Special Session title
Special Session on ADAS and Chassis Systems Coordination

Special Session proposer(s)

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Abstract

Most of today's passenger cars are over-actuated. Since the success of the Anti-lock Braking System (ABS) and the Electronic Stability Program (ESP), car manufacturers and equipment suppliers are rushing into developing new systems. These systems aim to make the vehicle safer, more comfortable and more performant. In particular, chassis systems provide and enhanced comfort through for example the Electric Power-assisted System (EPS) or the 4-Wheel Steering (4WS) system, and more performance through for example the Torque Vectoring (TV) system. The Advanced Driver Assistance Systems (ADAS) are them focused more on the safety, using for example the Evasive Steering Assist (ESA) or the Automatic Emergency Braking (AEB). All these systems act on the same vehicle, and therefore, conflicts may occur.

One of the solutions adopted in the industry is to activate one system at a time to avoid any conflict depending on the situation. Two main problems arises in this case. First, the situation should be detected, which is not always possible or easy to do, and second, activating only one system do not make use of the real potential of an over-actuated vehicle. Complex situations that could be solved with a smarter coordination strategy will not be. Within this context, the ITSC 2020 ADAS and Chassis Systems Coordination Special Session welcomes intelligent coordination, control, estimation and modeling contributions aimed at the safe, comfortable, and effective development of integrated vehicle dynamics control systems. The aim of this special session is to serve as a forum for the exchange of ideas and discussions on recent and new trends in advanced control and estimation applied to chassis systems, advanced driver assistance systems (ADAS) and mostly their coordination for a global vehicle motion control.

Keywords

- Advanced Vehicle Safety Systems
- Driver Assistance Systems
- Cooperative Techniques and Systems

Topics of interest

- Chassis Systems and ADAS Control
- Over-Actuation, Systems Interactions and Management
- Fault-Tolerance Control
- Autonomous Vehicles Model Predictive Control
- Supervisory Control and Autonomous Vehicles Collision-Free Control
- Friction Estimation and Adaptive Control
- Robust Control Theory

- Vehicle Dynamics and Tire Modeling
- Comfort Design and Suspension Control
- Human-Vehicle Interaction and Driver Behavior