



## 10th IFAC Symposium Advances in Automotive Control

August 28-31, 2022 | The Ohio State University, Columbus Ohio, USA

### First Announcement and Call for Papers and Contributions

The International Symposium on Advances in Automotive Control (AAC) of the International Federation of Automatic Control (IFAC) takes place every three years. The objective of the IFAC - AAC Symposium is to contribute to future research and development through active exchange between industry and academia.

Following the previous successful symposiums in Ascona, Mohican State Park, Karlsruhe, Salerno, Monterey, Munich, Tokyo, Kolmården and Orléans, the 10th AAC symposium will be held at The Ohio State University in Columbus, Ohio, USA.

Welcome Reception Sunday, August 28, 2022

Symposium Monday, August 29 – Wednesday, August 31, 2022

### Submission Deadlines and Time Plan

Prospective authors are requested to submit their contributions as a PDF file in IFAC paper format through the IFAC Paperplaza conference manuscript management system, <http://ifac.papercept.net/conferences/scripts/start.pl>. The templates for manuscripts are available on the website and the deadlines for submissions are shown below.

- Draft paper submission open: Nov. 29, 2021
- Draft paper submission ends: Mar, 11 2022
- Acceptance notification: April 15, 2022
- Final papers: May 1, 2022
- Opening registration: March 30, 2022
- Draft program: May 10, 2022
- Fee increase: May 13, 2022
- Final program: June 15, 2022

### About the Venue

The symposium will be held in Columbus, Ohio on the campus of The Ohio State University. Columbus is the largest city in Ohio and the fastest-growing city in the Midwest, with a vibrant blend of arts and culture; inspired culinary, fashion, music and entertainment scenes; exciting collegiate and professional sports; and an open, entrepreneurial spirit. With a burgeoning downtown, lively urban districts and a diverse array of welcoming neighborhoods, it's a city that invites exploration.



Additional conference information can be found at [car.osu.edu/aac2022](http://car.osu.edu/aac2022)

## Scope of the Symposium

The symposium will cover a wide range of topics in advanced automotive control systems including, but not limited to:

### Vehicle Autonomy and Connectivity

- Control, guidance and navigation of autonomous vehicles
- Perception, localization and path planning
- ML/AI for vehicle autonomy
- Simultaneous localization and mapping
- V2X communications
- Intelligent transportation systems
- Vehicle dynamics, control and state estimation
- Testing and validation

### Vehicle Security and Safety

- Advanced Driver Assist Systems
- Health monitoring of ADAS systems, powertrain and its components
- Vehicle cybersecurity for safety and privacy
- Position, navigation and timing safety and security in automotive systems
- AI/ML and model based approaches for safety and security in automotive systems
- Safety of the intended functionality
- Functional safety

### Traditional Powertrain Systems

- Powertrain modeling and control
- Combustion modeling and control: spark ignition, compression ignition, low temperature combustion
- Exhaust gas after-treatment: catalyst and DPF models, thermal management, SCR control, regeneration control

- Gas exchange processes, turbocharging, supercharging, variable valve technology
- Model-based diagnostics
- Dual fuel control, bio-fuels or bio-gas alternatives
- Transmissions, brakes, steering, suspension systems

### Electrified Powertrain Systems

- Vehicle architecture for XEV
- Optimal design and control of XEV
- Energy management for XEV
- Modeling and control for electric and electro-magnetic components
- Energy storage systems: electrochemical systems, supercapacitors, fuel cells
- Energy storage system modeling
- Charging and refueling infrastructure
- Battery management systems
- Battery thermal management systems

### Smart Mobility

- AI/ML application to automotive and transportation systems
- Cyber-physical transportation systems
- Driver-in-the-loop and driver assistance systems
- Single and multi-vehicle planning and coordination
- Modeling and optimization of ride-share and multi-mode transportation systems
- Freight system management and optimization

### Planning Committee

- IPC Chair: Carlos Guardiola, Universitat Politècnica de València
- NOC Chair: Giorgio Rizzoni, The Ohio State University
- NOC Vice Chair: Marcello Canova, The Ohio State University
- IPC Editor: Greg Shaver, Purdue University
- NOC Editor: Qadeer Ahmed, The Ohio State University
- Co-NOC Editor: Matilde D'Arpino, The Ohio State University
- Industry Board:
  - Scott Hotz – Southwest Research Institute
  - Hoseinali Borhan – Cummins
  - Bharkumar Hegde – General Motors Corporation
  - Byungho Lee – Hyundai America Technical Center, Inc.
  - Erik Hellstrom – Ford Research & Engineering
- Student & Award Chair: Stephanie Stockar, The Ohio State University

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(Revised 25 November 2019)