2016 IEEE Workshop on Open Problems and Challenges in Automotive Control

December 11, 2016
Aria Resort & Casino, Las Vegas NV
Time and Location: 9:00 AM - 6:00 PM, Starvine 10

Workshop Organizers **Simona Onori, Clemson University (TC AC Chair)**
Satadru Dey, UC Berkeley
Jason Siegel, University of Michigan

- 9:00 - 9:10 Welcome & intro, Simona Onori, Clemson University

Session 1: Safety, Diagnostics and Vehicle Dynamics

- 9:10 – 9:55 **Long Talk: Stefano Di Cairano (MERL),** *"Towards safety-guaranteed design of modular architectures for vehicle planning and control"*
- 9:55 –10:40 **Short Talks**
  - Giorgio Rizzoni (The Ohio State University), "*Challenges in model-based functional-safety- driven fault tolerance in automotive control systems?"*
  - Antonella Ferrara (University of Pavia), "*New trends in vehicle dynamics control: the ITEAM EU project perspective"*
- 10:40- 11:00 **Coffee Break**

Session 2: Powertrain I

- 11:00 - 11:45 **Long Talk: Mrdjan Jankovic (Ford),** *"Improving fuel economy – new engine hardware, transient management, and driver demand prediction"*
- 11:45 –12:30 **Short Talks**
  - Luca Zaccarian (University of Trento and LAAS-CNRS), *"Experiences on the use of reset control in low-level feedback loops for the automotive industry*"
  - Anna Stefanopoulou (University of Michigan), "*Fast engine response was needed for good drivability. How about Fuel Consumption? You would be surprised"*

- 12:30-1:45 **Lunch**

Session 3: Powertrain II

- 1:45 - 2:30 **Long Talk: John Shutty (Borg Warner),** *"The Scale of Control Challenges for Heavy Duty Vehicle"*
- 2:30 – 3:45 **Short Talks**
  - Luigi Del Re (Johannes Kepler Universität), "*Changing facets of complexity in automotive optimal control, from engines to vehicles*"
  - Hosam Fathy (Pennsylvania State University), "*Lessons and Challenges in Model-Based Automotive Battery Control"*
  - Michael Grimble (University of Strathclyde), "*Potential of Nonlinear and Multivariable Predictive Controls for Diesel Engines"*

- 3:45 – 4:00 **Coffee break**

Session 4: Connected Vehicles

- 4:00 – 4:45 **Long Talk: Andreas Malikopoulos (Oak Ridge National Laboratory),** *"Decentralized Optimal Control for Connected and Automated Vehicles"*

- 4:45 – 5:25 **Short Talks**
  - Ardalan Vahidi (Clemson University), "*Optimal Scheduling of Autonomous Vehicle Arrivals at Intelligent Intersections"*
  - Pierluigi Pisu (Clemson University), "*Security in Control of Connected Vehicles"*

5:25 Workshop Wrap-up, Simona Onori and Jason Siegel