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Intelligent and Connected Vehicles (ICVs) Technical Committee

Aims and Scope

The ICVs Technical Committee furthers the state of the art of engineering research by promoting high-quality theoretical and applied investigations in the area of connected and autonomous vehicles (ICVs) in on-road, off-road, and aerial operational environments. The enormous growth in numbers, diversity, and complexity of ICVs has been driven by: (i) enhancements of fundamental scientific understanding; (ii) technological convergence of computing, communication, and miniaturization; and (iii) increased scale and complexity of tangible embodiments and engineering implementations at the component-, subsystem-, and system-levels.

The ICVs Technical Committee seeks to further these goals by publishing peer-reviewed scientific papers that showcase strong theoretical and empirical contributions and findings to the body of engineering knowledge surrounding various facets of the lifecycle treatment (design, modeling, controlling, testing, demonstration, and experimentation) of connected and automated vehicles with an emphasis on the system perspective.

Topics of interest include, but are not limited to, the following technologies within the overall ICVs context:

- Active perception architectures and implementation (radar, vision, lidar) for ICVs
- Sensors, sensor fusion (infrastructure and vehicle-based) for ICVs
- Vehicle design, analysis, and control enhancements for ICVs
- Electrification/vehicle electronics architectures and implementations for ICVs
- Communication architectures and implementations (V2x) for ICVs
- Real-time computational paradigms and architectures (AI, model-based) for ICVs
- Novel actuation paradigms (structural control, reconfigurable systems) for ICVs
- Cyber-enabled system capabilities
- Map and positioning
- Artificial Intelligence
- Big data analysis and cloud computing architectures
- Vehicle navigation and situational awareness
- Fault detection and diagnosis; fault tolerant control
- Cybersecurity and cyber-enhanced security
- Active- and semi-active connected and automated vehicle control (adaptive, fuzzy, cooperative, neuro, emergent paradigms)
- Hybrid simulation- and empirical-testing paradigms (model-in-the-loop, hardware-in-the-loop)
- Human-in-the-loop elements
- Active vehicle safety architectures (occupant, pedestrian)
- Human-machine Interaction design (driver- and controller-interfaces)
- Varying grades of driver-assistance systems
- Psycho-social facets of shared control (trust, variability)
- Subsystem and system engineering frameworks

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New Energy Vehicles (NEVs) Technical Committee

Aims and Scope

The NEVs Technical Committee furthers the state of the art of engineering research by promoting high-quality theoretical and applied investigations in the area of new energy vehicles (NEVs) in on-road, off-road, and aerial operational environments. The enormous growth in numbers, diversity, and complexity of NEVs has been driven by: (i) enhancements of fundamental scientific understanding; (ii) technological convergence of materials, electronic & electrical, electrochemistry and light-weighting; and (iii) increased scale and complexity of tangible embodiments and engineering implementations at the component-, subsystem-, and system-levels.

The NEVs Technical Committee seeks to further these goals by publishing peer-reviewed scientific articles that showcase strong theoretical and empirical contributions and findings to the body of engineering knowledge surrounding various facets of the lifecycle treatment (design, modeling, controlling, testing, demonstration, and experimentation) of new energy vehicles with an emphasis on the system perspective.

Topics of interest include, but are not limited to, the following technologies within the overall NEVs context:

- Electrical motor and electrical control
- Battery materials
- Battery and battery package
- Utility and planning requirements for EV infrastructure
- EV, HEV and PHEV
- Alternative vehicle applications (heavy and medium duty)
- Disruptors
- Electrified powertrain systems & components
- Advances in and beyond Li-ion
- Electric drives
- Electromobility systems
- Hybrid technology
- Battery and super-capacitor technology
- Power electronics
- Hydraulic drives
- Energy storage systems
- Fuel cell technology
- Charging and Smart Grid infrastructures

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Vehicle Safety and Cyber Security (VSC) Technical Committee

Aims and Scope

The aims of the Vehicle Safety and Cyber Security Technical Committee are to promote technical and academic interactions among professionals who have an interest in advancing engineering research in vehicle safety. The topics covered by the committee include all kinds of vehicles that operate on-road, off-road, and by railroad, as well as in the air and space.

The VSC Technical Committee seeks to further these goals by publishing peer-reviewed scientific papers that showcase research findings and innovations, as well as applications in product developments and customer use environments. The committee organizes academic conferences, workshops, and exhibitions in various forms to facilitate interactions and collaborations among researchers, engineers, and students in vehicle safety areas and to help their career growth in academic, engineering, and industrial communities in China and outside of China. The committee welcomes active participation of professionals from universities and companies, as well as other technical organizations.

Within the overall context of vehicle safety and cyber security, topics of interest include, but are not limited to, the following subjects:

- Road Traffic Accidents
- Vehicle Safety Assessment
- Integrated Safety and Crash Protection
- New Energy Vehicle Safety
- Information and Cyber Security
- Functional Safety & Safety of Intended Functionality

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