

IECON 2021 Special Session Proposal

Title of the Proposal: Recent Advances in Decision-Making and Motion Control for Autonomous Vehicles

-Technical Outline of the Session and Topics:

Outline of the Session

Decision making and motion control are key components of autonomous driving, and would exert significant influences on the safety, efficiency and comfort of autonomous vehicles (AVs). Appropriate decisions are difficult to be obtained due to complex and unpredictable traffic environment that is mainly consisted of traffic scenarios and different kinds of surrounding obstacles. Meanwhile, high-precision motion control of autonomous vehicles is also required to improve. Currently, making appropriate decisions and executing high-precision control actions are still a great challenge, because the autonomous vehicles need to share the right of way with human-driven vehicles and other surrounding human occupants. And human behaviours highly are complicated and very difficult to predict. In a foreseeable future, the mixed traffic scenarios with mixed human-driven and self-driving vehicles would still last for a long term. Therefore, how to make safe, smart, sustainable, and swift driving decisions is of great significance and worthwhile exploring. This special session aims to provide up-to date research concepts, theoretical findings and practical solutions that could contribute to the decision making and control for autonomous driving.

Topics of the Session

Potential topics include, but are not limited to:

- *Modelling of interactions between human-driven vehicles and AVs*
- *Driving intention inference and trajectory prediction of AVs*
- *Risk assessment in different driving conditions*
- *System safety and cyber security of AVs*
- *Model-based and learning-based decision making and control of AVs*
- *Safety for complex urban driving scenarios*
- *Safety of the intended functionality for intelligent vehicles*
- *Artificial intelligence in ITS*
- *Transportation safety in complex dynamic scenarios*
- *Human factors in ITS and AVs*
- *Human-machine collaboration for AVs*
- *Motion planning and control for AVs*
- *Perception, sensing, and localization for AVs*
- *Advanced driver assistance systems*
- *Other connected and automated vehicle technologies*

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

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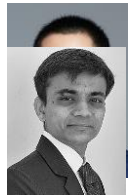
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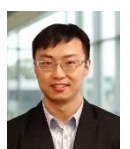
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