B-ROVERette: AI-Ready Scalable and Affordable Model Vehicle

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Category
Software
Software & Content
MOSS - Michigan Open Source
Support

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OVERVIEW

Affordable, high-fidelity 1/10-scale platform for autonomous driving and ADAS prototyping

- Enables realistic ADAS testing at a fraction of full-scale prototype costs
- Used for autonomous driving research, ADAS validation, and hands-on mobility education

BACKGROUND

Developing and validating advanced driver-assistance systems (ADAS) and autonomous driving algorithms traditionally requires expensive full-scale test vehicles or relies on software simulations. While full-scale vehicles offer realism, their $200K+ cost limits access to only large manufacturers and select research labs. Alternatively, lower-cost hobbyist robots and purely simulated environments lack the fidelity to capture real-world dynamics like sensor noise, variable lighting, or mechanical imperfections. This technological and financial gap slows innovation, prevents smaller companies and universities from contributing, and restricts large-scale hands-on training opportunities. The industry needs a cost-effective, realistic platform to accelerate ADAS advancement while lowering R&D barriers for a wider pool of innovators.

INNOVATION

B-ROVERette addresses this need with an affordable, robust, 1/10-scale Ackermann-steering robotic platform, equipped with a modular suite of automotive-grade sensors (camera, LiDAR, IMU) and a flexible computing interface. Its architecture faithfully replicates the kinematics and dynamics of full-size vehicles, allowing ADAS algorithms to be evaluated in real-world settings at minimal cost. Designed for seamless integration of AI and autonomy stacks via ROS 2 and TensorFlow/PyTorch, it supports onboard and cloud-based processing. This democratized testbed empowers Tier 1/2 suppliers, startups, researchers, and educators to rapidly prototype lane-keeping, obstacle avoidance, and sensor fusion algorithms. With its realistic performance, scalability, and hands-on usability, B-ROVERette accelerates R&D, fosters education, and expands access to cutting-edge mobility technologies.

ADDITIONAL INFORMATION

PROJECT LINKS:

- Oscar Github
- Broverette Github

DEPARTMENT/LAB:

- Jaerock Kwon, Electrical and Computer Engineering, UM Dearborn

LICENSE:

- Apache 2.0

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