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</table>
» UTSA Main Campus: Location of Student Union

» DoubleTree Hotel to Student Union
Student Union: Floor Maps for Meeting Rooms
GENERAL INFORMATION

List of Meeting Rooms (Ordered Alphabetically)
All meeting rooms for main conferences, and workshops/tutorial/PhD-forum are in adjacent buildings: Student Union (SU; the north side building) and H-E-B Student Union (HSU; the south side building).

Meeting rooms for Keynotes and HSCC/ICCPS/IoTDI/IPSN/RTAS:
» Bexar – HSU 1.102
» Deman – SU 2.01.28
» HEB Ballroom – HSU 1.104/106
» Retama Auditorium – SU 2.02.02
» Travis/Harris – HSU 2.202/212

Meeting rooms for Workshops/Tutorial/PhD Forum:
» Anaqua – SU 2.03.08
» Ash – SU 2.03.06
» Bexar – HSU 1.102
» Buckeye – SU 2.01.32
» Cameron – HSU 2.218
» Deman – SU 2.01.28
» Harris – HSU 2.212
» Hidalgo – HSU 2.214
» Magnolia – SU 2.01.30
» Mesquite – SU 2.01.24
» Montgomery – HSU 2.214A.1
» Nueces – HSU 2.216
» Oak – SU 2.01.20
» Pecan – SU 2.01.26
» Travis – HSU 2.202
» Willow – SU 2.02.12

RWC (Recreation Wellness Center): The F1/10th Race Competition; this is in a separate building, west of Student Union (see map).

Sky Lodge (Paseo area) – SU 1.01.00: Breakfast, Lunch and Reception.

Ximenes Avenue Garage (XAG): self-parking, at the rate of $2.5/hour. Discounted parking tickets at around $10/day/time will be available upon requests at the registration desk.
All Conferences, Workshops, Tutorial and Competition

Conferences (May 10-12, 2023)
» HSCC - 26th ACM International Conference on Hybrid Systems: Computation and Control
» ICCPS - 14th ACM/IEEE International Conference on Cyber-Physical Systems
» IoTDI - 8th ACM/IEEE Conference on Internet of Things Design and Implementation
» IPSN - 22th ACM/IEEE International Conference on Information Processing in Sensor Network
» RTAS - 29th IEEE Real-Time and Embedded Technology and Applications Symposium

Competitions (May 8-9, 2023)
» The 12th F1tenth Autonomous Grand Prix: CPS-IoT Week 2023

Tutorial (May 9, 2023)
» HIL Testing and Simulation Platforms for Digital Twins of Autonomous Road Vehicles

Workshops (May 9, 2023)
» The 11th Workshop on Modeling and Simulation of Cyber-Physical Energy Systems (MSCPES)
» The 10th Int’l Workshop on Applied veRification for Continuous and Hybrid Systems (ARCH)
» The 7th ACM/IEEE Workshop on the Internet of Safe Things (SafeThings)
» The 6th Workshop on Benchmarking Cyber-Physical Systems and Internet of Things (CPS-IoTBench)
» The 5th Workshop on Design Automation for CPS and IoT (DESTION)
» The 3rd Int’l Workshop on Computation-Aware Algorithmic Design for Cyber-Physical Systems (CAADCPs)
» The 3rd Workshop on Data-Drive and Intelligent Cyber-Physical Systems for Smart Cities (DI-CPS)
» The 2nd International workshop on Real-time And intelligent Edge computing (RAGE)
» The 2nd ACM International Workshop on Intelligent Acoustic Systems and Applications (IASA)
» The 1st Workshop on FUTURE PUBLIC SAFETY FOR ALL (FUPUSE4ALL)
» The 1st Workshop on Time-Centric Reactive Software (TCRS)
» Workshop on Bridging Learning and Algorithmic Fairness in the Operation of Urban Infrastructure and Network Systems
» Workshop on Perception for Safety-Critical Cyber-Physical Systems
» Workshop on Humans in Cyber-Physical Systems - Safe Teleoperation through Shared Control
» Workshop on Innovations in Data Analytics for Smart Agriculture (iDASA)
» A Celebration of Professor Jack Stankovic’s Contributions to Cyber-Physical Systems

Ph.D. Forum – IPSN (May 9, 2023)
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<tr>
<th>Time</th>
<th>Tuesday May 9, 2023</th>
<th>Wednesday May 10, 2023</th>
<th>Thursday May 11, 2023</th>
<th>Friday May 12, 2023</th>
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<tr>
<td>8:00 AM to 8:45 AM</td>
<td>Breakfast (Sky Lodge) &amp; Registration (Galleria)</td>
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<tr>
<td>8:45 AM to 9:00 AM</td>
<td>Opening Remarks</td>
<td>Announcements</td>
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<td>9:00 AM to 10:00 AM</td>
<td>Workshops/Tutorial Competitions PhD-Forum (IPSN)</td>
<td>Keynote 1 Prof. Janos Sztipanovits</td>
<td>Keynote 2 Prof. Jahn A. Stankovic</td>
<td>Keynote 3 Prof. Mani Srivastava</td>
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<tr>
<td>10:00 AM to 10:30 AM</td>
<td>Coffee Break</td>
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<td>10:30 AM to 12:00 PM</td>
<td>Workshops/Tutorial Competitions PhD-Forum (IPSN)</td>
<td>Paper Session 1 HSCC/ICCPS/IoTDI/IPSN/RTAS</td>
<td>Paper Session 3 HSCC/ICCPS/IoTDI/IPSN/RTAS</td>
<td>Paper Session 6 HSCC/ICCPS/IoTDI/IPSN/RTAS</td>
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<td>12:00 PM to 1:30 PM</td>
<td>Lunch (Sky Lodge)</td>
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<td>1:30 PM to 3:00 PM</td>
<td>Workshops/Tutorial Competitions PhD-Forum (IPSN)</td>
<td>Paper Session 2 HSCC/ICCPS/IoTDI/IPSN/RTAS</td>
<td>Paper Session 4 HSCC/ICCPS/IoTDI/IPSN/RTAS</td>
<td>Paper Session 7 HSCC/ICCPS/IoTDI/IPSN/RTAS</td>
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<td>3:00 PM to 3:30 PM</td>
<td>Coffee Break</td>
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<tr>
<td>3:30 PM to 5:30 PM</td>
<td>Workshops/Tutorial Competitions PhD-Forum (IPSN)</td>
<td>Poster/Demo Session</td>
<td>Paper Session 5 HSCC/ICCPS/IoTDI/IPSN/RTAS</td>
<td>Paper Session 8 HSCC/ICCPS/IoTDI/IPSN/RTAS</td>
</tr>
<tr>
<td>6:00 PM to 8:00/9:00 PM</td>
<td>Reception @ UTSA Sky Lodge/Paseo area</td>
<td>SIGBED Business Meeting 5:30pm-6:30pm</td>
<td>Banquet Pedrotti’s Ranch</td>
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</table>
Dr. Janos Sztipanovits is currently the E. Bronson Ingram Distinguished Professor of Engineering at Vanderbilt University and John Von Neumann professor of the Budapest University of Technology and Economy. He served as founding director of the Institute for Software Integrated Systems between 1998 and 2022, and currently he is member of the Executive Council. Between 1999 and 2002, he worked as program manager and deputy director of DARPA Information Technology Office. He was member of the US Air Force Science Advisory Board between 2006 and 2010 and the Board on Army RDT&E, Systems Acquisition, and Logistics (BARSL) between 2019 and 2021. He co-authored two books and over 350 papers in model-based design, model-integrated computing, design automation for cyber-physical systems, security and autonomous systems. He is Fellow of the IEEE and external member of the Hungarian Academy of Sciences.

Abstract: Cyber-Physical Systems (CPS) give rise to a heterogeneous but tightly coupled engineering design domain. CPS design requires engineering processes that span multiple design disciplines, complex design flows and extensive tool suites. One of the challenges of model-based design automation of CPS is that design trade-offs across traditionally isolated design domains require the deep integration of models, design flows and tool chains. The first part of the talk covers the evaluation of model-based methods gained along the implementation of an experimental design automation tool suite, OpenMETA developed for DARPA’s Adaptive vehicle Make (AVM) program. Experience with OpenMETA showed fundamental benefits as well as practical limitations of model-based design. Cost of developing component models and reusable component model libraries, the semantic complexity of compositional design of systems using heterogeneous components and scalability concerns of design space exploration represent challenges that slow down progress. Recent advances in data-driven methods that has been inspired by the successes of machine learning and AI applications offer partial answer to these challenges while introducing others. The second part of the talk presents recent results in introducing Learning-Enabled Components (LECs) in CPS design and new methods in design space exploration using surrogate models. Progress in the assurance of CPS designs incorporating LECs and developing surrogate models that merge symbolic and data-driven elements show that the convergence of model- and data-driven design is a promising direction that has the potential of accelerating industrial impact. The talk will conclude with the impact of this convergence on tool suites supporting the design of mission and safety critical systems CPS.
Professor John A. Stankovic is the BP America Professor in the Computer Science Department at the University of Virginia and Director of the (CPS) Link Lab. He is a Fellow of both the IEEE and the ACM. He has been awarded an Honorary Doctorate from the University of York for his work on real-time systems. In 2022, he was elected to the Virginia Academy of Science, Engineering, and Medicine. He won the IEEE Real-Time Systems Technical Committee’s Award for Outstanding Technical Contributions and Leadership. He also received the IEEE Technical Committee on Distributed Processing’s Distinguished Achievement Award (inaugural winner), and the IEEE TC on CPS’s Technical Achievement Award. He has two test-of-time paper awards. Stankovic has an h-index of 122 and over 65,000 citations. Prof. Stankovic received his PhD from Brown University.

Abstract: Ambient Intelligence has been a goal for more than 20 years. Are we getting close? What if we focus ambient intelligence on smart healthcare, are we getting close? What role does CPS play in ambient intelligence? This talk is motivated by these questions. Various challenges, research directions, and research results from my group’s work will be used to (partially) address these themes for smart healthcare. The talk includes discussions of the vision, the role of CPS, cognitive assistants on wearables, solutions supporting mental health, and lessons learned from real deployments. There is also a brief discussion on two key challenges: the need for robust models and dealing with uncertainties due to the environment and human behaviors.
**Abstract:** Computing systems intelligently performing perception-cognition-action (PCA) loops are essential to interfacing our digitized society with the analog world it is embedded in. They employ distributed edge-cloud computing hierarchies and deep learning methods to make sophisticated inferences and decisions from high-dimensional unstructured sensory data in our personal, social, and physical spaces. While the adoption of deep learning has resulted in considerable advances in accuracy and richness, they have also resulted in challenges such as generalizing to novel situations, assuring robustness in the face of uncertainty, engendering trust in opaque modes, reasoning about complex spatiotemporal events, and implementing in ultra resource-constrained edge devices. This talk presents ideas for addressing these challenges with physics-aware neuro-symbolic models, automatic platform-aware architecture search, and sharing of edge resources, and describes our experience in applying them in varied application domains such as mobile health, agricultural robotics, etc.
# DAILY PROGRAM OVERVIEW

## Tuesday | May 9, 2023

<table>
<thead>
<tr>
<th>Room/Time</th>
<th>9:00 AM - 10:00 AM</th>
<th>10:00 AM - 10:30 AM</th>
<th>10:30 AM - 12:00 PM</th>
<th>12:00 PM - 1:30 PM</th>
<th>1:30 PM - 3:00 PM</th>
<th>3:00 PM - 3:30 PM</th>
<th>3:30 PM - 5:30 PM</th>
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<tbody>
<tr>
<td>Paper Session</td>
<td>Coffee Break</td>
<td>Paper Session</td>
<td>Lunch</td>
<td>Paper Session</td>
<td>Coffee Break</td>
<td>Paper Session</td>
<td>Coffee Break</td>
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**Anaqua (SU 2.03.08)**
MSCPES: The 11th Workshop on Modeling and Simulation of Cyber-Physical Energy Systems

**Ash (SU 2.03.06)**
CPS-IoTBench: The 6th Workshop on Benchmarking Cyber-Physical Systems and Internet of Things

**Bexar (HSU 1.102)**
DESTION: The 5th Workshop on Design Automation for CPS and IoT

**Buckeye (SU 2.01.32)**
FUPUSE4ALL: FUTURE PUBLIC SAFETY FOR ALL

**Cameron (HSU 2.218)**
CAADCPS: The 3rd Int’l Workshop on Computation-Aware Algorithmic Design for Cyber-Physical Systems

**Deman (SU 2.01.28)**
A Celebration of Professor Jack Stankovic’s Contributions to Cyber-Physical Systems

**Harris (HSU 2.212)**
SafeThings: 7th ACM/IEEE Workshop on the Internet of Safe Things

**Hidalgo (HSU 2.214)**
Bridging Learning and Algorithmic Fairness in the Operation of Urban Infrastructure and Network Systems

**Magnolia (SU 2.01.30)**
IASA: ACM Int’l Workshop on Intelligent Acoustic Systems and Applications

**Mesquite (SU 2.01.24)**
DI-CPS: The 3rd Workshop on Data-Drive and Intelligent Cyber-Physical Systems for Smart Cities

**Montgomery (HSU 2.214A.1)**
iDASA: Innovations in Data Analytics for Smart Agriculture

**Nueces (SU 2.216)**
PhD Forum – IPSN 2023

**Oak (SU 2.01.20)**
ARCH: The 10th Int’l Workshop on Applied vRification for Continuous and Hybrid Systems

**Pecan (SU 2.01.26)**
Humans in Cyber-Physical Systems – Safe Teleoperation through Shared Control

**Travis (HSU 2.202)**
RAGE: The 2nd Int’l workshop on Real-time And intelliGent Edge computing

**Willow (SU 2.02.12)**
TCRS: Time-Centric Reactive Software

**RWC**
The 12th F1tenth Autonomous Grand Prix: CPS-IoT Week 2023 (Qualification races start on May 8th, 2023)

- **Breakfast** will be served in Sky Lodge area from 8am to 9am
- **Coffee breaks** will be in the hallways (multiple locations) outside of meeting rooms
- **Lunch** will be served in Sky Lodge and Paseo area from 12pm to 1:30pm
- **Reception** will be in Sky Lodge, Paseo and Fountain Courtyard areas, 6pm to 8pm
<table>
<thead>
<tr>
<th>Time/Conference</th>
<th>HSCC</th>
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<th>IoTDI</th>
<th>IPSN</th>
<th>RTAS</th>
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<tr>
<td>8:00 AM to 8:45 AM</td>
<td><strong>Breakfast</strong> (Sky Lodge) &amp; <strong>Registration</strong> (HEB Ballroom Galleria)</td>
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<tr>
<td>8:45 AM to 9:00 AM</td>
<td><strong>Opening Remarks</strong> (HEB Ballroom - HSU 1.104/106)</td>
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</table>
| 9:00 AM to 10:00 AM | **Keynote Talk:** *Convergence Between Model - and Data – driven Design for Cyber-Physical Systems*  
Prof. Janos Sztipanovits, Vanderbilt University, USA  
Session Chair: Dr. Abhishek Dubey  
(HEB Ballroom - HSU 1.104/106) |
| 10:00 AM to 10:30 AM | **Coffee Break** (hallway outside of meeting rooms) |
| 10:30 AM to 12:00 PM |  
**Session 1**  
(Bexar – HSU 1.102)  
**Session 1**  
(HEB Ballroom 1 - HSU 1.104)  
**Session 1**  
(Retama Auditorium – SU 2.0202)  
**Session 1**  
(Travis/Harris – HSU 2.202/212)  
**Session 1**  
(Deman – SU 2.01.28) |
| 12:00 PM to 1:30 PM | **Lunch** (Sky Lodge) – **Diversity Lunch***  
(Room: Mesquite) |
| 1:30 PM to 3:00 PM |  
**Session 2**  
(Bexar – HSU 1.102)  
**Session 2**  
(HEB Ballroom 1 - HSU 1.104)  
**Session 2**  
(Retama Auditorium – SU 2.0202)  
**Session 2**  
(Travis/Harris – HSU 2.202/212)  
**Session 2**  
(Deman – SU 2.01.28) |
| 3:00 PM to 3:30 PM | **Coffee Break**  
(hallway outside of meeting rooms) |
| 3:30 PM to 5:30 PM | **Poster/Demo Session**  
(hallway outside of meeting rooms) |
| 6:00 PM to 7:00 PM | **SIGBED Business Meeting**  
5:30pm-6:30pm @ HEB Ballroom 1 |

*Point of contact: Dr. Mahnoosh Alizadeh, alizadeh@ucsb.edu
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<thead>
<tr>
<th>Time/Conference</th>
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<td>8:45 AM to 9:00 AM</td>
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<td>Announcements (HEB Ballroom - HSU 1.104/106)</td>
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<tr>
<td>9:00 AM to 10:00 AM</td>
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<td>Keynote Talk: Towards Ambient Intelligence for Healthcare: A CPS Perspective Prof. John A. Stankovic, University of Virginia, USA Session Chair: Dr. Aloysius K. Mok (HEB Ballroom - HSU 1.104/106)</td>
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<tr>
<td>10:00 AM to 10:30 AM</td>
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<td>Coffee Break (hallway outside of meeting rooms)</td>
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<tr>
<td>10:30 AM to 12:00 PM</td>
<td>Session 3 (Bexar - HSU 1.102)</td>
<td>Session 3 (HEB Ballroom 1 - HSU 1.104)</td>
<td>Session 3 (Retama Auditorium - SU 2.0202)</td>
<td>Session 3 (Travis/Harris - HSU 2.202/212)</td>
<td>Session 3 (Deman - SU 2.01.28)</td>
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<tr>
<td>12:00 PM to 1:30 PM</td>
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<td>Lunch (Sky Lodge) - Jr. Faculty “Birds of a Feather” Lunch* (Room: Mesquite)</td>
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<td>1:30 PM to 3:00 PM</td>
<td>Session 4 (Bexar - HSU 1.102)</td>
<td>ICCPS Session 4 (HEB Ballroom 1 - HSU 1.104)</td>
<td>Session 4 (Retama Auditorium - SU 2.0202)</td>
<td>Session 4 (Travis/Harris - HSU 2.202/212)</td>
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<tr>
<td>3:30 PM to 5:30 PM</td>
<td>Session 5 (Bexar - HSU 1.102)</td>
<td>Session 5 (HEB Ballroom 1 - HSU 1.104)</td>
<td>Session 5 (Retama Auditorium - SU 2.0202)</td>
<td>Session 5 (Travis/Harris - HSU 2.202/212)</td>
<td>Session 5 (Deman - SU 2.01.28)</td>
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<tr>
<td>6:00 PM to 10:00 PM</td>
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<td>Banquet @ Pedrotti’s Ranch (Group transportation with charter buses; loading starts @5:45pm)</td>
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*Point of contact: Dr. Colleen Josephson, cojoseph@ucsc.edu*
## Friday | May 12, 2023

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<td>Announcements (HEB Ballroom - HSU 1.104/106)</td>
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<tr>
<td>9:00 AM to 10:00 AM</td>
<td><strong>Keynote Talk:</strong> Efficiently Enabling Rich and Trustworthy Inferences at the Extreme Edge Prof. Mani Srivastava, University of California, Los Angeles, USA</td>
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<td>Session Chair: Dr. Xiaofan (Fred) Jiang (HEB Ballroom - HSU 1.104/106)</td>
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<tr>
<td>10:30 AM to 12:00 PM</td>
<td>Session 6 (Bexar – HSU 1.102)</td>
<td>Session 6 (HEB Ballroom 1 – HSU 1.104)</td>
<td>Session 6 (Retama Auditorium – SU 2.0202)</td>
<td>Session 6 (Travis/Harris – HSU 2.202/212)</td>
<td>Session 6 (Deman – SU 2.01.28)</td>
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<tr>
<td>12:00 PM to 1:30 PM</td>
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<td><strong>Lunch</strong> (Sky Lodge)</td>
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<td>1:30 PM to 3:00 PM</td>
<td>Session 7 (Bexar – HSU 1.102)</td>
<td>Session 7 (HEB Ballroom 1 – HSU 1.104)</td>
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<td>Session 7 (Travis/Harris – HSU 2.202/212)</td>
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<tr>
<td>3:30 PM to 5:30 PM</td>
<td>Session 8 (Bexar – HSU 1.102)</td>
<td>Session 8 (HEB Ballroom 1 – HSU 1.104)</td>
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<td>Session 8 (Deman – SU 2.01.28)</td>
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Detailed Programs of Workshops, Tutorial, Competition and IPSN PhD-Forum

11th Workshop on Modeling and Simulation of Cyber-Physical Energy Systems (MSCPES)

9:10am-10:00am
Keynote: Interaction Variables Based Modeling and Simulations of Energy Dynamics. Marija Ilic

10:30am-12:00pm
Session
» SynTiSeD - Synthetic Time Series Data Generator. M. Meiser, B. Duppe, I. Zinnikus
» Tutorial: Everything you always wanted to know about SysMD. Johannes Koch

1:30pm-3:00pm
Session
» Developing a Campus Microgrid Model utilizing Modelica and the OpenIPSL Library. F. Fachini, A. Pigott, G. Laera, T. Bogodorova, L. Vanfretti, K. Baker
» Tutorial: Getting Started with Power System Modeling using Modelica and the OpenIPSL Library. Luigi Vanfretti

3:30pm-5:00pm
Session
» Towards a more comprehensive open-source model for interdisciplinary smart integrated energy systems. B. Wieg, T. Steffen, D. Babazadeh, C. Becker
» Distributed algorithm for simulating dynamic interactions within a general cyber-physical system. M. Ilic, M. Kosanic
» Modelling and Eigenanalysis of Sub-synchronous Oscillations Excited by Large Wind Power Plants. C. van Vledder, J. L. Rueda Torres, A. Stefanov, P. Palensky, O. Anaya-Lara, B. Kruimer, F. Gonzalez-Longatt
» Graph Theoretic Approach for Decentralized Control Architecture of Cyber Physical Smart Grid. H. K. R. M, V. Venkata Gopala Krishnan

The 10th International Workshop on Applied veRification for Continuous and Hybrid Systems (ARCH)

9:00am-10:00am
Session 1: Contributed Papers, Session Chair: Goran Frehse
» Sanaz Sheikhi and Stanley Bak: Closed-Loop ACAS Xu Neural Network Verification (Benchmark Proposal)
» Matthias Althoff: Checking and Establishing Reachset Conformance in CORA 2023

10:30am-12:00pm
Session 2: Results of the ARCH Friendly Competition, Session Chair: Goran Frehse
9:00am-9:15am
Opening Remarks

9:15am-10:15am
Keynote: Talk by Dr. Georgios Fainekos, Session Chair: Z. Berkay Celik

10:30am-12:00pm
Session 1: Critical Infrastructure Security, Session Chair: Z. Berkay Celik
 » Cooperative Verification of PLC Programs Using CoVeriTeam: Towards a reliable and secure Industrial Control Systems. Chibuzo Ukegbu, Hoda Mehrpouyan (Boise State University)
 » Adversarial-HD: Hyperdimensional Computing Adversarial Attack Design for Secure Industrial Internet of Things. Onat Gungor, Tajana Rosing (UC San Diego), Baris Aksanli (San Diego State University)
 » Insecure by Design in the Backbone of Critical Infrastructure. Jos Wetzels and Daniel dos Santos (Forescout); Mohammad Ghafari (TU Clausthal)

1:00pm-2:00pm
Session 2: Critical Infrastructure Security, Session Chair: Robert Kaster
 » Digital Shadows for Automotive Remote Attestation. Robert Kaster (University of Michigan-Dearborn, Robert Bosch), Di Ma (University of Michigan-Dearborn)
 » An Adversarial Attack on DNN-based Adaptive Cruise Control Systems. Yanan Guo (University of Pittsburgh), Christopher DiPalma (UC Irvine), Takami Sato (UC Irvine), Yulong Cao (University of Michigan), Alfred Chen (UC Irvine), Yueqiang Cheng (NIO)
 » Towards Efficient Personalized Driver Behavior Modeling with Machine Unlearning. Qun Song (Delft University of Technology), Rui Tan (Nanyang Technological University), Jianping Wang (City University of Hong Kong)

2:15pm-3:30pm
Session 3: IoT Security and Privacy, Session Chair: Ning Zhang
 » Protocol-agnostic IoT Device Classification on Encrypted Traffic Using Link-Level Flows. Gabriel Morales (The University of Texas at San Antonio), Adam Bieneck-Parrish (The University of Texas at San Antonio), Patrick Jenkins (The University of Texas at San Antonio), Rocky Slavin (University of Texas at San Antonio)
 » MVAM: Multi-variant Attacks on Memory for IoT Trust Computing. Arup Kumar Sarker (University of Virginia), Md. Khairul Islam (University of Virginia), Yuan Tian (University of California Los Angeles), Geoffrey Fox (University of Virginia)
 » HACKWRT: Network Traffic-Based Eavesdropping of Handwriting. Aaron Kinfe (University of Virginia), Chijung Jung (University of Virginia), Kai Lin (University of Virginia), Marshall Clyburn (University of Virginia), Fnu Suya (University of Virginia)
 » Towards Usable Parental Control for Voice Assistants. Peiyi Yang (University of Virginia), Jie Fan (University of Virginia), Zice Wei (University of Virginia), Haoqian Li (University of Virginia), Tu Le (University of Virginia), Yuan Tian (University of California Los Angeles)

3:30pm-4:00pm
Closing remarks and Awards
The 6th Workshop on Benchmarking Cyber-Physical Systems and Internet of Things (CPS-IoTBench)

8:45am-9:00am
Opening Remarks

9:00am-10:00am
**Keynote:** Benchmarking IoT Devices: Enhancing Privacy and Security in a Connected World. Anna Maria Mandalari

10:30am-11:55pm
Technical Session

- Improving Signal-Strength-based Distance Estimation in UWB Transceivers. Leo Botler, Konrad Diwold, Kay Roemer
- Applying NLOS Classification and Error Correction Techniques to UWB Systems: Lessons Learned and Recommendations. Michael Stocker, Markus Gallacher, Carlo Alberto Boano, Kay Roemer
- Benchmarking and Security Considerations of Wi-Fi FTM for Ranging in IoT Devices. Govind Singh, Anshul Pandey, Monika Prakash, Martin Andreoni, Michael Baddeley
- FrankenTrace: Low-Cost, Cycle-Level, Widely Applicable Program Execution Tracing for ARM Cortex-M SoC. Maciej Matraszek, Mateusz Banaszek, Wojciech Ciszewski, Konrad Iwanicki

11:55am-12:00pm
Closing Remarks

The 5th Workshop on Design Automation for CPS and IoT (DESTION)

9:10am-10:00am
**Invited Talk:** Designing for designers. Ankur Mehta

10:30am-12:00pm
Session

- Hamiltorch: A PyTorch-based library for Hamiltonian Monte Carlo. Adam Cobb
- Software Introspection for Signaling Social-Cyber Operations. Huascar Sanchez, Briland Hitaj
- **Invited Talk:** Teaching AI Co-Designers the Right Lessons: An Urban Air Mobility Case Study. Sydney Whittington

1:30pm-3:00pm
Session

- Reusable Network Simulation for CPS Co-Simulations. Himanshu Neema, Harmon Nine and Thomas Roth
- Surrogate Modeling using Physics-guided Learning. Ali Ozdagli, Peter Volgyesi and Xenofon Koutsoukos
- Constrained Bayesian optimization for Automatic Underwater vehicle hull design. Harsh Vardhan, Peter Volgyesi, Will Hedgecock and Janos Sztipanovits

3:30pm-5:10pm
Session

- Middleware for a Heterogeneous CAV Fleet. Matthew Nice, Matthew Bunting, Daniel Work and Jonathan Sprinkle
The 3rd International Workshop on Computation-Aware Algorithmic Design for Cyber-Physical Systems (CAADCPS)

9am-9:15am
Welcome Remarks

9:15am-10:00am
Talk by Samarjit Chakraborty, University of North Carolina at Chapel Hill

10:30am-12:00pm
Session
» Neural Reachability and Risk-Aware Control for Autonomous System Safety, by Bardh Hoxha, Toyota Research Institute of North America
» Compositional verification and synthesis of interconnected control systems, by Majid Zamani, University of Colorado Boulder

1:30pm-3:00pm
Session
» Abstract Representations for Efficient Planning and Decision-Making for Agents with Limited Computational Resources, by Panagiotis Tsiotras, Georgia Institute of Technology
» Data-Driven Reachability and Invariance for Gaussian Process State Space Models, by Paul Griffioen, University of California, Berkeley

3:30pm-5:30pm
Session
» Vehicle Data for CPS Research from Libpanda, by Jonathan Sprinkle, Vanderbilt University
» Timing Analysis (and Synthesis) of Aperiodic Sampled Control Systems, by Manuel Mazo Jr., Delft University of Technology
» High-Performance Representative Micro-architectural Simulation of Complex Applications, by Heiner Litz, University of California Santa Cruz

The 3rd Workshop on Data-Drive and Intelligent Cyber-Physical Systems for Smart Cities (DI-CPS)

10:30am-12:00pm
Session 1: Agent-based Systems
» Opening Remarks DI-CPS chairs (15 minutes)
» Physics-informed Machine Learning Model Generalization in AIoT: Opportunites and Challenges. Wenjie Luo and Rui Tan (20 minutes)
» Dynamic Simplex: Balancing Safety and Performance in Autonomous Cyber Physical Systems. Baiting Luo, Shreyas Ramakrishna, Ava Pettet, Christopher Kuhn, Gabor Karsai and Ayan Mukhopadhyay (20 minutes)
» Intelligent Distributed Charging Control for Large Scale Electric Vehicles: A Multi-Cluster Mean Field Game Approach. Shawon Dey and Hao Xu (20 minutes)

1:30pm-3:00pm
Session 2: Data and Case Study
» Keynote Dr. Miroslav Pajic, (45 minutes)
» Assessing the Impact of Disruptive Events on Urban Mobility: A Case Study of Chicago Taxis during COVID-19. Tianyi Li, Xiatian Logansen and Raphael Stern (20 minutes)
» Visualization of Large-Scale Trajectory Datasets. Gergely Zachar (20 minutes)
3:30pm-5:00pm
Session 3: System Design & Deployment
» Analysis of a Runtime Data Sharing Architecture over LTE for a Heterogeneous CAV Fleet. Alex Richardson, Matthew Nice, Matthew Bunting, Jonathan Lee, Rahul Bhadani, Dan Work and Jonathan Sprinkle (20 minutes)
» Approaches for Synthesis and Deployment of Controller Models on Automated Vehicles for Car-following in Mixed Autonomy. Rahul Bhadani, Matt Bunting, Matthew Nice, Fangyu Wu, Amaury Hayat, Jonathan Lee, Alexandre Bayen, Benedetto Piccoli, Benjamin Seibold, Dan Work, and Jonathan Sprinkle (20 minutes)
» Concluding Remarks. DI-CPS Chairs. (15 minutes)

The 2nd international workshop on Real-time And intelligent Edge computing (RAGE)

9:00am-9:30am
Invited Talk: Ryan Kastner

9:30am-10:00am
Session 1: Security and acceleration over the edge
» Automated Generation, Verification, and Ranking of Secure SoC Access Control Policies. Andres Meza and Ryan Kastner

10:15am-11:00am
Session 2: Edge computing and Wireless
» Resource Optimized Hierarchical Split Federated Learning for Wireless Networks. Latif U. Khan, Mohsen Guizani and Choong Seon Hong

11:00am-11:30am
Invited Talk: Silverline - A practical framework for building reliable distributed systems. Anthony Rowe

11:30am-12:00pm
Invited Talk: Silverline in Action - Flexible and Robust Edge-based Control in Industrial Automation. Arne Hamann

1:30pm-2:00pm
Invited Talk: Shared-Memory-Based Lock-Free Queues: The Key to Fast and Robust Communication on Safety-Critical Edge Devices. Michael Pöhnl

2:00pm-3:00pm
Session 3: Memory contention, I/O, and mixed-criticality
» Investigating and Mitigating Contention on Low-End Multi-Core Microcontrollers. Daniel Oliveira, Weifan Chen, Sandro Pinto and Renato Mancuso
» Many-Core Real-Time Network-on-Chip I/O Systems for Reducing Contention and Enhancing Predictability. Zhe Jiang, Xiaotian Dai, Shuai Zhao, Ran Wei and Ian Gray
» Graceful Degradation with Condition- and Inference-aware for Mixed-Criticality Scheduling in Autonomous Systems. Jie Zou, Xiaotian Dai and John McDermid
» EigenEdge: Real-Time Software Execution at the Edge with RISC-V and Hardware Accelerators. Kuan-Lin Chiu, Guy Eichler, Biruk Seyoum and Luca Carloni
3:30pm-4:00pm

4:00pm-4:30pm
Invited Talk: Can We Control Time? Foundations of Software-Shaped Platforms for Precise Performance Control. Renato Mancuso

4:30pm-5:00pm
Session 4: IoT and Machine Learning
» Implementing and Deploying an ML Pipeline for IoT Intrusion Detection with Node-RED. Yimin Zhang, Barikisu Asulba, Nuno Schumacher, Mario Sousa, Pedro Souto, Luis Almeida, Pedro Santos, Nuno Martins and Joana Sousa
» Waist Tightening of CNNs: A Case study on Tiny YOLOv3 for Distributed IoT Implementations. Isaac Sanchez Leal, Eiraj Saqib, Irida Shallari, Axel Jantsch, Silvia Krug and Mattias O’Nils

FUTURE PUBLIC SAFETY FOR ALL (FUPUSE4ALL)

8:30am-10:00am
Session 1: Topics on CPS, Session Chair: Prof Evangelos Markakis, HMU
» Invited Talk: IEEE MOVE. Grayson Randall
» The Technical Development of an Extended Reality Research Testbed for Public Safety. Scott Ledgerwood, Jack Lewis, Jeffrey Karhoff, Qi Zhu, Matthew Whitlock, Julia Chelen
» Efforts Towards a Digital Twin-based Testbed for Public Safety. Nicole Hatch, Walt Magnussen, Jian Tao

10:30am-12:00pm
Session 2: Topics on CPS, Session Chair: Matthew Borst, IEEE
» Emergency communications leveraging decentralized swarm computing. Michail-Alexandros Kourtis, George Xilouris, Michael Batistatos, Anastasios Kourtis, Albertos Markakis
» Blockchain Strategy for Multi-level Interoperability in Public Safety Scenario. Stefano Loss, Nelio Cacho, Frederico Lopes

Time-Centric Reactive Software (TCRS)

9:00am-10:00am
Session 1: Keynote
» Safety First: Though on the Other Hand, Time is Critical. Jonathan Sprinkle

10:30am-12:00pm
Session 2
» Semantics foundations of PsyC based on Synchronous Logical Execution Time. Fabien Siron, Dumitru Potop, Robert de Simone, Damien Chabrol, Amira Methni
» Polyglot Modal Models through Lingua Franca. Alexander Schulz-Rosengarten, Reinhard von Hanxleden, Marten Lohstroh, Soroush Bateni, Edward A. Lee

1:30pm-3:00pm
Session 3
» Bounding the End-to-End Execution Time in Distributed Real-Time Systems: Arguing the Case for Deterministic Networks in Lingua Franca. Henrik Austad, Geir Mathisen
Bridging Learning and Algorithmic Fairness in the Operation of Urban Infrastructure and Network Systems (AFL)

8:55am-9:00am
Introduction by Organizers Devansh Jalota and Jessica Lazarus

9:00am-10:00am
Session of Invited Talks
- 9:00am-9:30am Combining Learning and Control in Cyber-Physical Systems. Andreas Malikopoulous (University of Delaware)
- 9:30am-10:00am Invited Talk, Siddhartha Banarjee (Cornell University)

10:30am-11:15am
Session of Invited and Contributed Talks
- 10:30am-11am Invited Talk: Using Digital Infrastructure to manage the curbside in real-time. Shushman Choudhury (Lacuna AI)
- 11am-11:15am Contributed Talk: Optimizing Seismic Retrofit of Bridges: Integrating Efficient Graph Neural Network Surrogates and Transportation Equity. Tong Liu (University of Illinois Urbana-Champaign)

11:15am-12:00pm
Panel Discussion

1:30pm-3:00pm
Session of Invited Talks
- 1:30pm-2pm SlrpEV: Smart LeaRning Pilot for Electric Vehicles. Scott Moura (UC Berkeley)
- 2pm-2:30pm Online Learning for Equilibrium Pricing Under Incomplete Information. Navid Azizan (MIT)
- 2:30pm-3pm Machine-Learned Prediction Equilibrium for Dynamic Network Flows. Michael Markl (University of Augsburg)

3:30pm-4:45pm
Session of Invited and Contributed Talks
- 3:30pm-4pm Invited Talk, Maximilian Schiffer (Technical University of Munich)
- 4:00pm-4:30pm Invited Talk: Towards Equitable Design and Operation of Public Transportation Systems. Abhishek Dubey (University of Vanderbilt)
- 4:30pm-4:45pm Contributed Talk: Sensing in Airspace for Sequential O-D Network Routing. Jin Gao, Ankur Mani, Lavanya Marla (University of Illinois Urbana-Champaign).

4:45pm-5:30pm
Concluding Panel: Future Directions Bridging Learning and Fairness in Both Theory and Practice for Urban Infrastructure Systems
Workshop on Perception for Safety-Critical Cyber-Physical Systems

1:30pm-2:50pm
Session: Session Chair: TBD
» Evaluation Metrics of Object Detection for Quantitative System-Level Analysis of Autonomous Systems. Apurva Badithela (California Institute of Technology), Tichakorn Wongpiromsarn (Iowa State University), and Richard M. Murray (California Institute of Technology)
» Early Anomaly Detection for DNN-based Perception-driven Control. Krutitidpta Samal (University of Nebraska-Lincoln), Dung Hoang Tran (University of Nebraska-Lincoln), and Marilyn Wolf (University of Nebraska-Lincoln)
» Adversarial Robustness against Perceptual Attack. Suraj Singireddy (University of Texas at San Antonio), Rickard Ewetz (University of Central Florida), and Sumit Kumar Jha (University of Texas at San Antonio)
» Invisible Textures: Comparing Machine and Human Perception of Environment Texture for Augmented Reality. Tim Scargill (Duke University), Majda Hadziahmetovic (Duke University), and Maria Gorlatova (Duke University)

3:30pm-4:15pm
Invited Keynote 1: Dimitris N. Metaxas (Rutgers University)

4:15pm-5:00pm
Invited Keynote 2: Taylor T. Johnson (Vanderbilt University)

5:00pm-5:30pm
Panel Discussion

Humans in Cyber-Physical Systems – Safe Teleoperation through Shared Control

9:00am-10:00am
Welcome and Introductions
» Invited Speaker Meeko Oishi

10:30am-11:00am
Student Speakers
» Heterogeneous Characterization Modeling via Kernel Embeddings of Distributions. Kendric Ortiz

11:00am-12:00pm
Invited Speaker: Hadas Kress-Gazit

1:30pm-2:00pm
Student Speakers
» Quantifying Performance and Skills of Behaviors Using Task Specifications. Aniruddh Puranic
» Autonomous Vehicle Education Using a Virtual Reality Driving Simulator. Zhijie Quiao

2:00pm-3:00pm
Invited Speaker: Juan Wachs

3:30pm-4:45pm
Student Speakers
» An Empirical Study of Task Explanations in Multi-Agent Settings. Lindsay Sanneman
» Designing adaptive interventions for human-aware autonomous systems. Vidisha Kudalkar
» MEGA-Dagger: Imitation Learning with Multiple Imperfect Experts. Xiatao Sun
» Refining Human-Centered Autonomy Using Side Information. Adam Thorpe
» Specifying Drone Teleoperation Skill for Adaptive Curriculum Generation. Emily Jensen
Innovations in Data Analytics for Smart Agriculture (iDASA)

9:00am-9:10am
Opening Remarks

9:10am-9:30am
Talk: A life-long learning experience in agricultural sciences and engineering topics focusing on rural economic development, Veera Gnaneswar Gude, Purdue University Northwest

9:35am-10:00am
Talk: Nutrient Optimization for Climate Smart, Intelligent Food Supply Chain Dynamics Modeling, Richard Donovan, University of California, Irvine

10:30am-12:00pm
Panel: Innovations in Data Analytics for Smart Agriculture, Session Chair: Krystel Castillo
» Rene Villalobos, Arizona State University
» Tanveer Hossain Bhuiyan, The University of Texas at San Antonio
» Sasha Dong, University of Houston

1:30pm-3:00pm
Panel: The role of government in supporting smart agriculture research, education and training, Session Chair: Krystel Castillo
» Alex Jones, NSF Program Director, CISE CNS
» James Kiniry, Research Agronomist, Grassland Soil and Water Research Laboratory, USDA-ARS, Temple, Texas
» Mathew Pelletier (virtual), Researcher, Cotton Production and Processing Research Laboratory, USDA-ARS, Lubbock, Texas

The 2nd ACM International Workshop on Intelligent Acoustic Systems and Applications (IASA)

9:00am-10:00am
Keynote: Pei Zhang (University of Michigan, Ann Arbor)

10:30am-12:00pm
Session 1: Robust Acoustic Sensing
Presentation: 15min Talk + 5min Q&A
» A Cognitive Scaling Mixer for Concurrent Ultrasound Sensing and Music Playback in Smart Devices. Yin Li (Cornell Tech), Rajalakshmi Nandakumar (Cornell Tech)
» CaNRun: Non-Contact, Acoustic-based Cadence Estimation on Treadmills using Smartphones. Ziyi Xuan (Columbia University), Ming Liu (Columbia University), Jingping Nie (Columbia University), Minghui Zhao (Columbia University), Stephen Xia (Columbia University), Xiaofan Jiang (Columbia University)
A Celebration of Professor Jack Stankovic's Contributions to Cyber-Physical Systems

8:45am-9:00am
Opening Remarks, Wei Zhao (Shenzhen Institute of Advanced Technology)

9:00am-10:00am
Panel, Moderator: Meiyi Ma, (Vanderbilt University)
» Wei Zhao (Shenzhen Institute of Advanced Technology)
» Chenyang Lu (Washington University in St. Louis)
» Radu Stoleru (Texas A&M University)
» Shan Lin (Stony Brook University)
» Sarah Preum (Dartmouth College)

10:30am-12:00pm
Talks, Session Chair: Wei Zhao (Shenzhen Institute of Advanced Technology)
» Feng Zhao (Tsinghua University)
» Don Towsley (University of Massachusetts Amherst)
» Miroslav Pajic (Duke University)
» Guoliang Xing (Chinese University of Hong Kong)

1:30pm-3:00pm
Talks, Session Chair: Radu Stoleru (Texas A&M University)
» Tarek Abdelzaher (University of Illinois Urbana Champaign)
» Jon Goodall (University of Virginia)
» Lu Feng (University of Virginia)
» Gang Zhou (William & Mary)

3:30pm-4:30pm
Talks, Session Chair: Chenyang Lu (Washington University in St. Louis)
» Chris Gill (Washington University in St. Louis)
» Raj Rajkumar (Carnegie Mellon University)
» Insup Lee (University of Pennsylvania)

4:30pm-5:15pm
Jack Stankovic (University of Virginia) Speech

7:30pm-10:00pm
Banquet
9:00am-10:00am
Keynote: Sustainable Intelligent Everyday Objects are the Future by Bashima Islam

Abstract: This talk focuses on a sustainable approach to realize the vision of “Intelligent Everyday Objects.” The goal is to equip everyday objects with sensing, computing, and communication capabilities without sacrificing their form-factor or usability while enhanced user experience. Such devices can be referred to as “Extreme Edge” devices. Batteries often answer the power requirement of these extreme edge devices. However, replacing or recharging batteries is cumbersome and unscalable. To illustrate, even with a battery life of 10 years, 274 million batteries would need to be replaced daily when the number of extreme edge devices reaches one trillion by 2035. Thus, the solution is to explore resource-constrained computation and sustainable energy sources. These constraints, resources and stochastically available energy introduces new challenges, e.g., timeliness, complex computability (executing machine learning algorithm), and applicability. We will start the talk with how I started working on this topic. Next, we will discuss how everyday objects are becoming more than they ever have been, and how we will move to a sustainable future.

Speaker's Bio: Bashima is an Assistant Professor in the Department of Electrical and Computer Engineering and Computer Science at Worcester Polytechnic Institute (WPI). She directs the Bringing Awareness through Systems for Humans Lab (BASH Lab), which focuses on understanding and enhancing the usability, intelligence, and processing capabilities of tiny low-power edge devices to realize their full potential in our daily lives. She aims to develop a new set of intelligent edge computers that provide sustainable and scalable sensing solutions in various application domains ranging from health wearable to precision agriculture. The interdisciplinary nature of her research involves diverse domains, including Machine Learning, Mobile Computing, Embedded Systems, and Ubiquitous Computing. In recognition of her work on time-aware intermittent systems, she was the finalist of the Gaetano Borriello Outstanding Student Award at UbiComp 2020, and was one of the Rising Stars in EECS, 2020. She also received the N2Women Young Researcher Fellowship in 2017. Forbes named her as one of the 30 most influential scientists under the age of 30 in 2021. Bashima received her Ph.D. in Computer Science from the University of North Carolina at Chapel Hill (UNC) in 2021 and has spent a year as a Visiting Postdoctoral Research Associate at the University of Illinois at Urbana Champaign (UIUC).

10:30am-12:00pm
Session 1: AI for Sensor Networks, Panelist: VP Nguyen (remote), Rui Tan, Shiwei Fang

- Intelligence beyond the Edge in IoT. Xiaofan Yu (University of California San Diego)
- Integrating Prior Knowledge and Machine Learning Techniques for Efficient AIoT Sensing. Wenjie Luo (Nanyang Technological University)
- DDoS attack detection in IoT systems using Neural Networks. Arvin Hekmati (University of Southern California)

1:30pm-3:30pm
Session 2: New Design of Sensor Networks, Panelist: Wan Du

- Designing Large-Scale Wireless Urban Environmental Sensor Networks. Alex Cabral (Harvard University)
- Cooperative Problem-Solving with Systems of Constrained Mobile Agents. Jared Coleman (University of Southern California)
- Pushing the limits of high-resolution sensing with single-chip mmWave radar. Akarsh Prabhakara (Carnegie Mellon University)
- Vehicular-based Support to Cooperative Edge Computing based Applications in Next-gen Networks. Angelo Feraudo (University of Bologna)
F1/10TH AUTONOMOUS RACE COMPETITION PROGRAM

May 7th, 2023: Competition Setup
1:00pm-7:00pm
» The organizers will be setting up the track and competition area
» Competitors will not be permitted to test on the track while it’s being built
» Following track setup, competitors are welcome to test and work in the competition area as long as the building remains open

May 8th, 2023: Qualifications
» 7:30am - 8:30am: Team Setup
» 8:30am – 9:00am: Instructions for Training and Qualification
» 9:00am – 12:00pm: Inspection and Training/Track Session
» 12:00pm – 2:00pm: Qualification Session 1 / Lunch
» 2:00pm – 6:00pm: Qualification Session 2

May 9th, 2023: Race Day
» 7:30am - 8:30am: Team Setup
» 8:30am – 9:00am: Instructions for Race Day
» 9:00am – 11:00am: Training/Track Session
» 11:00am – 2:00pm: Race Session 1 / Lunch
» 2:00pm – 5:30pm: Race Session 2
» 5:30pm – 6:00pm: Grand Finals and Award Ceremony
10:30am-12:00pm
Session 1: Temporal Logic, Session Chair: Alexandre Donzé
- Conformal Quantitative Predictive Monitoring of STL Requirements for Stochastic Processes. Luca Bortolussi, Francesca Cairoli and Nicola Paoletti
- An STL-based Approach to Resilient Control for Cyber-Physical Systems. Hongkai Chen, Scott A. Smolka, Nicola Paoletti and Shan Lin
- Mixed Integer Linear Programming Approach for Control Synthesis with Weighted Signal Temporal Logic. Gustavo A. Cardona, Disha Kamale and Cristian-Ioan Vasile

1:30pm-3:00pm
Session 2: Verification and Testing, Session Chair: Taylor T Johnson
- Quantitative Verification for Neural Networks using ProbStars. Hoang-Dung Tran, Sungwoo Choi, Hideki Okamoto, Bardh Hoxha, Georgios Fainekos and Danil Prokhorov
- Fully-Automated Verification of Linear Systems Using Reachability Analysis with Support Functions. Mark Wetzling, Niklas Kochdumper, Stanley Bak and Matthias Althoff
- Verification of Recurrent Neural Networks with Star Reachability. Hoang Dung Tran, Sung Woo Choi, Xiaodong Yang, Tomoya Yamaguchi, Bardh Hoxha and Danil Prokhorov

3:30pm-5:30pm
Poster/DEMO Session
- Poster Abstract: Data-Driven Correct-by-Design Control of Parametric Stochastic Systems. Oliver Schön, Birgit van Huligever, Sofie Haesaert and Sadegh Soudjani
- Poster Abstract: Reachability and Controlled Invariance for Human Stability during Sit-to-Stand. Daphna Raz, Liren Yang, Brian Umberger and Necmiye Ozay
- Poster Abstract: Sampling-based Approach to Robust STL Synthesis for Complex Systems under Uncertainty. Qi Heng Ho, Roland Ilyes, Zachary Sunberg and Morteza Lahijanian
- Poster Abstract: Towards Seamless Reactivity of Hybrid Control. Lucas Neves Egidio, Satya Prakash Nayak, Matteo Della Rossa, Anne-Kathrin Schmuck and Raphaël Junger
- Poster Abstract: A Toolchain for Accelerated Symbolic Control. Rupak Majumdar, Kaushik Mallik, Mateusz Rychlicki, Anne-Kathrin Schmuck and Sadegh Soudjani
10:30am-12:00pm
Session 3: Safety, Stability and Robustness, Session Chair: Bardh Hoxha

» Safe Self Triggered Control Based on Precomputed Reachability Sequences. Arvind Adimoolam, Indranil Saha and Thao Dang

» Characterization of the ordering of path-complete stability certificates with addition-closed templates. Virginie Debauche, Matteo Della Rossa and Raphaël Jungers

» Lazy Synthesis of Symbolic Output-Feedback Controllers for State-Based Safety Specifications. Mehrdad Zareian and Anne-Kathrin Schmuck

1:30pm-3:00pm
Session 4: HSCC Keynote, Session Chair: Ricardo Sanfelice

» Talk Title: Learning Hybrid Systems for Fun and Profit. by Dr. Sriram Sankaranarayanan

» Abstract: Hybrid system identification techniques seek hybrid system models of various forms that can approximate given observation data involving the states and outputs of the system. They promise to derive relatively simple dynamical models that can be interpreted and analyzed using many of the available tools for safety, stability and controller synthesis developed by the HSCC community. Although hybrid system identification techniques have been well-studied, the problem itself is known to be computationally hard. We motivate the continued need for efficient algorithms for identifying hybrid system models, despite the successes enjoyed by neural network-based dynamical models identified using variants of stochastic gradient descent. We present some recent results that combine ideas from areas such as approximation algorithms and non-smooth optimization. Finally, we will conclude by examining some of the key open problems in this area.

Based on joint work with Guillaume Berger, Monal Narasimhamurthy, Kandai Watanabe and Morteza Lahijanian.

3:30pm-5:30pm
Session 5: Switched and Stochastic Systems: Session Chair: Francesca Cairoli

» Continuity of Thresholded Mode-Switched ODEs and Digital Circuit Delay Models. Arman Ferdowsi, Matthias Függer, Thomas Nowak and Ulrich Schmid


» Interval Markov Decision Processes with Continuous Action-Spaces. Giannis Delimpaltadakis, Morteza Lahijanian, Manuel Mazo Jr. and Luca Laurenti

» SySCoRe: Synthesis via Stochastic Coupling Relations. Birgit van Huijgevoort, Oliver Schön, Sadegh Soudjani and Sofie Haesaert
Friday | May 12th, 2023

10:30am-12:00pm
Session 6: Quantitative Analysis, Monitoring and Test Generation, Session Chair: Nicola Paoletti
  » Pattern Matching and Parameter Identification for Parametric Timed Regular Expressions. Akshay Mambakam, Eugene Asarin, Nicolas Basset and Thao Dang
  » Exploring Signal Temporal Logic and specification robustness for the analysis of CPS security against stealthy attacks. Aniruddh Chandratre, Tomas Acosta, Tanmay Khandait, Giulia Pedrielli and Georgios Fainekos
  » Wordgen: a Time Word Generation Tool. Benoit Barbot and Alexandre Donze

1:30pm-3:00pm
Session 7: Verification, Robustness and Approximation, Session Chair: Dejan Nickovic
  » Reachability Analysis for Linear Systems with Uncertain Parameters using Polynomial Zonotopes. Ertai Luo, Niklas Kochdumper and Stanley Bak
  » Automatic Abstraction Refinement in Neural Network Verification using Sensitivity Analysis. Tobias Ladner and Matthias Althoff
  » BERN-NN: Tight Bound Propagation For Neural Networks Using Bernstein Polynomial Interval Arithmetic. Wael Fatnassi, Haitham Khedr, Valen Yamamoto and Yasser Shoukry
  » Quantitative Robustness Analysis of Sensor Attacks on Cyber-Physical Systems. Stephen Chong, Ruggero Lanotte, Massimo Merro, Simone Tini and Jian Xiang
10:30am-12:00pm
Session 1: Industrial Applications, Session Chair: Arne Hamann (Robert Bosch GmbH)
» Autonomous and Cost-effective Defect Detection System for Molded Pulp Products. Haochen Wang, Zhiwei Shi, Yafei Qiao, Fan Yang, Yuzhe He, Dong Xuan, Wei Zhao
» BubCam: A Vision System for Automated Quality Inspection at Manufacturing Lines. Jiale Chen, Duc Van Le, Rui Tan, Daren Ho

1:30pm-3:00pm
Session 2: CPS for Social Good, Session Chair: Borzoo Bonakdarpour (Michigan State University)

3:30pm-5:30pm
Poster/DEMO Session, Session Chairs: Meiyi Ma (Vanderbilt University), Sarah Masud Preum (Dartmouth College)
10:30am-12:00pm
Session 3: AI and Machine Learning for CPS, Session Chair: Jyo Deshmukh (University of Southern California)

- FedAR+: A Federated Learning Approach to Appliance Recognition with Mislabeled Data in Residential Environments. Ashish Gupta, Hari Prabhat Gupta, Sajal K. Das

1:30pm-3:00pm
Session 4: Safe Learning-enabled CPS, Session Chair: James Weimer (Vanderbilt University)

- A Neurosymbolic Approach to the Verification of Temporal Logic Properties of Learning-enabled Control Systems. Navid Hashemi, Bardh Hoxha, Tomoya Yamaguchi, Danil Prokhorov, Georgios Fainekos, Jyotirmoy Deshmukh

3:30pm-5:30pm
Session 5: Panel with National Science Foundation Program Managers
Session Chair: Abhishek Dubey (Vanderbilt University)
Panelists: David Corman, Linda Bushnell, John E. Taylor, and Pavithra Prabhakar

Discussion about the accomplishments of NSF cyber-physical system, smart and connected community, and CIVIC Programs. Overview on steps to write a good proposal and differentiate between Small, Medium and Frontier CPS Proposals.

PANELISTS BIOS:

» **Dr. David Corman** is the Program Director leading Cyber Physical Systems (CPS), Smart and Connected Communities (S&CC), and CIVIC Innovation Challenge Programs for the National Science Foundation. The CPS program is a cross-disciplinary and inter-agency program and seeks to reveal cross-cutting, fundamental scientific and engineering principles that underpin the integration of cyber and physical elements across all application domains including autonomous systems, manufacturing, energy, civil and mechanical engineering, and agriculture. The Smart and Connected Communities(S&CC) program was started by NSF in 2016. The goal of this program is to support strongly interdisciplinary, integrative research and research capacity building activities that will improve understanding of smart and connected communities and lead to discoveries that enable sustainable change to enhance community functioning. The focus here is not simply on cities – but on cities, towns, and rural regions. Whereas S&CC looks to develop foundational research, CIVIC looks to accelerate the transition of the research through community partnership and impactful pilots. Dr. Corman joined NSF 2013. He previously worked for McDonnell Douglas / Boeing in a variety of research positions. Dr. Corman was chief scientist in the Network Systems Technology for Boeing Research and Technology during the period from 2007 – 2013. His responsibilities also included development and leadership of research projects in cybersecurity for airplane and avionics systems. Dr. Corman obtained a dual BS degree in System Science and Mathematics and Applied Mathematics and Computer Science from Washington University in St. Louis. He then obtained a dual MS degree in SSM and Mechanical Engineering from Washington University. He completed his graduate education at the University of Maryland - College Park and obtained a PhD in Electrical Engineering with a major in controls and minor in communications and applied mechanics.
Linda Bushnell is a NSF Program Director. She is also a Research Professor in ECE at the University of Washington. She received her Ph.D. in EECS from UC Berkeley in 1994, her M.A. in Mathematics from UC Berkeley in 1989, her M.S. in EE from UConn in 1987, and her B.S. in EE from UConn in 1985. She also received her MBA from the UW Foster School of Business in 2010. Her research interests include networked control systems and cyber-physical systems. She is a Fellow of the IEEE for contributions to networked control systems. She is a Fellow of IFAC for contributions to the analysis and design of networked control systems. She is a recipient of the US Army Superior Civilian Service Award, NSF ADVANCE Fellowship, and IEEE Control Systems Society Distinguished Member Award. She has been a member of the IEEE since 1985, a member of the IEEE CSS since 1990, and a member of the IEEE Women in Engineering since 2013. She is Treasurer of the American Automatic Control Council (AACC) and Member of the Technical Board for the International Federation on Automatic Control (IFAC).

John E. Taylor is a NSF Program Director. He is also the Frederick Law Olmsted Professor. Taylor studies the dynamics where human and engineered networks meet, making him an ideal fit for an endowed professorship named for the father of landscape architecture and a designer who believed engineered infrastructure should be both functional and aesthetically appealing, serving society’s needs while also creating more livable and healthy communities. Taylor has been an entrepreneur and worked as a project manager before starting his career in higher education. He taught most recently at Virginia Tech, where he was a dean’s faculty fellow in the College of Engineering and a Preston and Catharine White fellow in the College of Architecture and Urban Studies.

Dr. Pavithra Prabhakar is a NSF Program Director. She is also a professor in the department of computer science and holds the Peggy and Gary Edwards Chair in Engineering. She is currently serving the National Science Foundation as a Program Director in the Software and Hardware Foundations Cluster in the Computer and Information Science and Engineering Directorate. She obtained her doctorate in computer science and a master’s degree in applied mathematics from the University of Illinois at Urbana-Champaign, followed by a CMI postdoctoral fellowship for a year at the California Institute of Technology. Prior to coming to K-State, she spent four years at the IMDEA Software Institute in Spain as a tenure-track assistant professor. She previously interned at Bell Labs, Murray Hill, while working toward her doctorate.
10:30am-12:00pm
Session 6: Testing, Verification, and Certification, Session Chair: Houssam Abbas (Oregon State University)
» Joint Differentiable Optimization and Verification for Certified Reinforcement Learning. Yixuan Wang, Simon Zhan, Zhihu Wang, Chao Huang, Zhaoran Wang, Zhuoran Yang, Qi Zhu
» Conformal Prediction for STL Runtime Verification. Lars Lindemann, Xin Qin, Jyotirmoy V. Deshmukh, George J. Pappas
» Monitoring Signal Temporal Logic in Distributed Cyber-physical Systems. Anik Momtaz, Houssam Abbas, Borzoo Bonakdarpour

1:30pm-3:00pm
Session 7: Safety and Resilience for CPS, Session Chair: Radoslav Ivanov (Rensselaer Polytechnic Institute)
» Design and Deployment of Resilient Control Execution Patterns: A Prediction, Mitigation Approach. Ipsita Koley, Sunandan Adhikary, Arkaprava Sain, Soumyajit Dey
» Dynamic Simplex: Balancing Safety and Performance in Autonomous Cyber Physical Systems. Baiting Luo, Shreyas Ramakrishna, Ava Pettet, Christopher Kuhn, Gabor Karsai, Ayan Mukhopadhyay
» EnergyShield: Provably-Safe Offloading of Neural Network Controllers for Energy Efficiency. Mohanad Odema, James Ferlez, Goli Vaisi, Yasser Shoukry, Mohammad Al Faruque

3:30pm-5:30pm
Session 8: Tools, Testbeds, and Deployment, Session Chair: Oleg Sokolsky (University of Pennsylvania)
» sat2pc: Generating Building Roof’s Point Cloud from a Single 2D Satellite Images, Yoones Rezaei, Stephen Lee
» TIM: A Novel Quality of Service Metric for Tactile Internet, Kees Kroep, Vineet Gokhale, Ashutosh Simha, R Venkatesha Prasad, Vijay S Rao

List of Best Paper Candidates for ICCPS 2023:
» BubCam: A Vision System for Automated Quality Inspection at Manufacturing Lines (Best Paper Candidate: 10:30am – 12pm, Jiale Chen (Nanyang Technological University), Duc Van Le (Nanyang Technological University), Rui Tan (Nanyang Technological University), Daren Ho (HP Inc.): Session 1 (Day 1) – Industrial Applications
» Offline Learning of Closed-Loop Deep Brain Stimulation Controllers for Parkinson Disease Treatment (Best Paper Candidate): Qitong Gao (Duke University), Stephen L. Schmidt (Duke University), Afsana Chowdhury (Duke University), Guangyu Feng (Duke University), Jennifer J. Peters (Duke University), Katherine Gentry (Duke University), Warren M. Grill (Duke University), Dennis A. Turner (Duke University), Miroslav Pajic (Duke University) 1:30pm – 3pm, Session 2 (day 1) – CPS for Social Good
» CODIT: Conformal Out-of-Distribution Detection in Time-Series Data for Cyber-Physical Systems (Best Paper Candidate), Ramneet Kaur (University of Pennsylvania), Kaustubh Sridhar (University of Pennsylvania), Sangdon Park (Georgia Institute of Technology), Yahan Yang (University of Pennsylvania), Susmit Jha (SRI International), Anirban Roy (SRI International), Oleg Sokolsky (University of Pennsylvania), Insup Lee (University of Pennsylvania) 1:30pm-3pm, Session 4 (Day 2): Safe Learning-enabled CPS
» sat2pc: Generating Building Roof’s Point Cloud from a Single 2D Satellite Images (Best Paper Candidate), Yoones Rezaei (University of Pittsburgh), Stephen Lee (University of Pittsburgh): 3:30pm-5:30pm, Session 8 (Day 3): Tools, testbeds, and deployment.
10:30am-12:00pm  
Session 1: Wearables, Session Chair: TBD  
» In-Ear-Voice: Towards Milli-Watt Audio Enhancement with Bone-Conduction Microphones for In-Ear Sensing Platforms; Philipp Schilk (ETH), Niccolò Polveni (EPFL), Andrea Ronco (ETH), Milos Černak (Logitech Europe), Michele Magno (ETH)  
» FaceTouch: Practical Face Touch Detection with a Multimodal Wearable System for Epidemiological Surveillance. Li Liu, Zhichao Cao, and Tianxing Li (Michigan State University)  
» Detecting Mental Disorders with Wearables: A Large Cohort Study. Ruixuan Dai, Thomas Kannampallil, Seunghwan Kim, Vera Thornton, Laura Bierut, and Chenyang Lu (Washington University in St. Louis)

1:30pm-2:30pm  
Session 2: Human Sensing, Session Chair: Borzoo Bonakdarpour (Michigan State University)  
» E3Pose: Energy-Efficient Edge-assisted Multi-camera System for Multi-human 3D Pose Estimation. Letian Zhang and Jie Xu (University of Miami)  
» VALERIAN: Invariant Feature Learning for IMU Sensor-based Human Activity Recognition in the Wild. Yujiao Hao (McMaster University); Boyu Wang (Western University); Rong Zheng (McMaster University)  

2:30pm-3:00pm  
NSF PAWR – ARA Platform, Wireless Living Lab for Smart and Connected Rural Community  
https://arawireless.org/

3:30pm-5:30pm  
Poster/DEMO Session
Thursday | May 11th, 2023

10:30am-12:00pm
Session 3: Smart City and Infrastructure, Session Chair: VP Nguyen (University of Texas at Arlington)
» Because Every Sensor Is Unique, so Is Every Pair: Handling Dynamicity in Traffic Forecasting. Ariar Prabowo and Wei Shao (RMIT); Hao Xue (UNSW); Piotr Koniusz (CSIRO); Flora D. Salim (UNSW)
» Fairguard: Harness Logic-based Fairness Rules in Smart Cities. Yiqi Zhao, Ziyan An, Xuqing Gao, Ayan Mukhopadhyay, and Meiyi Ma (Vanderbilt University)
» SolarDetector: Automatic Solar PV Array Identification using Big Satellite Imagery Data. Qi Li, Sander Schott, and Dong Chen (Colorado School of Mines)
» LightEQ: On-Device Seismic Event Detection with Embedded Machine Learning. Tayyaba Zainab (GEOMAR Helmholtz Centre for Ocean Research Kiel, Germany and Kiel University, Germany); Olaf Landsiedel (Kiel University, Germany and Chalmers University of Technology, Sweden); Jens Karstens (GEOMAR Helmholtz Centre for Ocean Research Kiel, Germany)

1:30pm-3:00pm
Session 4: Sensing Location and Space, Session Chair: Shuochao Yao (George Mason University)
» Eagle: End-to-end Deep Reinforcement Learning based Autonomous Control of PTZ Cameras. Sandeep Singh Sandha (University of California, Los Angeles); Bharathan Balaji (Amazon); Luis Garcia (University of Southern California, Information Sciences Institute); Mani Srivastava (University of California, Los Angeles)
» LiLOC: Enabling Precise 3D Localization in Dynamic Indoor Environments using LIDARs. Darshana Rathnayake and Meeralakshmi Radhakrishnan (Singapore Management University); Inseok Hwang (POSTECH); Archan Misra (Singapore Management University)
» AI-based Simultaneous Audio Localization and Communication For Robots. Amjad Yousef Mjaid (The Delft University of Technology); Venkatesha Prasad (TU Delft); Mees Jonker, Casper van der Horst, Lucan de Groot, and Sujay Narayana (TU Delft)
» Amalgamated Intermittent Computing Systems. Bashima Islam (Worcester Polytechnic Institute); Yubo Luo (University of North Carolina at Chapel Hill); Shahriar Nirjon (UNC Chapel Hill)

3:30pm-5:30pm
Session 5: Federated and Cloud-Assisted AI, Session Chair: Pengfei Zhou (University of Pittsburgh)
» FedRule: Federated Rule Recommendation System with Graph Neural Networks. Yuhang Yao (Carnegie Mellon University); Mohammad Mahdi Kamani, Zhongwei Cheng, and Lin Chen (Wyze Labs); Carlee Joe-Wong (Carnegie Mellon University); Tianqiang Liu (Wyze Labs)
» DÂlen: Enabling Flexible and Adaptive Model-serving for Multi-tenant Edge AI. Qianlin Liang, Walid A. Hanafy, and Noman Bashir (University of Massachusetts Amherst); Ahmed Ali-Eldin (Chalmers University of Technology and UMass Amherst); David Irwin and Prashant Shenoy (University of Massachusetts Amherst)
» Streaming Video Analytics On The Edge With Asynchronous Cloud Support. Anurag Ghosh (Carnegie Mellon University); Srinivasan iyengar (Microsoft); Stephen Lee (University of Pittsburgh); Anuj Rathore (Clutterbot); Venkat N Padmanabhan (Microsoft Research India)
» Async-HFL: Efficient and Robust Asynchronous Federated Learning in Hierarchical IoT Networks. Xiaofan Yu (University of California, San Diego); Lucy Cherkasova (ARM Research); Harsh Vardhan, Quanling Zhao, Emily Ekaireb, Xiuyan Zhang, Arya Mazumdar, and Tajana Rosing (University of California, San Diego)
» MOHAWK: Mobility and Heterogeneity-Aware Dynamic Community Selection for Hierarchical Federated Learning. Allen-Jasmin Farcas (The University of Texas at Austin); Myungjin Lee, Ramana Rao Kompella, and Hugo Latapie (Cisco Systems); Gustavo de Veciana and Radu Marculescu (The University of Texas at Austin)
10:30am-12:00pm
Session 6: Privacy and Security I, Session Chair: Nader Sehatbakhsh (UCLA)

- Practical Crowdsourcing of Wearable IoT Data with Local Differential Privacy. Thomas Marchioro, Andrei Kazlouski, and Evangelos P. Markatos (FORTH)
- Meta Morphosis: Task-oriented Privacy Cognizant Feature Generation for Multi-task Learning. Md Adnan Arefeen (University of Missouri-Kansas City); Zhouyu Li (North Carolina State University); Md Yusuf Sarwar Uddin (University of Missouri-Kansas City); Anupam Das (North Carolina State University)
- A Blockchain-Based Privacy-Preserving Model for Consent and Transparency in Human-Centered Internet of Things. Jorge Eduardo Rivadeneira (University of Coimbra); Maria B. Jiménez (Universidad Politécnica de Madrid); Radu Marculescu (The University of Texas at Austin); André Rodrigues (University of Coimbra); Fernando Boavida (University of Coimbra); Jorge Sá Silva (University of Coimbra)

1:30pm-3:00pm
Session 7: Privacy and Security II, Session Chair: Philip Lundrigan (Brigham Young University)

- IoT System Vulnerability Analysis and Network Hardening with Shortest Attack Trace in a Weighted Attack Graph. Yinxin Wan, Xuanli Lin, Abdulhakim Sabur, Alena Chang, Kuai Xu, and Guoliang Xue (Arizona State University)
- Incremental Anomaly Detection with Guarantee in the Internet of Medical Things. Xiayan Ji, Hyonlyong Choi, Oleg Sokolsky, and Insup Lee (University of Pennsylvania)
- Practical Cryptographic Forensic Tools for Lightweight Internet of Things and Cold Storage Systems. Saif E. Nouma and Attila A. Yavuz (University of South Florida)
- LOIS: Low-cost Packet Header Protection for IoT Devices. Minmei Wang (University of Connecticut); Shouqian Shi (University of California Santa Cruz); Xiaoxue Zhang (UCSC); Song Han (University of Connecticut); Chen Qian (University of California Santa Cruz)

3:30pm-5:30pm
Session 8: IoT Platforms and Networks, Session Chair: Bashima Islam (Worcester Polytechnic Institute)

- Verified Telemetry: A General, Easy to use, Scalable, and Robust Fault Detection SDK for IoT Sensors. Tanmaey Gupta, Shubhankar Handa, and Akshay Nambi (Microsoft Research)
- Boosting Reliability and Energy-Efficiency in Indoor LoRa. Mahbubur Rahman (City University of New York); Abusayeed Saifullah (Wayne State University)
- Handling Coexistence of LoRa with Other Networks through Embedded Reinforcement Learning. Sezana Fahmida (Wayne State University); Venkata Prashant Modekurthy (University of Nevada, Las Vegas); Mahbubur Rahman (Queens College, City University of New York); Abusayeed Saifullah (Wayne State University)
- QuIC-IoT: Model-Driven Short-Term IoT Deployment for Monitoring Physical Phenomena. Tung-Chun Chang and Tirtha Banerjee (University of California, Irvine); Nalini Venkatasubramanian (UC Irvine); Rob York (University of California, Berkeley)
10:30am-12:00pm
Session 1: LoRa, Session Chair: Shijia Pan
» LoPhy: A Resilient and Fast Covert Channel over LoRa PHY. Boya Liu, Chaojie Gu, Shibo He, Jiming Chen (Zhejiang University)
» FLoRa: Energy-Efficient, Reliable, and Beamforming-Assisted Over-The-Air Firmware Update in LoRa Networks. Zehua Sun, Tao Ni, Huanqi Yang, Kai Liu (City University of Hong Kong), Yu Zhang, Tao Gu (Macquarie University), Weitao Xu (City University of Hong Kong)
» Link Quality Modeling for LoRa Networks in Orchards. Kang Yang, Yuning Chen (University of California, Merced), Xuanren Chen, Wan Du (University of California Merced)

1:30pm-3:00pm
Session 2: Machine Learning, Session Chair: Wan Du
» POS: An Operator Scheduling Framework for Multi-model Inference on Edge Intelligent Computing. Ziyang Zhang (Harbin Institute of Technology, Harbin, China), Huan Li, Yang Zhao (Harbin Institute of Technology, Shenzhen, China), Changyao Lin (Harbin Institute of Technology, Harbin, China), Jie Liu (Harbin Institute of Technology, Shenzhen, China)
» CoEdge: A Cooperative Edge System for Distributed Real-Time Deep Learning Tasks. Zhehao Jiang (The Chinese University of Hong Kong), Neiwen Ling, Xuan Huang, Shuyao Shi, Chenhao Wu, Xiaoguang Zhao, Zhenyu Yan, Guoliang Xing (The Chinese University of Hong Kong)
» PointSplit: Towards On-device 3D Object Detection with Heterogenous Low-power Accelerators. Keondo Park, You Rim Choi, Inhoe Lee, Hyung-Sin Kim (Seoul National University)

3:30pm-5:30pm
Poster/DEMO Session

5:30pm-6:30pm
IPSN Business Meeting
Thursday | May 11th, 2023

10:30am-12:00pm
Session 3: Acoustic and vibration sensing, Session Chair: Gang Zhou
» Addressing Practical Challenges in Acoustic Sensing To Enable Fast Motion Tracking. Yongzhao Zhang (Shanghai Jiao Tong University), Hao Pan (SJTU), Yi-Chao Chen (Shanghai Jiao Tong University), Lili Qiu (University of Texas at Austin), Yu Lu (Shanghai Jiao Tong University), Guangtao Xue (SJTU), Jiadi Yu (Shanghai Jiao Tong University), Feng Lyu (Central South University), Haonan Wang (SJTU)
» CMA: Cross-Modal Association Between Wearable and Structural Vibration Signal Segments for Indoor Occupant Sensing. Yue Zhang, Zhizhang Hu (University of California Merced), Uri Berger (Yale University, Child Study Center, Anxiety and Mood Disorders Program), Shijia Pan (University of California Merced)
» WINC: A Wireless IoT Network for Multi-Noise Source Cancellation. Ishani Janveja, Jiaming Wang, Junfeng Guan (UIUC), Suraj Jog (UIUC, Microsoft Research), Haitham Hassanieh (EPFL)

1:30pm-3:00pm
Session 4: mmWave, Session Chair: Pat Pannuto
» Interpersonal Distance Tracking with mmWave Radar and IMUs. Yimin Dai (Nanyang Technological University), Xian Shuai (The Chinese University of Hong Kong), Rui Tan (Nanyang Technological University), Guoliang Xing (The Chinese University of Hong Kong)
» Platypus: Sub-mm Micro-Displacement Sensing with Passive Millimeter-wave Tags As Phase Carriers. Thomas Horton King (Carnegie Mellon University), Jizheng He, Chun-Kai (Sean) Yao (University of Illinois Urbana-Champaign), Akarsh Prabhakara (Carnegie Mellon University), Mohammad Alipour (University of Illinois Urbana-Champaign), Swarun Kumar, Anthony Rowe (Carnegie Mellon University), Elahe Soltanaghai (University of Illinois Urbana-Champaign)
» mmRipple: Communicating with mmWave Radars through Smartphone Vibration. Kaiyan Cui (The Hong Kong Polytechnic University, Xi’an Jiaotong University), Qiang Yang, Yuanqing Zheng (The Hong Kong Polytechnic University), Jinsong Han (Zhejiang University)

3:30pm-5:30pm
Session 5: Wireless communications I, Session Chair: Elahe Soltanaghai
» DeepGANTT: A Scalable Deep Learning Scheduler for Backscatter Networks. Daniel F. Perez-Ramirez (RISE Computer Science, Sweden and KTH Royal Institute of Technology, Sweden), Carlos Pérez-Penichet, Nicolas Tsiftes (RISE Computer Science, Sweden), Thiemo Voigt (Uppsala University, Sweden and RISE Computer Science, Sweden), Dejan Kostić (KTH Royal Institute of Technology, Sweden and RISE Computer Science, Sweden), Magnus Boman (KTH Royal Institute of Technology, Sweden)
» Experience: ARISTOTLE: wAke-up ReceIver-based, STar tOpology baTteryLEss sensor network. Sayedsepehr Mosavat (University of Duisburg-Essen, Niederrhein University of Applied Sciences), Matteo Zella (Niederrhein University of Applied Sciences), Marcus Handte, Alexander Julian Golkowski, Pedro José Marrón (University of Duisburg-Essen)
» WibZig: Reliable and Commodity-device Compatible PHY-CTC via Chip Emulation in Phase. Tao Cheng, Shining Li, Feng Jiao (Northwestern Polytechnical University), Yan Pan (National University of Defense Technology)
» Hydra: Concurrent Coordination for Fault-tolerant Networking. Andreas Biri, Reto Da Forno, Tobias Kuonen (ETH Zurich), Fabian Mager (TU Dresden), Marco Zimmerling (University of Freiburg), Lothar Thiele (ETH Zurich)
Friday | May 12th, 2023

10:30am-12:00pm
Session 6: Vision Sensing I, Session Chair: Rui Tan
» MicroDeblur: Image Motion Deblurring on Microcontroller-based Vision Systems. Seulki Lee (UNIST (Ulsan National Institute of Science and Technology))

1:30pm-3:00pm
Session 7: Wireless communications II, Session Chair: Hyung-Sin Kim
» Network On or Off? Instant Global Binary Decisions over UWB with Flick. Enrico Soprana, Matteo Trobinger, Davide Vecchia, Gian Pietro Picco (University of Trento, Italy)
» SpectraLux: Towards Exploiting a Broader Spectrum with Passive VLC. Seyed Keyarash Ghiasi, Vivian Dsouza (TU Delft), Koen Langendoen (Delft University of Technology), Marco Zuniga (TU Delft)
» Everything has its Bad Side and Good Side: Turning Processors to Low Overhead Radios Using Side-Channels. Justin Feng, Timothy Jacques, Omid Abari, Nader Sehatbakhsh (UCLA)
10:30am-12:00pm
Session 1: Average-case and probabilistic behavior, Session Chair: Abusayeed Saifullah
» Average Task Execution Time Minimization under (m,k) Soft Error Constraint. Junjie Shi, Niklas Ueter, Jian-Jia Chen and Kuan-Hsun Chen
» Minimizing Probabilistic End-to-end Latencies of Autonomous Driving Systems. Taeho Han and Kanghee Kim

1:30pm-3:00pm
Session 2: Partitioning and composition, Session Chair: Bryan Ward
» Shedding Light on Static Partitioning Hypervisors for Arm-based Mixed-Criticality Systems. José Martins and Sandro Pinto
» Hardware Compute Partitioning on NVIDIA GPUs. Joshua Bakita and Jim Anderson
» Compositional Mixed-Criticality Systems with Multiple Executions and Resource-Budgets Model. Abdullah Al Arafat, Sudharsan Vaidhun, Liangkai Liu, Kecheng Yang and Zhishan Guo

3:30pm-5:30pm
Poster/DEMO Session, Session Chair: Sibin Mohan
» Towards a statistical worst-case energy consumption model. Marwan El Khazen, Slim Ben Amor, Kossivi Kougblenou, Liliana Cucu-Grosjean and Adriana Gogonel
» Work In Progress: A New Task Model for Real-Time DNNs over GPU. Mourad Dridi, Yasmina Abdeddaim and Chiara Daini
» Work in Progress: Real-time Transformer Inference on Edge AI Accelerators. Brendan Reidy, Mohammadreza Mohammadi, Mohammed Elbtity, Heath Smith and Ramtin Zand
» Demo: Simulation and Security Toolbox for Cyber-Physical Systems. Lin Zhang, Mengyu Liu and Fanxin Kong
Thursday | May 11th, 2023

10:30am-12:00pm  
**Session 3: ROS 2, Session Chair: Renato Mancuso**  
» **Real-Time Performance Analysis of Processing Systems on ROS2 Executors**, Yue Tang, Nan Guan, Xu Jiang, Xiantong Luo and Wang Yi  
» **ROSGM: A Real-Time GPU Management Framework with Plug-In Policies for ROS 2**, Ruoxiang Li, Tao Hu, Xu Jiang, Laiwen Li, Wenxuan Xing, Qingxu Deng and Nan Guan  
» **Timing Analysis and Priority-driven Enhancements of ROS 2 Multi-threaded Executors**, Hoora Sobhani, Hyunjong Choi and Hyoseung Kim

1:30pm-3:00pm  
**Session 4: Optimization and trade-off, Session Chair: Gedare Bloom**  
» **Best Reviewer award presentation and discussion**

3:30pm-5:30pm  
**Session 5: Scheduling, Session Chair: Sathish Gopalakrishnan**  
» **Schedulability Analysis of Non-preemptive Sporadic Gang Tasks on Hardware Accelerators**, Binqi Sun, Tomasz Kloda, Jiyang Chen, Cen Lu and Marco Caccamo  
» **Scheduling Periodic Segmented Self-Suspending Tasks without Timing Anomalies**, Ching-Chi Lin, Mario Günzel, Junjie Shi, Tristan Taylan Seidl, Kuan-Hsun Chen and Jian-Jia Chen  
» **Precise Response Time Analysis for Multiple DAG Tasks with Intra-task Priority Assignment**, Nan Chen, Shuai Zhao, Ian Gray, Alan Burns, Siyuan Ji and Wanli Chang  
» **Real-Time Scheduling of Autonomous Driving System with Guaranteed Timing Correctness**, Jinghao Sun, Kailu Duan, Xisheng Li, Nan Guan, Zhishan Guo, Qingxu Deng and Guozhen Tan
Friday | May 12th, 2023

10:30am-12:00pm
Session 6: Safety and Security, Session Chair: Daniel Casini
» Cache Bank-Aware Denial-of-Service Attacks on Multicore ARM Processors. Michael Bechtel and Heechul Yun
» Real-Time Data-Predictive Attack-Recovery for Complex Cyber-Physical Systems, Lin Zhang, Kaustubh Sridhar, Mengyu Liu, Pengyuan Lu, Xin Chen, Fanxin Kong, Oleg Sokolsky and Insup Lee

1:30pm-3:00pm
Session 7: Memory and Middleware, Session Chair: Kuan-Hsun Chen
» MemPol: Policing Core Memory Bandwidth from Outside of the Cores. Alexander Zuepke, Andrea Bastoni, Weifan Chen, Marco Caccamo and Renato Mancuso
» ZeroCost-LLC: Shared LLCs at No Cost to WCL. Zhuanhao Wu, Anirudh Kaushik and Hiren Patel
» MultiSSE: Static Syscall Elision and Specialization for Event-Triggered Multi-Core RTOS. Gerion Entrup, Björn Fiedler, Daniel Lohmann

3:30pm-5:30pm
Session 8: Networks and Communication, Session Chair: Fanxin Kong
» G(1P)2C: Temporally Isolated Multiprocessor Real-Time IPC with Server-to-Server Invocations. Cédric Courtaud and Björn Brandenburg
» On the QNX IPC: Assessing Predictability for Local and Distributed Real-Time Systems. Matthias Becker, Dakshina Dasari and Daniel Casini
» Efficient and Accurate Handling of Periodic Flows in Time-Sensitive Networks. Seyed Mohammadhosseinp Tabatabae, Marc Boyer, Jean-Yves Le Boudec, Jörg Migge
Program of Banquet at Pedrotti’s Ranch
May 11, 2023
6:00pm – 10:00pm

» 5:45pm – Busses begin loading at UTSA (parking lot besides Student Union)
» 6:15pm – Arrival. Greeted by horseback team and Longhorn & Mariachi; appetizers (Tortilla Chips, Salsa, Queso, Potato Chips, French Onion dip) and drinks;
» 7:00pm – Texas Rodeo (around 30 minutes)
» 7:30/7:45pm – Food lines open for dinner service, inside the Lone Oak with Food lines set in the Corral. Mariachi greeting to welcome guests back inside. Mariachi wraps at 8:00pm

**Ranch Iceberg Salad:** Red Onions, Cherry Tomatoes, Shredded Cheese and Bacon, Roasted Pepper Ranch and Italian Dressing

**Dinner:** South Texas Barbecue: Smoked Brisket Carved to Order & Barbecue Chicken, served with Pedrotti’s Signature Texas BBQ Sauce

**Sides:** Ranch Style Pinto Beans, Cream Corn, and Creamy Potato Salad, Hawaiian Rolls, All The Fixings (Sliced Pickles, Onions and Jalapenos), Assortment of Cookies & Brownies; Iced Tea, Water and Coffee Station

**Veggie/Gluten/Vegan:** Smoke Cabbage Steaks with Cilantro Yogurt Sauce.

» 8:15pm – Welcome Remarks/Awards/Recognitions
» 9:45pm – Busses load & Roll Out to UTSA & Hotels (DoubleTree)

**About Pedrotti’s Ranch**

Located at 13715 FM 1560 N, Helotes TX 78023, Pedrotti’s Ranch aims to serve, satisfy and delight our customers with the most hospitable, family-friendly, and accommodating event services in all of Texas. For more information, please scan the QR code below.
SPECIAL THANKS TO:

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