

## **IECON 2021 Special Session Proposal**

**Title of the Proposal:** Recent Advances in Sliding Mode Control and Model Predictive Control for Automated and Autonomous Vehicles

### **-Technical Outline of the Session and Topics:**

#### **Outline of the Session**

Sliding Mode Control and Model Predictive Control are considered as a powerful and advanced control strategy for the control of the MIMO complex systems under the perturbations and noise, which demands for state prediction in which the plant becomes insensitive to the matched and unmatched disturbances. Although different approaches, e.g., reaching law approaches, event-triggered design, implicit discretization, have been proposed to address the issues related to the implementation, the application of these techniques to real-world problems is rather challenging. Particularly, the design of SMC and MPC for Automated and Autonomous vehicles has been an active area of research within the community whose need attention due to a large avenue of opportunities of new researches. Furthermore, the simulation of SMC and MPC consider that the computational demanded are enough to design and test the strategies and in real-time scenarios needs to consider and assess the computational resources demanded. This also takes for other field of resources when the design should to build prototypes and understand the target hardware to support the SMC and MPC. This special session aims to provide up-to date research concepts, theoretical findings and practical solutions that could contribute to the application of SMC and MPC control to Automated and Autonomous vehicles.

#### **Topics of the Session**

Potential topics include, but are not limited to:

- *Sliding Mode Control for Automated and Autonomous Vehicles*
- *Model Predictive Control for Automated and Autonomous Vehicles*
- *Sliding Mode Control for Motion Planning and Control to Automated and Autonomous Vehicles*
- *Model Predictive Control for Motion Planning and Control to Automated and Autonomous Vehicles*
- *Sliding Mode Control and Model Predictive Control for Maneuvers and ADAS Features*
- *Sliding Mode Control and Model Predictive Control for Longitudinal and Lateral Control*
- *Sliding Mode Control and Model Predictive Control for Propulsion System of Automated and Autonomous Vehicles*
- *Real-time implementation of Sliding Mode Control and Model Predictive Control to Automated and Autonomous Vehicles*
- *Hardware-In-the Loop for Sliding Mode Control and Model Predictive Control to Automated and Autonomous Vehicles*
- *Other connected and automated vehicle technologies*

**-The name, a photo, a very short bio, contact details and IEEE IES membership of the Session**

Organizer:

*Organizer 1:*



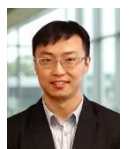
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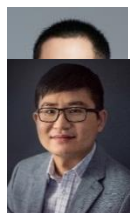
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