

Unsettled Topics in Automated Vehicle Data Sharing for Verification and Validation Purposes

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Yaser Khalighi, Ph.D. is a seasoned technologist and an entrepreneur. He earned a doctorate and master's degree from Stanford University with a specialization in high-performance distributed computing and mathematical modeling. His expertise includes artificial intelligence (AI), machine learning, and platform engineering.

Based in Silicon Valley, he has a stellar track record in building production-level computational solutions utilizing machine learning, simulation, and analytics to resolve a variety of complex, large-scale problems. He has been instrumental in recruiting and leading teams of engineers and scientists for reputable technology-based organizations.



Mohsen Khalkhali is a seasoned strategist, investor, and an entrepreneur. He has built and run global strategy and operations for a mobile telecoms company and started the world's first business-to-business transaction platform for telecom suppliers. More recently, he founded and ran a global venture capital firm investing in seed-stage startups with an active portfolio of 15 AI-rich companies across digital health, enterprise software-as-a-service, and industrial internet of things.

As a conscious leadership practitioner, Mohsen's expertise has been transformative in identifying, funding, and growing entrepreneurial teams that focus on exponential growth and long-term value.

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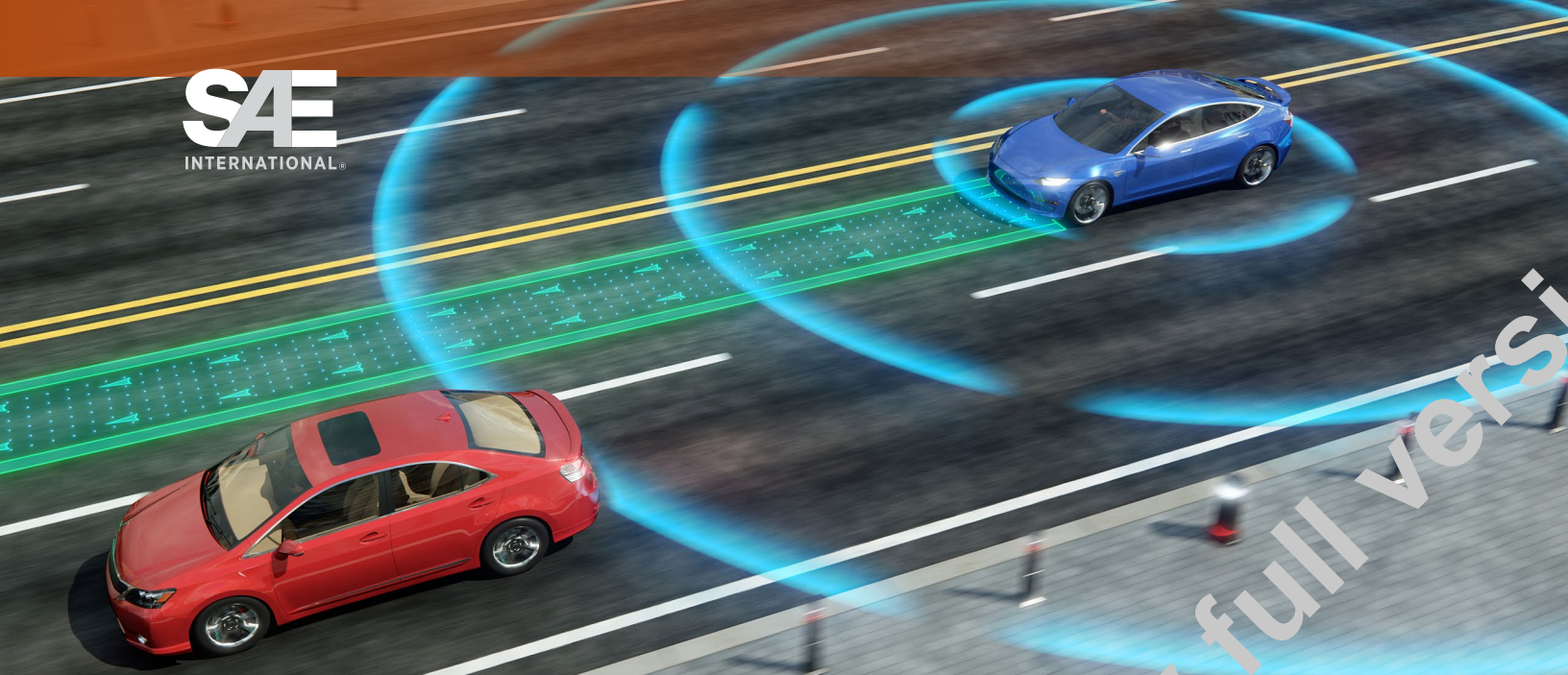
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Abstract

The race to autonomy has been synonymous with the race to data collection. Automated vehicles (AVs) generate terabytes of data per day. Perception engineers use these large datasets to analyze and model the automated driving systems (ADS) that will eventually be integrated into vehicles that will drive themselves. However, the current industry practices of collecting data by driving on public roads to understand real-world scenarios is not practical and will be unlikely to lead to safe deployment of this technology anytime soon. Evidence shows that it could take 400 years for a fleet of 100 AVs to drive enough miles to prove that they are as safe as humans.

We, therefore, discuss an unsettled topic of sharing data for verification and validation purposes where - instead of each testing project and organization doing their own tests in isolation and potentially duplicating work - a shared-data culture, business, and technology be developed. This could allow for rapid generation, testing, and sharing of the billions of possible scenarios that are needed to prove practicality and safety of an ADS - resulting in lower research and development costs to the industry. We explore how this could lead to better regulation, insurance, public acceptance - and finally, shorter technology development cycles. Finding a business case and changing to an open data culture are not going to be easy tasks, but we believe data sharing is the only way forward for the whole industry to move to the next phase of deployment after nearly a decade of intense research.

NOTE: SAE EDGE™ Research Reports are intended to identify and illuminate key issues in emerging, but still unsettled, technologies of interest to the mobility industry. The goal of SAE EDGE™ Research Reports is to stimulate discussion and work in the hope of promoting and speeding resolution of identified issues. SAE EDGE™ Research Reports are not intended to resolve the issues they identify or close any topic to further scrutiny.

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