

Unsettled Issues in Vehicle Autonomy, Artificial Intelligence, and Human- Machine Interaction

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About the Editor



In 1997, **Fang Chen** received her PhD from Linköping University in Sweden. Since then, her main research areas have included cognitive science, interactive design, and human-machine interaction with a theoretical background involving physiology, behavioral psychology, and visual and auditory interaction. Her research has been widely applied in multimedia system usability, automatic control, aerospace and automotive driving control, public safety, and crisis management. As an expert in interaction design, Dr. Chen serves as a member and consultant at several international academic research institutions. She has published hundreds of papers in international journals and conferences.

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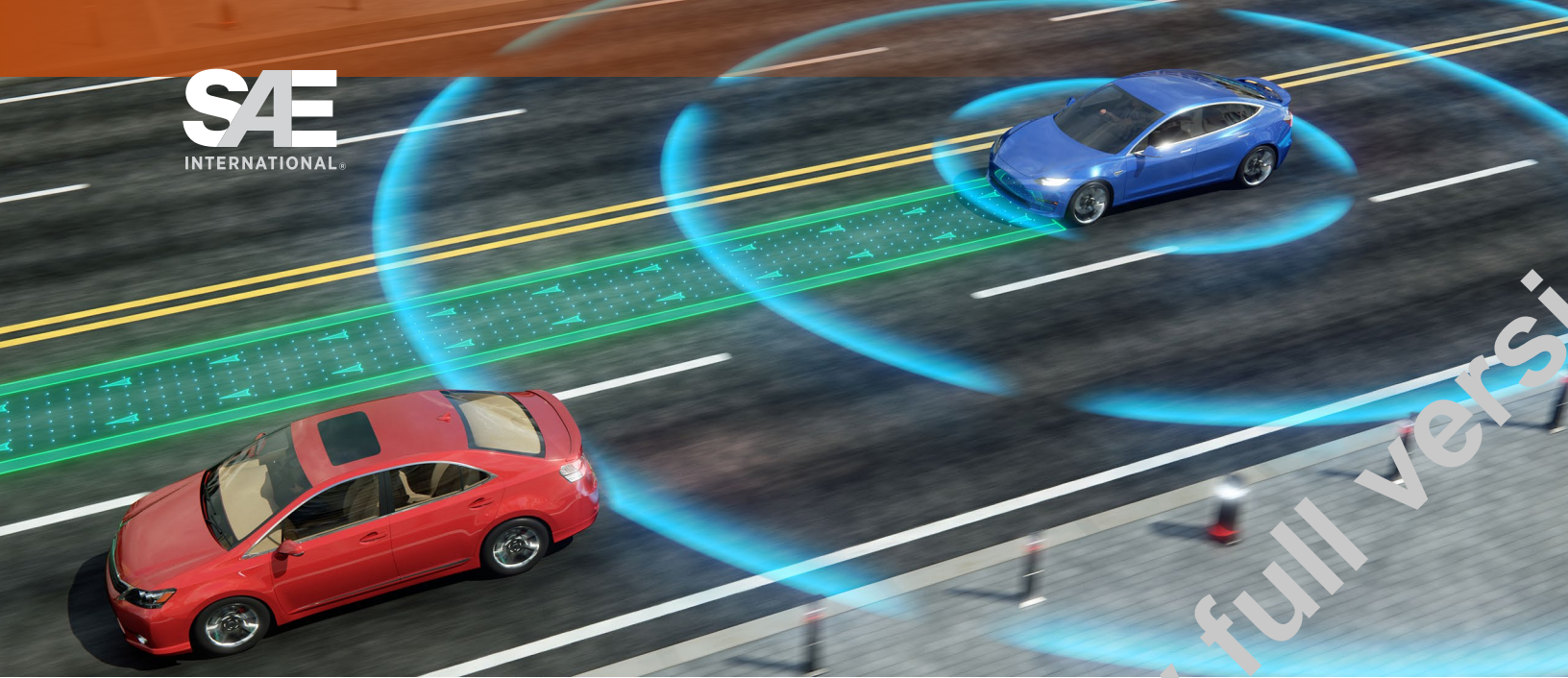
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Abstract

Artificial intelligence (AI)-based solutions are slowly making their way into mobile devices and other parts of our lives on a daily basis. By integrating AI into vehicles, many manufacturers are looking forward to developing autonomous cars. However, as of today, no existing autonomous vehicles (AVs) that are consumer ready have reached SAE Level 5 automation. To develop a consumer-ready AV, numerous problems need to be addressed. In this report we present a few of these unaddressed issues related to human-machine interaction design. They include interface implementation, speech interaction, emotion regulation, emotion detection, and driver trust. For each of these aspects, we present the subject in detail—including the area's current state of research and development, its current challenges, and proposed solutions worth exploring.

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. These reports are not intended to resolve the challenges they identify or close any topic to further scrutiny.

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