

Exponent®
Engineering & Scientific Consulting

Evan Lowe, Ph.D.

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Professional Profile

Evan Lowe, Ph.D., is a Managing Engineer in Exponent's Vehicle Engineering Practice with 20+ years of experience in Advanced Driver Assistance Systems (ADAS) and automated vehicle (AV) development, vehicle dynamics, and high-fidelity simulation. He specializes in ADAS/AV testing and validation, emergency obstacle-avoidance analysis, and regulatory and standards compliance assessments under FMVSS and ISO 26262—helping OEMs, Tier One suppliers, and technology clients translate complex vehicle requirements into validated, defensible engineering solutions. Leveraging his testing, simulation, and regulatory analysis background, Dr. Lowe supports clients in the development of safety cases and engineering analyses that require rigorous, defensible technical assessment of ADAS/AV system performance.

Dr. Lowe has supported ADAS and AV programs across the full validation spectrum — from Model-, Software-, Hardware-, Driver-, and Vehicle-in-the-Loop (MIL/SIL/HIL/DIL/VIL) simulation to full-scale physical vehicle testing. His work spans system architecture guidance, test-scenario development, and co-simulation using MATLAB/Simulink, CarSim, Virtual Test Drive (VTD), and ROS2, along with fault and fail-safe analysis aligned to ISO 26262 and FMVSS compliance testing for OEM and Tier One vehicle development programs.

He has addressed challenges including obstacle avoidance, sensor fusion, and perception validation for OEM, Tier One, and startup technology clients, and has conducted electronic stability control (ESC) and all-wheel-drive (AWD) development and testing across extreme temperature environments, with simulation-to-track correlation research supporting regulatory test compliance.

Dr. Lowe has translated this testing and simulation experience into patented and patent-pending methodologies for assessing AV obstacle avoidance capabilities, combining simulation and proving-ground testing with a regulatory test-scoring framework that supports pre-compliance testing, technical due diligence, and expert analysis of ADAS/AV system performance.

Before joining Exponent, Dr. Lowe held technical product, applications engineering, and business development roles at Hexagon Manufacturing Intelligence and Cadence Design Systems, growing Virtual Test Drive (VTD/VTDx) simulation engagements for OEM and Tier One clients across North America. He also conducted research on vehicle dynamics and stability control through simulation at Honda R&D Americas. He earned a Ph.D. in Mechanical Engineering from The Ohio State University, with a dissertation on autonomous vehicle emergency obstacle avoidance; an M.S. in Mechanical Engineering from Clemson University; and a B.S.E. in Mechanical Engineering (Cum Laude) from the University of Michigan.

Dr. Lowe has authored peer-reviewed research on AV emergency maneuvers and obstacle-avoidance capability assessments and has presented at academic and industry conferences. He also volunteers as

a curriculum developer and instructor for introductory software development courses for elementary and middle school students.

Academic Credentials & Professional Honors

Ph.D., Mechanical Engineering, The Ohio State University, 2022

M.S., Mechanical Engineering, Clemson University, 2010

B.S.E., Mechanical Engineering, University of Michigan, 2005

Licenses and Certifications

Artificial Intelligence Safety Professional

Prior Experience

Principal Product Engineer, Cadence Design Systems, Ann Arbor, Michigan, 2026

Autonomous Applications Engineer & Senior Business Development Representative, Hexagon Manufacturing Intelligence, Ann Arbor, Michigan, 2022–2026

Founder & Principal Consultant, ADAS/AV technical consulting firm, Ann Arbor, Michigan, 2023–2026

Software Application Engineer, Mechanical Simulation Corporation, Ann Arbor, Michigan, 2019–2021

Chief Operating Officer, Columbus AI Incorporated, Columbus, Ohio, 2018–2019

Vehicle Dynamics Chassis Control Engineer — Advanced Traction Systems, Honda R&D Americas, Inc., Raymond, Ohio, 2014–2018

Simulation Application Engineer, FAAC, Ann Arbor, Michigan, 2005–2007

Professional Affiliations

SAE International — Professional Member

Patents

U.S. Patent No. 64/112,170, Simulation-to-Track Bridge: A Tiered Vehicle Model Architecture and Sub-Score Parity Validation Process for GOACA Certification of Autonomous Vehicle Obstacle Avoidance Systems, July 16, 2026, Lowe E.

U.S. Patent No. 64/112,162, System and Method for Computing an Avoidance Quality Index for Autonomous Vehicle Regulatory Testing, July 16, 2026, Lowe E.

U.S. Patent No. 64/112,148, Three-Stage Integrity Validation System for Autonomous Vehicle Regulatory Testing, July 16, 2026, Lowe E.

U.S. Patent No. 64/112,184, Aerial Computer Vision System for Non-Contact Spatial Measurement in Standardized Autonomous Vehicle Performance Testing, July 15, 2026, Lowe E.

U.S. Patent No. 63/964,049, System and Method for Deploying and Validating an Emergency Obstacle Avoidance Maneuver Framework on Autonomous Road Vehicles, July 10, 2026, Lowe E.

Publications

Lowe E, Guvenc L. General obstacle avoidance capability assessment for autonomous vehicles. Electronics 2024; 13(24):4901.

Lowe E. Guvenc L. Autonomous vehicle emergency obstacle avoidance maneuver framework at highway speeds. Electronics 2023; 12(23):4765.

Lowe E. A framework for real-time autonomous road vehicle emergency obstacle avoidance maneuvers with validation protocol. Doctoral Dissertation. Columbus, OH: Ohio State University; 2022.

Lowe E, Guvenc L. A review of autonomous road vehicle integrated approaches to an emergency obstacle avoidance maneuver. arXiv preprint arXiv:2105.09446; 2021.

Lowe E, Zhu S, Aksun-Guvenc B, Guvenc L. FMVSS 126 sine with dwell ESC regulation test for autonomous vehicles. SAE Technical Paper No. 2019-01-1011; 2019.

Lowe E, Drouin N, Venhovens PJ, Brooks JO. Understanding the needs of hand control instructors, dealers/installers, and users. Occupational Therapy in Health Care 2014; 28(4):394–409.

Presentations

Lowe E. FMVSS 126 sine with dwell ESC regulation test for autonomous vehicles. Oral Presentation, SAE World Congress, Detroit, MI, 2019.

Lowe E. Using driving simulators to train drivers to use adaptive equipment. Poster Presentation, Medical Education Research Day, Greenville, SC, 2014.

Lowe E. Aging research day & geriatric symposium. Poster Presentation, Columbia, SC, 2014.

Lowe E. The gerontological society of America annual scientific meeting. Poster Presentation, New Orleans, LA, 2013.

Lowe E. Development of adaptive equipment training on a driving simulator. Conference Seminar, National Mobility Equipment Dealers Association, Daytona Beach, FL, 2013.

Lowe E. Human factors in the automotive industry. Seminar, CU-ICAR Summer Scholars, Greenville, SC, 2013.

Project Experience

ADAS/AV Testing, Simulation & Validation

- **Led** ADAS/AV simulation and validation engagements using Virtual Test Drive (VTD/VTDx) for OEM and Tier One vehicle programs, growing a $2M+ annual sales and services pipeline through technical account support and conference-driven business development.

- **Directed** full-scale physical vehicle test programs and MIL/SIL/HIL/DIL/VIL simulation campaigns from initiation through final technical reporting, developing and validating custom automatic emergency braking (AEB), lane keep assist systems (LKAS), and real-time obstacle-avoidance

logic and executing ISO 26262-aligned fault and fail-safe evaluations on AWD and stability control systems in OEM production environments.

Emergency Obstacle Avoidance & Regulatory Test Development

- **Authored** a patented framework for deploying and validating emergency obstacle avoidance maneuvers on autonomous road vehicles, establishing a structured methodology for high-speed evasive maneuver assessment.
- **Developed** a patent-pending system for computing an Avoidance Quality Index and a three-stage integrity validation system supporting autonomous vehicle regulatory testing.
- **Created** a simulation-to-track bridge methodology — a tiered vehicle model architecture and sub-score parity validation process — supporting General Obstacle Avoidance Capability Assessment (GOACA) certification of autonomous vehicle obstacle avoidance systems.
- **Automated** the complete FMVSS 126 ESC Sine with Dwell regulation test through a fully automated MATLAB/Simulink and CarSim co-simulation framework.

Vehicle Dynamics & Full-Scale Testing

- **Designed and executed** full-scale dynamic safety test programs for traction control and AWD systems across extreme hot- and cold-weather track environments, analyzing Controller Area Network (CAN) bus data.
- **Supported** development and tuning of AWD and stability control systems for hybrid production vehicle platforms.

Additional Education & Training

Honda R&D Americas A-License, High-Performance Driving, 2018

Advisory Appointments

Executive Advisory Board Member, Hexagon Manufacturing Intelligence — University–Industry Partnerships, 2022–2026

Peer Reviews

Reviewer, IEEE Intelligent Transportation Systems (ITS) Society Conference, Auckland, New Zealand, 2019.