

## 4th Special Session on Automated Vehicle Safety

### Abstract

The current global pandemic has emphasized the utility of automated driving technology. The need for safe transportation of people and goods during large-scale lockdowns has provided yet another reason for the mass deployment of Automated Vehicles (AVs). But the determination of safety assurances for automated driving vehicles remains one of the most crucial challenges in the industry. Automated transportation is not just a product, but an industry. And it is as industry that we must solve this challenge. Several behavioral safety models for automated driving have been proposed recently and made their way towards standards. However, we still face practical roadblocks in the evaluation, implementation, and comparison of safety models. In this special session we invite researchers, automakers, technology companies, and government regulators to come together to develop a holistic understanding and approach to enabling AV Safety. We invite papers that provide contributions to the definition, validation, and standardization of AV safety, including methods for the development of metrics, benchmarks and evangelization of Safety Assurances to users and the public. This session continues the open discussion started in ITSC 2018 with the goal of making AV Safety Assurance a reality. In 2020, our first on-line event, we hosted presentations showcasing the use of simulation technology for verification, validation, and interpretability of AV safety to a large digital audience. With the experience of the last year we are confident this edition whether digital or in-person will be widely popular. The session will consist of high-quality paper presentations with time for questions and answers from the public.

### Aim and Scope

As automated vehicles make progress towards mass deployment, introducing such a disruptive technology into society requires that we agree and understand the intrinsic properties that come with it. Defining safety, from the point of view of whether the AV is making safe logical decisions or not, and crafting regulations that can support safety guarantees will enable the global mass production and world acceptance of automated vehicles. The aim of this session is to carry the momentum that started with an open discussion at IEEE ITSC 2018 where a diverse group of leaders from throughout the automated vehicle ecosystem came together with academic presentations, industry insights and an open panel discussion about the safety of automated vehicles. Since then we have maintained a regular cadence of community meetings organizing safety workshops at IEEE IV and IEEE ITSC with steadily growing interest and attendance. Last year's ITSC special session on Safety was our first fully on-line event and introduced top quality papers in the areas of safety validation and verification, interpretability, safety test-case generation and evaluation of safety model parametrization with human-feedback. The main goal of this year's special session is accelerating a common understanding of safety, accepted throughout the industry. Many researchers have started exploring and sharing the usage of tools (simulation, controlled tests in closed loops, etc.) and results (case studies, scenarios, etc.) for evaluating the safety principles controlling AVs. This session will promote and facilitate the collaboration between academics, industry experts and policy makers in order to specify the AV safety standards and tools that will help save millions of lives. Our global contributors, including USA, Europe, and Asia, seek to provide a universal view of how safety perceived around the world and how we can satisfy the regional differences. This understanding is crucial for developing a general safety standard that can be applied worldwide.

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