symbolic Controllers Matthias Rungger and Majid Zamani
16:50-18:00	Poster and demo presentations (see next page) Chair: Jim Kapinski
18:00 - 20:00	CPS Community Forum

POSTERS:

- A Scalable Method for Finding Flaws in the Design of Technical Systems that Are Modelled by Ordinary Differential Equations
Jan Kuratko and Stefan Ratschan
- DynIBEX: a Differential Constraint Library for Studying Dynamical Systems
Julien Alexandre Dit Sandretto and Alexandre Chapoutot
- CSiSAT: A Satisfiability Solver for SMT Formulae with Continuous Probability Distributions
Yang Gao and Martin Franzle
- Temporal Logic Verification for Delay Differential Equations
Peter Nazier Mosaad and Martin Franzle
- Statistical Verification of the Toyota Powertrain Control Verification Benchmark
Nima Roohi, Yu Wang, Matthew West, Geir Dullerud and Mahesh Viswanathan
- Online Learning of STL Formulae for Signal Classification
Giuseppe Bombara and Calin Belta

DEMOS:

- Montre: A Tool for Monitoring Timed Regular Expressions
Dogan Ulus
- System Testing with S-TaLiRo: Recent Functionality and Additions
Bardh Hoxha, Adel Dokhanchi and Georgios Fainekos
- Hybrid Systems Model Transformations with HyST
Stanley Bak, Sergiy Bogomolov and Taylor T Johnson

Wednesday 13 April

7:45-8:15	Registration
8:15-10:30	Opening and Industrial Keynote Speakers Ken Butts, Toyota, USA; Rada Rodriguez, Schneider Electric, Germany; Joe Salvo, GE Global Research, USA; Sabine Herlitschka, Infineon, Austria
10:30-11:00	Coffee Break
11:00-12:30	Safety and stability analysis Chair: Taylor Johnson
11:00-11:30	Safety Analysis of Automotive Control Systems Using Multi-Modal Port-Hamiltonian Systems <i>Siyuan Dai and Xenofon Koutsoukos</i>
11:30-12:00	Verification and synthesis of timing contracts for embedded controllers <i>Mohammad Al Khatib, Antoine Girard and Thao Dang</i>
12:00-12:30	Formal Analysis of Robustness at Model and Code Level <i>Timothy Wang, Pierre-Loic Garoche, Pierre Roux, Romain Jobredeaux and Eric Feron</i>
12:30-14:00	Lunch
14:00-15:30	Methods for reachability analysis Chair: Thao Dang
14:00-14:30	Symbolic-Numeric Reachability Analysis of Closed-Loop Control Software <i>Aditya Zutshi, Sriram Sankaranarayanan, Jyotirmoy Deshmukh and Xiaoqing Jin</i>
14:30-15:00	SMT-Based Analysis of Virtually Synchronous Distributed Hybrid Systems <i>Kyungmin Bae, Peter Olveczky, Soonho Kong and Sicun Gao</i>
15:00-15:30	Scalable Static Hybridization Methods for Analysis of Nonlinear Systems <i>Stanley Bak, Sergiy Bogomolov, Thomas Henzinger, Taylor T Johnson and Pradyot Prakash</i>
15:30-16:00	Coffee Break
16:00-18:00	Time- and event-based models Chair: Necmiye Ozay
16:00-16:30	Adaptive Decentralized MAC for Event-triggered Networked Control Systems <i>Mikhail Vilgelm, Mohammadhossein Mamduhi, Wolfgang Kellerer and Sandra Hirche</i>
16:30-17:00	Event-separation properties and asymptotic behaviour of hybrid event-based control systems <i>Tobias Noesselt, Matthias Schultalbers and Jan Lunze</i>
17:00-17:30	Semi-autonomous Intersection Collision Avoidance through Job-shop Scheduling <i>Heejin Ahn and Domitilla Del Vecchio</i>
17:30-18:00	Building Power Consumption Models from Executable Timed I/O Automata Specifications <i>Benoit Barbot, Marta Kwiatkowska, Alexandru Mereacre and Nicola Paoletti</i>
19:30-	Banquet, Concert, and Awards

Thursday 14 April

7:45-8:15	Registration
8:15-9:30	Opening and Keynote Speaker Tomaso Poggio, CSAIL, MIT, USA
9:30-10:00	Coffee Break
10:00-12:00	Control synthesis Chair: Majid Zamani
10:00-10:30	Control synthesis for large collections of systems with mode-counting constraints <i>Petter Nilsson and Necmiye Ozay</i>
10:30-11:00	Compositional Synthesis with Parametric Reactive Controllers Rajeev Alur, Salar Moarref and Ufuk Topcu.
11:00-11:30	Nonlinear Controller Synthesis and Automatic Workspace Partitioning for Reactive High-Level Behaviors <i>Jonathan Decastro and Hadas Kress-Gazit</i>
11:30-12:00	Robust Asymptotic Stabilization of Hybrid Systems using Control Lyapunov Functions <i>Ricardo Sanfelice</i>
12:00-13:30	Lunch
13:30-14:30	Invited speaker Sandra Hirche, Optimal Co-Design of Scheduling and Control for Networked Systems Chair: Alessandro Abate
14:30-15:30	Models with uncertainty Chair: Antoine Girard
14:30-15:00	Entropy and minimal data rates for state estimation and model detection <i>Daniel Liberzon and Sayan Mitra</i>
15:00-15:30	Safety Verification of Piecewise-Deterministic Markov Processes <i>Rafael Wisniewski, Christoffer Sloth, Manuela Bujorianu and Nir Piterman</i>
15:30-16:00	Coffee Break
16:00-18:00	Reachability computation Chair: Alex Donze
16:00-16:30	Computing Distances between Reach Flowpipes <i>Rupak Majumdar and Vinayak Prabhu</i>
16:30-17:00	Reachset Conformance Testing of Hybrid Automata <i>Hendrik Roehm, Jens Oehlerking, Matthias Woehrle and Matthias Althoff</i>
17:00-17:30	From Simulation Models to Hybrid Automata Using Urgency and Relaxation <i>Stefano Minopoli and Goran Frehse</i>
17:30-18:00	Parallelotope Bundles for Polynomial Reachability <i>Tommaso Dreossi, Carla Piazza and Thao Dang</i>