

**Unsettled Issues
Regarding Autonomous
Vehicles and Open-source
Software**

Rahul Razdan, PhD

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Rahul Razdan, PhD
Raztech Research Institute

EDG DEVELOPMENT TEAM

John Wall, *BlackBerry® QNX®*
Ben Volkow, *Otonomo*
Dan Cauchy, *The Linux Foundation*
Shinpei Kato, PhD, *Tier IV*

Mahesh Menase, *Acclivis Technologies*
M. Ilhan Akbas, PhD, *Embry-Riddle Aeronautical
University*
Asaf Atzmon, *Cybellum*



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About the Editor



Dr. Rahul Razdan is a seasoned scientist and business executive who has held significant roles in the world of academia, startups, and Fortune 500 companies. In corporate roles, he was the Senior Vice President of Strategy of Flextronics, General Manager of the System and Functional Verification Business at Cadence Design Systems, and Alpha CPU architect at Digital Equipment Corporation. He has built successful startups in areas such as wireless power, machine learning, and low-power electronics design.

In academia, beyond a large range of worldwide collaborations, he maintains academic appointments at the University of Florida, Florida Polytechnic University, and Institute for Human and Machine Cognition. Today, he is CEO of Raztech Research Institute, a technology-based research institute that incubates ideas at the intersection of technology and society. Active projects for the institute include the Autonomous Vehicle Verification Consortium, NextGen Edu, and Anew Design Automation. He has a bachelor's (1984) and master's degree (1985) from Carnegie Mellon University and a doctorate from Harvard University (1994).

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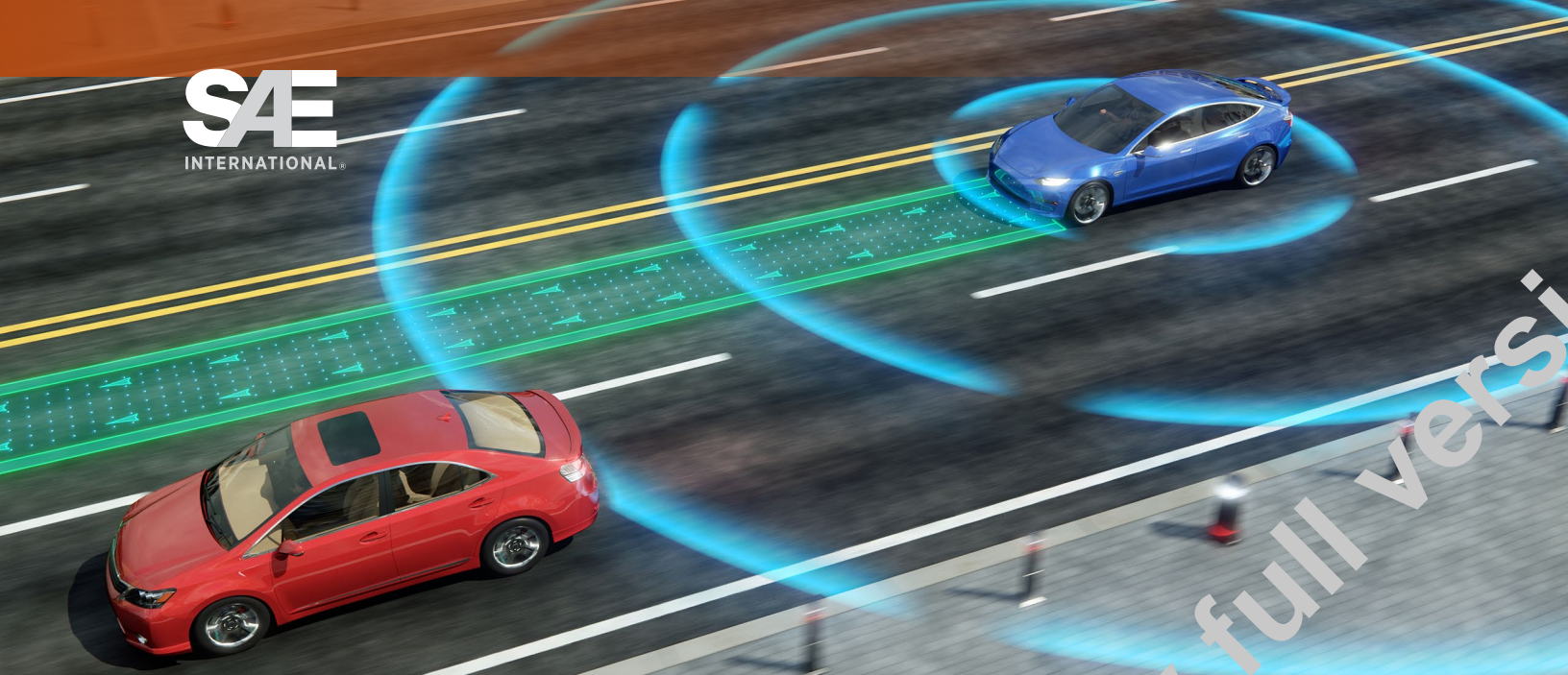
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Unsettled Issues Regarding Autonomous Vehicles and Open-source Software

Abstract

Over the last decade, automobiles have been morphing from stand-alone mechanical objects to highly connected systems with the ever-increasing usage of electronics. Now, these electronics effectively form the nervous system of the modern vehicles. With autonomy, some semblance of local decision-making is being built into these vehicles, which is networked through communication interfaces to a cloud architecture. This cloud can enable even more power and capabilities within the broader \$2 trillion automotive ecosystem. Finally, an increasing percentage of electronic functionality is captured in software, and an increasing percentage of that software is utilizing open-source code.

Open-source applications like Linux and WordPress have been enormously successful in the world of information technology, but can they have an impact on transportation? What about critical issues such as safety, security, and validation? This report introduces the impact of software in automotive applications and digs deeper into the role of open-source communities in accelerating innovation and the important topics of safety and cybersecurity.

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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