

Cyber-Physical Systems Week 2013

HSCC IPSN ICCPS RTAS HiCoNS



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**Philadelphia, PA
USA**

April 9-11, 2013

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Monday, April 8, Morning Workshops

- *[Columbus Ballroom A, 8:30am-12:00pm]* 5th Workshop on AdaPtive and Reconfigurable Embedded Systems (APRES 2013)
- *[USS New Jersey, 8:30am-12:00pm]* 3rd International Workshop on Mobile Sensing: The Future, brought to you by Big Sensor Data
- *[Riverview Room A, 8:30am-12:00pm]* 3rd Workshop on Modeling and Evaluation of Cyber Physical Systems (CyPhy 2013)
- *[Columbus Ballroom C, 8:30am-12:00pm]* 1st Workshop on Cyber-Physical Systems Education (CPS-Ed)
- *[Grand Ballroom A, 8:30am-12:00pm]* Medical Cyber-Physical Systems Workshop (MCPS 2013)
- *[Riverview Room C, 8:30am-12:00pm]* Workshop on Computation and Control (COMCO)
- *[Columbus Ballroom B, 8:30am-12:00pm]* Workshop on Signal Processing Advances in Sensor Networks

Monday, April 8, Afternoon Workshops

- *[Columbus Ballroom A, 1:00pm-6:00pm]* 5th Workshop on AdaPtive and Reconfigurable Embedded Systems (APRES 2013)
- *[Washington B, 1:00pm-6:00pm]* 4th International Workshop on Networks of Cooperating Objects for Smart Cities (CONET/UBICITEC 2013)
- *[USS New Jersey, 1:00pm-3:00pm]* 3rd International Workshop on Mobile Sensing: The Future, brought to you by Big Sensor Data
- *[Riverview Room A, 1:00pm-6:00pm]* 3rd Workshop on Modeling and Evaluation of Cyber Physical Systems (CyPhy 2013)
- *[Riverview Room B, 1:00pm-6:00pm]* 2nd Workshop on Formal Composition of Motion Primitives
- *[Grand Ballroom A, 1:00pm-6:00pm]* Medical Cyber-Physical Systems Workshop (MCPS 2013)
- Numerical Software Verification (NSV) VI
- *[Columbus Ballroom B, 1:00pm-3:00pm]* Workshop on Signal Processing Advances in Sensor Networks

Monday, April 8, Morning Tutorials

- *[Washington B, 8:30am-12:00pm]* Introduction to Control Theory and Its Application to Feedback Computing
- *[Riverview Room B, 8:30am-12:00pm]* Model Checking for Probabilistic Hybrid Systems
- *[Washington A, 8:30am-12:00pm]* Compositional Design of Cyber-Physical Systems: The META Tool Suite
- *[USS Olympia, 8:30am-12:00pm]* Experimenting For Everyone With a Hexacopter: Getting Practical Data for your Research

Monday, April 8, Afternoon Tutorials

- *[Columbus Ballroom B, 3:00pm-7:00pm]* Model-based design of cyber physical systems
- *[Washington A, 1:00-3:00pm]* Atacama: An Open Research Platform for Mixed-Criticality Real-time Switched Ethernet
- *[Washington A, 4:00-6:00pm]* Developing Embedded/Real-Time and Cyber-Physical Systems: Functional Reactive Programming, RTL-based Formal Verification, Response Time Analysis, and Power-Aware Scheduling

Tuesday, April 9, Morning Session

Plenary: Deborah Estrin: Sensemaking for Mobile Health (8:45am-10:00am) (Seaport Auditorium)

HSCC'13: Control I (Session Chair: Paulo Tabuada) (Columbus Ballroom)

[10:35] *Jana Tumova, Gavin C. Hall, Sertac Karaman, Emilio Frazzoli and Daniela Rus*: "Least-violating Control Strategy Synthesis with Safety Rules"

[11:00] *Daniel Liberzon*: "Limited-information control of hybrid systems via reachable set propagation"

[11:25] *Heath Leblanc and Xenofon Koutsoukos*: "Resilient Synchronization in Robust Networked Multi-Agent Systems"

[11:50] **Tool Teaser:** *Sebti Mouelhi, Antoine Girard and Gregor Goessler*: "CoSyMA: A Tool for Controller Synthesis using Multi-scale Abstractions"

[11:58] **Tool Teaser:** *Robert Rogersten, Huan Xu, Necmiye Ozay, Ufuk Topcu and Richard M. Murray*: "An Aircraft Electric Power Testbed for Validating Automatically Synthesized Reactive Control Protocols"

ICCPs'13: Transportation CPS (Session Chair: Kang Shin) (Grand Ballroom B & C)

[10:30] *Reza Azimi, Gaurav Bhatia, Ragunathan Rajkumar, Priyantha Mudalige*: "Reliable Intersection Protocols Using Vehicular Networks"

[11:00] *Eugene Kim, Jinkyu Lee, Kang Shin*: "Real-Time Prediction of Battery Power Requirements for Electric Vehicles"

[11:30] *Mohammad Ashiqur Rahman, Qi Duan, Ehab Al-Shaer*: "Energy Efficient Navigation Management for Hybrid Electric Vehicles on Highways"

IPSN'13: IP: Learning from Sensor Data (Session Chair: Pei Zhang) (Grand Ballroom A)

[10:30] *Matthew Faulkner, Annie Liu, Andreas Krause*: "A Fresh Perspective: Learning to Sparsify for Detection in Massive Noisy Sensor Networks"

[11:00] *Yohan Chon, Yunjong Kim, Hojung Cha*: "Autonomous Place Naming System using Opportunistic Crowdsensing and Knowledge from Crowdsourcing"

[11:30] *Carl Ellis, Mike Hazas, James Scott*: "Matchstick: A Room-to-Room Thermal Model for Predicting Indoor Temperature from Wireless Sensor Data"

RTAS'13: Systems and System Architecture (Session Chair: Steve Goddard) (Grand Ballroom D)

[10:30] *Michael Roitzsch, Stefan Wächtler and Hermann Härtig*: "Atlas: Look-Ahead Scheduling Using Workload Metrics"

[10:55] *Eric Missimer, Ye Li and Richard West*: "Real-Time USB Communication in the Quest Operating System"

[11:20] *Man-Ki Yoon, Sibin Mohan, Jaesik Choi, Jung-Eun Kim and Lui Sha*: "SecureCore: A Multicore based Intrusion Detection Architecture for Realtime Embedded Systems"

[11:45] *Gopinath Karmakar, Ashutosh Kabra and Krithi Ramamritham*: "Coordinated Scheduling of Thermostatically Controlled Real-Time Systems under Peak Power Constraint"

HiCoNS'13: Cyber-Physical Systems Security (Session Chair: TBD) (Washington Room)

[10:30] *Sibin Mohan, Stanley Bak, Emiliano Betti, Heechul Yun, Lui Sha, Marco Caccamo*: "S3A: Secure System Simplex Architecture for Enhanced Security and Robustness of Cyber-Physical Systems"

[11:00] *Alexander Camek, Christian Buckl, Alois Knoll*: "Future Cars: Necessity for an Adaptive and Distributed Multiple Independent Levels of Security Architecture"

[11:30] *Mark Yampolskiy, Peter Horvath, Xenofon D. Koutsoukos, Yuan Xue, Janos Sztipanovits*: "Taxonomy for Description of Cross-Domain Attacks on CPS"

Tuesday, April 9, Afternoon Session I

HSCC'13: Invited Talk (Session Chair: Calin Belta) (Columbus Ballroom)

[1:00-2:00] *Aaron D. Ames*: "Human-Inspired Control of Bipedal Robots via Control Lyapunov Functions and Quadratic Programs"

HSCC'13: Learning (Session Chair: Sriram Sankaranarayanan) (Columbus Ballroom)

[2:00] *Van Luong Le, Fabien Lauer, Laurent Bako and Gérard Bloch*: "Learning Nonlinear Hybrid Systems: from Sparse Optimization to Support Vector Regression"

[2:25] *Xiaoqing Jin, Alexandre Donzé, Jyotirmoy Deshmukh and Sanjit Seshia*: "Mining Requirements from Closed-loop Control Models"

[2:50] **Tool Teaser**: *Zhi Han and Pieter Mosterman*: "Towards Sensitivity Analysis of Hybrid Systems Using Simulink"

[2:58] **Tool Teaser**: *Ricardo Sanfelice, David Copp and Pablo Nãñez*: "A Toolbox for Simulation of Hybrid Systems in Matlab/Simulink"

ICCPs'13: Best Paper Nominee (Session Chair: TBD) (Grand Ballroom B & C)

[1:00] *Junsung Kim, Hyoseung Kim, Karthik Lakshmanan, Ragunathan Rajkumar*: "Parallel Scheduling for Cyber-Physical Systems: Analysis and Case Study on a Self-Driving Car"

[1:30] *Xiaofeng Wang, Naira Hovakimyan, Lui Sha*: "L1Simplex: Fault-Tolerant Control of Cyber-Physical Systems"

[2:00] *Kyoung-Dae Kim*: "Collision Free Autonomous Ground Traffic: A Model Predictive Control Approach"

[2:30] *Mehdi Maasoumy, Qi Zhu, Cheng Li, Forrest Meggers, Alberto Sangiovanni-Vincentelli*: "Co-design of Control Algorithm and Embedded Platform for HVAC Systems"

IPSN'13: SPOTS: Networking and Location (Session Chair: Marco Zuniga) (Grand Ballroom A)

[1:00] *Wenjie Zeng, Anish Arora, Kannan Srinivasan*: "Low-Power Counting via Collaborative Wireless Communications"

[1:30] *Frederik Hermans, Olof Rensfelt, Thiemo Voigt, Edith Ngai, Lars-Ake Norden, Per Gunningberg*: "SoNIC: Classifying Interference in 802.15.4 Sensor Networks"

[2:00] *Raja Jurdak, Philipp Sommer, Brano Kusy, Navinda Kottege, Chris Crossman, Adam Mckeown, David Westcott*: "Camazotz: Multimodal Activity-Based GPS Sampling"

[2:30] *Chenren Xu, Bernhard Firner, Robert S. Moore, Feixiong Zhang, Yanyong Zhang, Richard Howard*: "SCPL: Indoor Device-Free Multi-Subject Counting and Localization Using Radio Signal Strength"

RTAS'13: Work in Progress & Poster Session: 1:15pm-3:00pm

Session Chair: Enrico Bini (Grand Ballroom D)

HiCoNS'13: Invited Keynote Address and Discussion: 1:00pm-2:00pm

Session Chair: TBD (Washington Room)

HiCoNS'13: Work in Progress: 2:00pm-3:00pm

Session Chair: TBD (Washington Room)

Tuesday, April 9, Afternoon Session II

HSCC'13: Stability (Session Chair: Xenofon Koutsoukos) (Columbus Ballroom)

[3:30] Pavithra Prabhakar and Mahesh Viswanathan: "On the Decidability of Stability of Hybrid Systems"

[3:55] Michael Posa, Mark Tobenkin and Russ Tedrake: "Lyapunov Analysis of Rigid Body Systems with Impacts and Friction via Sums-of-Squares"

[4:20] Stefano Di Cairano, Maurice Heemels, Mircea Lazar and Alberto Bemporad: "Hybrid Control Lyapunov Functions for Stabilization of Hybrid Systems"

[4:45] **Tool Teaser:** Eike Moehlmann and Oliver Theel: "Stabhyli -- A Tool for Automatic Stability Verification of Non-Linear Hybrid Systems"

[4:53] **Tool Teaser:** Timothy Bourke and Marc Pouzet: "Zélus: A Synchronous Language with ODEs"

HSCC'13: Stability: CPSWeek Poster and Demo Session: 5:00pm-8:00pm Session Chair: TBD (Columbus Ballroom)

ICCPs'13: Work in Progress: 3:30pm-5:00pm

Session Chair: Nalini Venkatasubramanian (Grand Ballroom B & C)

ICCPs'13: Poster and Demo Session: 5:00pm-8:00pm Session Chair: Omprakash Gnawali (Grand Ballroom B & C)

IPSN'13: One-Minute-Madness (demo & poster pitch talks): 3:30pm-5:00pm Session Chair: TBD (Grand Ballroom A)

IPSN'13: Demo and Poster Session: 5:00pm-8:00pm Session Chair: TBD (Grand Ballroom A)

RTAS'13: Cache Management (Session Chair: Tulio Verdanege) (Grand Ballroom D)

[3:30] Renato Mancuso, Roman Dudko, Emiliano Betti, Marco Cesati, Marco Caccamo and Rodolfo Pellizzoni: "Real-Time Cache Management Framework for Multi-core Architectures"

[3:55] Heechul Yun, Gang Yao, Rodolfo Pellizzoni, Marco Caccamo and Lui Sha: "MemGuard: Memory Bandwidth Reservation System for Efficient Performance Isolation in Multi-core Platforms"

[4:20] Andreas Abel and Jan Reineke: "Measurement-based Modeling of the Cache Replacement Policy"

[4:45] Will Lunniss, Sebastain Altmeyer, Claire Maiza and Robert I. Davis: "Integrating Cache Related Pre-emption Delay Analysis into EDF Scheduling"

HiCoNS'13: Networking, Communication, and Control (Session Chair: TBD) (Washington Room)

[3:30] Danielle C. Tarraf: "Bounding the Smallest Robustly Control Invariant Sets in Networks with Discrete Disturbances and Controls"

[4:00] Bin Hu, Michael D. Lemmon: "Using Channel State Feedback to Achieve Resilience to Deep Fades in Wireless Networked Control Systems"

[4:30] Yasser Shoukry, Jose Araujo, Paulo Tabuada, Mani Srivastava, Karl H. Johansson: "Minimax Control for Cyber-Physical Systems Under Network Packet Scheduling Attacks"

HiCoNS'13: Poster and Demo Session with Reception: 5:00pm-8:00pm (Washington Room)

Wednesday, April 10, Morning Session

Plenary Talk: Vijay Kumar: Aerial Robot Swarms (8:45am-10:00am) (Seaport Auditorium)

HSCC'13: State Estimation (Session Chair: Stefano diCairano) (Columbus Ballroom)

[10:30] *Jerome Thai and Alexandre Bayen*: State estimation for polyhedral hybrid systems and applications to the Godunov scheme"

[10:55] *Dirk van Zwieten, Erjen Lefeber and W.P.M.H. Heemels*: "Observer design for a class of piecewise affine hybrid systems"

[11:20] *Krishnendu Chatterjee, Alexander Kößler and Ulrich Schmid*: "Automated Analysis of Real-Time Scheduling using Graph Games"

[11:45] **Case Study Paper**: *Ganesh Kumar, Aurelie Buffin, Theodore Pavlic, Stephen Pratt and Spring Berman*: "A Stochastic Hybrid System Model of Collective Transport in the Desert Ant *Aphaenogaster cockerelli*"

ICCPs'13: Medical Devices (Session Chair: TBD) (Grand Ballroom B & C)

[10:30] *Mohammad-Mahdi Bidmeshki, Roozbeh Jafari*: "Low Power Programmable Architecture for Periodic Activity Monitoring"

[11:00] *Po-Liang Wu, Woochul Kang, Abdullah Al-Nayeem, Lui Sha, Richard Berlin, Julian Goldman*: "A Low Complexity Coordination Architecture for Networked Supervisory Medical Systems"

[11:30] *Ayan Banerjee, Sandeep Gupta*: "Spatio-Temporal Hybrid Automata for Safe Cyber-Physical Systems: A Medical Case Study"

IPSN'13: Panel: What is the Intellectual Core of Sensor Networks: 10:30am-12:00pm

Panel Moderator: Raj Rajkumar (Grand Ballroom A)

RTAS'13: WCET (Session Chair: Peter Marwedel) (Grand Ballroom D)

[10:30] *Abhijeet Banerjee, Sudipta Chattopadhyay and Abhik Roychoudhury*: "Precise Micro-architectural Modeling for WCET Analysis via AI+SAT"

[10:55] *Bernard Blackham and Gernot Heiser*: "Sequoll: a Framework for Model Checking Binaries"

[11:20] *Enrico Mezzetti and Tullio Vardanega*: "A Rapid Cache-aware Procedure Positioning Optimization to Favor Incremental Development"

[11:45] *Joost Hausmans, Stefan Geuns, Maarten Wiggers and Marco Bekooij*: "Two Parameter Workload Characterization for Improved Dataflow Analysis Accuracy"

HiCoNS'13: Security and Privacy (Session Chair: TBD) (Washington Room)

[10:30] *Jerome Le Ny, George J. Pappas*: "Privacy-Preserving Release of Aggregate Dynamic Models"

[11:00] *Edward S. Canepa, Christian G. Claudel*: "A Framework for Privacy and Security Analysis of Probe-Based Traffic Information Systems"

[11:30] *Aaron Bestick, Lillian J. Ratliff, Posu Yan, Ruzena Bajcsy, S. Shankar Sastry*: "An Inverse Correlated Equilibrium Framework for Utility Learning in Multiplayer, Noncooperative Settings"

Wednesday, April 10, Afternoon Session I

HSCC'13: Reachability (Session Chair: Alessandro Abate) (Columbus Ballroom)

[1:00] *Matthias Althoff*: "Reachability Analysis of Nonlinear Systems using Conservative Polynomialization and Non-Convex Sets"

[1:25] *Insoon Yang, Sabine Becker-Weimann, Mina J. Bissell and Claire J. Tomlin*: "One-Shot Computation of Reachable Sets for Differential Games"

[1:50] *Massimo Benerecetti and Marco Faella*: "Tracking Differentiable Trajectories across Polyhedra Boundaries"

[2:15] *Goran Frehse, Colas Le Guernic and Rajat Kateja*: "Flowpipe Approximation and Clustering in Space-Time"

[2:40] *Quan Zu, Miaomiao Zhang, Jiaqi Zhu and Naijun Zhan*: "Bounded Model-checking of Discrete Duration Calculus"

ICCPs'13: CPS Design (Session Chair: TBD) (Grand Ballroom B & C)

[1:00] *Arquimedes Canedo, Eric Schwarzenbach, Mohammad Abdullah Al Faruque*: "Context-sensitive Synthesis of Executable Functional Models of Cyber-Physical Systems"

[1:30] *Patricia Derler, Edward Lee, Martin Torngren, Stavros Tripakis*: "Cyber-Physical System Design Contracts"

[2:00] *Zhenkai Zhang, Emeka Eyisi, Xenofon Koutsoukos, Joseph Porter, Gabor Karsai, Janos Sztipanovits*: "Co-Simulation Framework for Design of Time-Triggered Cyber Physical Systems"

[2:30] *Damoon Soudbakhsh, Linh Phan, Oleg Sokolsky, Insup Lee, Anuradha Annaswamy*: "Co-design of Control and Platform with Dropped Signals"

IPSN'13: IP: Applications (Session Chair: Jan Beutel) (Grand Ballroom A)

[1:00] *Guojin Liu, Rui Tan, Ruogu Zhou, Guoliang Xing, Wen-Zhan Song, Jonathan M. Lees*: "Volcanic Earthquake Timing using Wireless Sensor Networks"

[1:30] *Ravneet Bajwa, Ram Rajagopal, Erdem Coleri, Pravin Varaiya, Christopher Flores*: "In-Pavement Wireless Weigh-In-Motion"

[2:00] *Vijay Srinivasan, John Stankovic, Kamin Whitehouse*: "FixtureFinder: Discovering the Existence of Electrical and Water Fixtures"

[2:30] *Romain Fontugne, Jorge Ortiz, Nicolas Tremblay, Pierre Borgnat, Patrick Flandrin, Kensuke Fukuda, David Culler, Hiroshi Esaki*: "Strip, Bind, and Search: A Method for Identifying Abnormal Energy Consumption in Buildings"

RTAS'13: Industrial Session: 1:15pm-3:00pm

Session Chair: Rahul Mangharam (Grand Ballroom D)

HiCoNS'13: Panel Discussion: 1:00pm-2:00pm

Session Chair: TBD (Washington Room)

HiCoNS'13: Work in Progress: 2:00pm-3:00pm

Session Chair: TBD (Washington Room)

Wednesday, April 10, Afternoon Session II

HSCC'13: Scheduling (Session Chair: Goran Frehse) (Columbus Ballroom)

[3:30] *Arquimedes Canedo, Livio Dalloro and Hartmut Ludwig*: "Pipelining for Cyclic Control Systems"

[3:55] *Daniele Fontanelli, Luca Greco and Luigi Palopoli*: "Optimal CPU Allocation to a Set of Control Tasks with Soft Real-Time Execution Constraints"

[4:20] *Rajeev Alur, Vojtech Forejt, Salar Moarref and Ashutosh Trivedi*: "Safe Schedulability of Bounded-Rate Multi-Mode Systems"

[4:45] **Case Study Paper**: *Sarah Loos, David Renshaw and André Platzer*: "Formal Verification of Distributed Aircraft Controllers"

HSCC Best Paper Award Recognition Session: 5:00pm-5:10pm Session Chairs: Calin Belta and Franjo Ivančić (Columbus Ballroom)

ICCPs'13: CPS Panel Session: 3:30pm-5:00pm

Title: Cyber-Physical Systems Architectures (Grand Ballroom B & C)

Moderator: John Baras

IPSN'13: SPOTS: Programming and Testing (Session Chair: Kamin Whitehouse) (Grand Ballroom A)

[3:30] *Ruogu Zhou, Guoliang Xing*: "Nemo: A High-fidelity Noninvasive Power Meter System for Wireless Sensor Networks"

[4:00] *Roman Lim, Federico Ferrari, Marco Zimmerling, Christoph Walser, Philipp Sommer, Jan Beutel*: "FlockLab: A Testbed for Distributed, Synchronized Tracing and Profiling of Wireless Embedded Systems"

[4:30] *Alexander Bernauer, Kay Romer*: "A Comprehensive Compiler-Assisted Thread Abstraction for Resource-Constrained Systems"

RTAS'13: Resource Sharing and BSN (Session Chair: Ted Baker) (Grand Ballroom D)

[3:30] *Mikael Åsberg, Thomas Nolte and Moris Behnam*: "Resource Sharing Using the Rollback Mechanism in Hierarchically Scheduled Real-Time Open Systems"

[3:55] *Björn Brandenburg*: "Improved Analysis and Evaluation of Real-Time Semaphore Protocols for PFP Scheduling"

[4:20] *Marcus Völz, Benjamin Engel, Claude-Joachim Hamann and Hermann Härtig*: "On Confidentiality-Preserving Real-Time Locking Protocols"

[4:45] *Xin Qi, Matthew Keally, Gang Zhou, Yantao Li and Zhen Ren*: "AdaSense: Adapting Sampling Rates for Activity Recognition in Body Sensor Networks"

HiCoNS'13: Resilience and Robustness (Session Chair: TBD) (Washington Room)

[3:30] *Heath J. LeBlanc, Xenofon Koutsoukos*: "Algorithms for Determining Network Robustness"

[4:00] *Miroslav Pajic, Nicola Bezzo, James Weimer, Rajeev Alur, Rahul Mangharam, Nathan Michael, George J. Pappas, Oleg Sokolsky, Paulo Tabuada, Stephanie Weirich, Insup Lee*: "Towards Synthesis of Platform-Aware Attack-Resilient Control Systems: Extended Abstract"

[4:30] *Zhijing Qin, Grit Denker, Carolyn Talcott, Nalini Venkatasubramanian*: "Achieving Resilience of Heterogeneous Networks Through Predictive, Formal Analysis"

Thursday, April 11, Morning Session

Plenary Talk: Manfred Broy: Challenges in Modeling Cyber-Physical Questions (8:45am-10:00am) (Seaport Auditorium)

HSCC'13: Verification (Session Chair: Rajeev Alur) (Columbus Ballroom)

[10:30] Akshay Rajhans and Bruce Krogh: "Compositional Heterogeneous Abstraction"

[10:55] Yanni Kouskoulas, David Renshaw, André Platzer and Peter Kazanides: "Certifying the Safe Design of a Virtual Fixture Control Algorithm for a Surgical Robot"

[11:20] Krishnendu Chatterjee and Vinayak Prabhu: "Quantitative Timed Simulation Functions and Refinement Metrics for Real-Time Systems"

[11:45] **Case Study Paper:** Taolue Chen, Marco Diciolla, Marta Kwiatkowska and Alexandru Mereacre: "A Simulink Hybrid Heart Model for Quantitative Verification of Cardiac Pacemakers"

ICCPs'13: Security and Safety (Session Chair: Karl-Erik Årzén) (Grand Ballroom B & C)

[10:30] Zhenghao Zhang, Matthew Trinkle, Aleksandar Dimitrovski, Husheng Li: "Combating Time Synchronization Attack in Smart Grid: A Cross Layer Defense Mechanism"

[11:00] Kyusuk Han, Swapna Divya Potluri, Kang Shin: "On Authentication in a Connected Vehicle: Secure Integration of Mobile Devices with Vehicular Networks"

[11:30] Philip Asare, John Lach, John Stankovic: "FSTPA-I: A Formal Approach to Hazard Identification via System Theoretic Process Analysis"

IPSN'13: SPOTS: Applications (Session Chair: Per Gunningberg) (Grand Ballroom A)

[10:30] Jin Zhang, Yuanpeng Wang, Qian Zhang, Chen Qiu: "A Real-time Auto-Adjustable Smart Pillow System for Sleep Apnea Detection and Treatment"

[11:00] Frank Mokaya, Cynthia Kuo, Quinn Jacobson, Brian Nguyen, Anthony Rowe, Pei Zhang: "MARS: A Muscle Activity Recognition System Enabling Self-configuring Musculoskeletal Sensor Networks"

[11:30] Varick L. Erickson, Stefan Achleitner, Alberto E. Cerpa: "POEM: Power-efficient Occupancy-based Energy Management System"

RTAS'13: Power Management (Session Chair: Daniel Mossé) (Grand Ballroom D)

[10:30] Morteza Damavandpeyma, Sander Stuijk, Twan Basten, Marc Geilen and Henk Corporaal: "Throughput-Constrained DVFS for Scenario-Aware Dataflow Graphs"

[10:55] Buyoung Yun, Kang G. Shin and Shige Wang: "Predicting Thermal Behavior for Temperature Management in Time-Critical Multicore Systems"

[11:20] Felix Bruns, Steffen Brüggemann, Dirk Kuschnerus and Attila Bilgic: "Energy-Driven Proportional Fair Scheduling for Industrial Measurement Devices"

[11:45] Muhammad Ali Awan and Stefan M. Petters: "Energy Aware Partitioning of Tasks onto a Heterogeneous Multi-core Platform"

HiCoNS'13: Verification and Testing (Session Chair: TBD) (Washington Room)

[10:30] Pavithra Prabhakar, Boris Köpf: "Verifying Information Flow Properties of Hybrid Systems"

[11:00] James Weimer, Damiano Varagnolo, Karl Henrik Johansson: "Distributed Model-Invariant Detection of Unknown Inputs in Networked Systems"

[11:30] Richard Skowrya, Andrei Lapets, Azer Bestavros, Assaf Kfoury: "Verifiably-Safe Software-Defined Networks for CPS"

Thursday, April 11, Afternoon Session I

HSCC'13: Stochastic Hybrid Systems (Session Chair: Marta Kwiatkowska) (Columbus Ballroom)

[1:00] *Ilya Tkachev and Alessandro Abate*: "Formula-free finite abstractions for linear temporal verification of Stochastic Hybrid Systems"

[1:25] *Ilya Tkachev, Alexandru Mereacre, Joost-Pieter Katoen and Alessandro Abate*: "Quantitative Automata-based Controller Synthesis for Non-Autonomous Stochastic Hybrid Systems"

[1:50] *Maryam Kamgarpour, Sean Summers and John Lygeros*: "Control Design for Property Specifications on Stochastic Hybrid Systems"

[2:15] *Ernst Moritz Hahn and Holger Hermanns*: "Rewarding Probabilistic Hybrid Automata"

[2:40] *Hongfei Fu*: "Approximating Acceptance Probabilities of CTMC-Paths on Multi-Clock Deterministic Timed Automata"

ICCPs'13: CPS Applications (Session Chair: TBD) (Grand Ballroom B & C)

[1:00] *Shinpei Kato, Jason Aumiller, Scott Brandt*: "Zero-Copy I/O Processing for Low-Latency GPU Computing"

[1:30] *Bo Li, Zhuoxiong Sun, Kirill Mechitov, Gregory Hackmann, Chenyang Lu, Shirley J. Dyke, Gul Agha, Billie F. Spencer Jr.*: "Realistic Case Studies of Wireless Structural Control"

[2:00] *Song Han, Aloysius Mok, Jianyong Meng, Yi-Hung Wei, Pei-Chi Huang, Quan Leng, Xiuming Zhu, Luis Sentis, Kwan Suk Kim, Risto Miikkulainen*: "Architecture of a Cyberphysical Avatar"

[2:30] *Eloi Pereira, Christoph Kirsch, Raja Sengupta, João Borges de Sousa*: "BigActors - A Model for Structure-Aware Computation"

IPSN'13: IP: Location and Coverage (Session Chair: Luca Mottola) (Grand Ballroom A)

[1:00] *Janos Sallai, Peter Volgyesi, Akos Ledeczi, Ken Pence, Ted Bapty, Sandeep Neema, Richard Davis*: "Acoustic Shockwave-Based Bearing Estimation"

[1:30] *Yang Zhao, Neal Patwari, Jeff Phillips, Suresh Venkatasubramanian*: "Radio Tomographic Imaging and Tracking of Stationary and Moving People via Kernel Distance"

[2:00] *Aris Valtazanos, D.K. Arvind, Subramanian Ramamoorthy*: "Using wearable inertial sensors for posture and position tracking in unconstrained environments through learned translation manifolds"

[2:30] *Aveek Purohit, Zheng Sun, Pei Zhang*: "SugarMap: Location-less Coverage for Micro-Aerial Sensing Swarms"

RTAS'13: Timing Analysis (Session Chair: Insik Shin) (Grand Ballroom D)

[1:15] *Linh T.X. Phan and Insup Lee*: "Improving Schedulability of Fixed-Priority Real-Time Systems using Shapers"

[1:40] *Chung-Wei Lin, Marco Di Natale, Haibo Zeng, Linh Thi Xuan Phan and Alberto Sangiovanni-Vincentelli*: "Timing Analysis of Process Graphs with Finite Communication Buffers"

[2:05] *Linh T.X. Phan, Meng Xu, Jaewoo Lee, Insup Lee and Oleg Sokolsky*: "Overhead-Aware Compositional Analysis of Real-Time Systems"

[2:30] *Hany Kashif, Sina Gholamian, Rodolfo Pellizzoni, Hiren D. Patel and Sebastian Fischmeister*: "ORTAP: An Offset-based Response Time Analysis for a Pipelined Communication Resource Mode"

HiCoNS'13: Invited Keynote Address and Discussion: 1:00pm-3:00pm

Session Chair: TBD (Washington Room)

Thursday, April 11, Afternoon Session II

HSCC'13: Control II (Session Chair: Agung Julius) (Columbus Ballroom)

[3:30] *Matthias Rungger, Manuel Mazo and Paulo Tabuada*: "Specification guided controller synthesis for linear systems and safe linear-time temporal logic"

[3:55] *Ebru Aydin Gol and Mircea Lazar*: "Temporal Logic Model Predictive Control for Discrete-Time Systems"

[4:20] *Matthew R. Maly, Morteza Lahijanian, Lydia E. Kavradi, Hadas Kress-Gazit and Moshe Y. Vardi*: "Iterative Temporal Motion Planning for Hybrid Systems in Partially Unknown Environments"

[4:45] **Case Study Paper**: *Koushil Sreenath, Connie Hill and Vijay Kumar*: "A Partially Observable Hybrid System Model for Bipedal Locomotion for Adapting to Terrain Variations"

ICCPs'13: Smart Energy (Session Chair: Rahul Mangharam) (Grand Ballroom B & C)

[3:30] *Tamim I Sookoor, Kamin Whitehouse*: "RoomZoner: Occupancy-based Room-Level Zoning of a Centralized HVAC System"

[4:00] *Ting Zhu, Zhichuan Huang, Ankur Sharma, Jikui Su, David Irwin, Aditya Kr Mishra, Daniel Menasche, Prashant Shenoy*: "Sharing Renewable Energy in Smart Microgrids"

[4:30] *Niranjini Rajagopal, Suman Giri, Anthony Rowe, Mario Berges*: "A Magnetic Field-based Appliance Metering System"

IPSN'13: IP: Networking (Session Chair: Minyoung Kim) (Grand Ballroom A)

[3:30] *Andreas Loukas, Marco Zuniga, Matthias Woehrle, Marco Cattani, Koen Langendoen*: "Think Globally, Act Locally: On the Reshaping of Information Landscapes"

[4:00] *Mo Sha, Gregory Hackmann, Chenyang Lu*: "Energy-Efficient Low Power Listening for Wireless Sensor Networks in Noisy Environments"

[4:30] *Yurong Jiang, Xing Xu, Peter Terlecky, Tarek Abdelzaher, Amotz Bar-Noy, Ramesh Govindan*: "MediaScope: Selective On-Demand Media Retrieval from Mobile Devices"

RTAS'13: Parallel Run-times and code generation (Session Chair: Gabriel Parmer) (Grand Ballroom D)

[3:30] *David Ferry, Jing Li, Mahesh Mahadevan, Chris Gill, Chenyang Lu and Kunal Agrawal*: "A Real-Time Scheduling Service for Parallel Tasks"

[3:55] *Semeen Rehman, Anas Toma, Florian Kriebel, Muhammad Shafique, Jian--Jia Chen and Jörg Henkel*: "Reliable Code Generation and Execution on Unreliable Hardware under Joint Functional and Timing Reliability Considerations"

[4:20] *Malcolm Mollison and James Anderson*: "Bringing Theory Into Practice: A Userspace Library for Multicore Real-Time Scheduling"

[4:45] *Wolfgang Puffitsch, Eric Noulard and Claire Pagetti*: "Mapping a Multi-Rate Synchronous Language to a Many-Core Processor"

HiCoNS'13: Resource Allocation and Quality of Service (Session Chair: TBD) (Washington Room)

[3:30] *Yusuke Aoki, Takafumi Kanazawa, Toshimitsu Ushio*: "Mechanism Design for Robust Resource Management to False Report in Cloud Computing Systems"

[4:00] *Chinwendu Enyioha, Victor Preciado, George Pappas*: "Bio-Inspired Strategy for Control of Viral Spreading in Networks"

[4:30] *Shaohui Wang, Anaheed Ayoub, Radoslav Ivanov, Oleg Sokolsky, Insup Lee*: "Contract-based Blame Assignment by Trace Analysis"