

## Workshop II: Safe Operation of Connected and Autonomous Vehicle Fleets

### Monday October 26, 2020

- 7:55      *SESSION CHAIR: DANIEL WORK (Vanderbilt University)*
- 7:55–8:00      *Welcome & Opening Remarks: Dean Miguel García-Garibay (Dean of Physical Sciences, UCLA) and Dima Shlyakhtenko (Director, IPAM)*
- 8:00–8:40      **Aaron Ames** (California Institute of Technology)  
*Safety-Critical Control of Autonomous Systems*
- 8:50–9:00      *Break*
- 9:00–9:40      **Luca Carlone** (Massachusetts Institute of Technology)  
*Certifiable Perception for Robots and Autonomous Vehicles: From Robust Algorithms to Robust Systems*
- 9:50–10:00      *Break*
- 10:00–10:40      **Ricardo Sanfelice** (University of California, Santa Cruz)  
*Set-Based Hybrid Predictive Control for Collision Detection and Evasion in Autonomous Vehicles*
- 10:50–11:00      *Break*
- 11:00–11:40      **Jonathan Sprinkle** (University of Arizona)  
*Large-scale high-fidelity simulation for multi-vehicle applications*
- 11:50–12:00      *Break*
- 12:00–12:10      *Lightning Poster Presentations by Gilbert Bahati (UC Berkeley), Ronan Keane (Cornell Univ.), Nour Khoudari (Temple Univ.), and Pierluigi Pisu (Clemson Univ.)*

### Tuesday October 27, 2020

- 8:00      *SESSION CHAIR: RICHARD SOWERS (University of Illinois at Urbana-Champaign)*
- 8:00–8:40      **Cathy Wu** (Microsoft Research AI, MIT)  
*Mixed Autonomy Traffic: A Reinforcement Learning Perspective*
- 8:50–9:00      *Break*
- 9:00–9:40      **Benjamin Seibold** (Temple University)  
*Energy Impact of Automated Vehicles used as Sparse Traffic Controllers*
- 9:50–10:00      *Break*
- 10:00–10:40      **Katherine Driggs-Campbell** (University of Illinois at Urbana-Champaign)  
*Insights from Inference and Prediction for Safe Vehicle-Pedestrian Interaction*
- 10:50–11:00      *Break*

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11:00–11:40 **Sam Coogan** (Georgia Institute of Technology)  
*Mixed autonomy in ride-sharing networks*

### Wednesday October 28, 2020

8:00 *SESSION CHAIR: RAPHAEL STERN (University of Minnesota, Twin Cities)*

8:00–8:40 **Antonella Ferrara** (Università di Pavia)  
*From connected and autonomous vehicles control to vehicular traffic control, a multi-scale perspective*

8:50–9:00 *Break*

9:00–9:40 **Ketan Savla** (University of Southern California (USC))  
*Performance Evaluation of Space-Constrained Traffic System under Safe Car Following*

9:50–10:00 *Break*

10:00–10:40 **Pierluigi Pisu** (Clemson University)  
*On Resilient Control for Secure Connected Vehicles*

10:50–11:00 *Break*

11:00–11:40 **Daniel Work** (Vanderbilt University)  
*Traffic Flow Smoothing at scale*

### Thursday October 29, 2020

8:00 *SESSION CHAIR: JONATHAN SPRINKLE (University of Arizona)*

8:00–8:40 **Andreas Malikopoulos** (University of Delaware)  
*Optimal Path Planning and Coordination for Connected and Automated Vehicles*

8:50–9:00 *Break*

9:00–9:40 **Richard Sowers** (University of Illinois at Urbana-Champaign)  
*Big data and traffic patterns*

9:50–10:00 *Break*

10:00–10:40 **Gabor Orosz** (University of Michigan)  
*Conflict analysis for decision making and control of connected automated vehicles*

10:50–12:00 *Lunch (on your own)*

12:00–12:40 **Ramanarayan Vasudevan** (University of Michigan)  
*Bridging the Gap Between Safety and Real-Time Performance for Autonomous Vehicle Control*

12:50–1:00 *Break*

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1:00–1:40 **Marco Pavone** (Stanford University)  
*On safe and efficient human-robot interactions via multimodal intent modeling and reachability-based safety assurance*

## Friday October 30, 2020

8:00 *SESSION CHAIR: KATHERINE DRIGGS-CAMPBELL (University of Illinois at Urbana-Champaign)*

8:00–8:40 **Lillian Ratliff** (University of Washington)  
*Integrating Automation into Curbside Management: Case Studies, Challenges, and Opportunities*

8:50–9:00 *Break*

9:00–9:40 **Ruzena Bajcsy** (University of California, Berkeley (UC Berkeley))  
*History of Modeling driving and driver using Control theory and safety*

9:50–10:00 *Break*

10:00–10:40 **Sayan Mitra** (University of Illinois at Urbana-Champaign)  
*Abstractions for programming distributed robotic applications*

10:50–11:00 *Break*

11:00–11:40 **Gabor Karsai** (Vanderbilt University)  
*Towards Assurance-based Learning-enabled Cyber-Physical Systems*

