



**Exponent®**  
Engineering & Scientific Consulting

## Ross Alexander

Senior Associate | Vehicle Engineering

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### Professional Profile

Mr. Ross Alexander is a senior associate in the vehicle engineering practice and specializes in the development and analysis of vehicle-based electromechanical systems. His background is in optimization-based path planning algorithms for mobile robots, unmanned aerial vehicles, and autonomous vehicles.

While at Exponent's Test and Engineering Center, in Phoenix, AZ, Mr. Alexander is responsible for developing custom methodologies and control systems to conduct testing on conventional and electric vehicles (EV). He is proficient in conducting battery quality and abuse testing on pack-level lithium-ion batteries for EV, robot-assisted crash testing, and Advanced Driver Assist System (ADAS) testing.

He plays an integral role in the continuing development of Exponent's EV battery pack test laboratory and has pioneered new test methodologies for pack-level testing in terms of safety and abuse. His experience includes thermal propagation, mechanical abuse, and coolant ingress on pack-level lithium-ion batteries, and includes test setup, custom fixture design, instrumentation, data analysis, and post-test battery disassembly and failure investigation.

Mr. Alexander develops and operates robotic systems to reliably control vehicle dynamics for a variety of test scenarios. These include throttle control systems for emissions testing, utilizing robot-controlled vehicles to perform crash tests with and without emergency maneuvers, and vehicle soft target ADAS testing. Prior to joining Exponent, Mr. Alexander worked in the Hybrid Robotics Laboratory at the University of California at Berkeley to develop environment mapping and obstacle avoidance algorithms for quadcopters.

### Academic Credentials & Professional Honors

M.Eng., Mechanical Engineering, University of California, Berkeley, 2020

B.A.Sc., Engineering Physics, Queen's University at Kingston, 2019

### Prior Experience

Product Designer – Mechatronics, SeaStar solutions, May 2017 – September 2018