Exponent®
Engineering & Scientific Consulting

Matt Carpenter

Senior Engineer | Vehicle Engineering
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Professional Profile

Mr. Carpenter specializes in motor vehicle incident investigation and root cause determination. He is proficient in capturing data from a multitude of sources to develop an understanding of the human and vehicle factors leading to an incident. Mr. Carpenter has expertise in vehicle powertrain components (engine, transmissions) and analyzing propulsion-related safety hazards, such as vehicle rollaway. He has an extensive background in performing root cause analyses of components, modules, systems, and systems-of-systems.

Prior to joining Exponent, Mr. Carpenter worked as a senior system integration engineer of transmission shift-by-wire systems at General Motors. In this role, he performed vehicle verification testing to ensure the shift-by-wire system met customer expectations, and he led root cause investigations into issues with system functionality. This experience developed Mr. Carpenter's expertise in automotive incident investigation, system-to-system communication and interactions, and Design for Six Sigma.

Before joining GM, Mr. Carpenter worked as a lead design engineer of nacelle actuation systems at The Boeing Company. During this time, he was involved in the design, testing, certification, and support of mechanical and hydraulic actuation systems across the commercial airplane portfolio. This experience developed Mr. Carpenter's expertise in component failure investigation, computer-aided design (CATIA, Rhinoceros 3D), system modeling (MATLAB Simulink), and project management.

Academic Credentials & Professional Honors

B.S., Mechanical Engineering, University of Michigan, Ann Arbor, 2010

M.S., Mechanical Engineering, University of Michigan, Ann Arbor, 2010

2010 J.A. Bursley Prize Scholarship for leadership in mechanical engineering

2009 Lloyd H. Donnell Scholarship for academic excellence in solid mechanics, dynamics and fluid mechanics

Pi Tau Sigma Mechanical Engineering Honor Society

Tau Beta Pi Engineering Honor Society

Prior Experience

Senior System Integration Engineer, General Motors, 2016-2019

Lead Design Engineer, Boeing, 2011-2016

Independent Researcher, Human Biomechanics and Controls Laboratory, University of Michigan, 2010

Professional Intern, Dow Corning, 2010

Engineering Summer Intern, Shell Oil Company, 2008 & 2009

Professional Affiliations

SAE International

Patents

US Patent 9,890,739: Controlling Nozzle Areas of Variable Area Fan Nozzles, issued February 13, 2018 (with JJ Jackowski, KE Karnofski).

Additional Education & Training

Powered Industrial Truck (Forklift), Operator's Training Classes 4 and 5, 2022

Advanced Applications of Heavy Vehicle EDR Data, SAE International, 2021

Accessing and Interpreting Heavy Vehicle Event Data Recorders, SAE International, 2021

HVE Forum Participant, Engineering Dynamics Company, 2021

Crash Reconstruction Using FARO Zone 3D, FARO, 2021

Bosch CDR Tool Technician Training, Institute of Police Technology and Management – University of North Florida, 2020

Architecture and Systems Engineering Professional Certificate Program, Massachusetts Institute of Technology, 2018

Design for Six Sigma (DFSS) Black Belt, General Motors, 2018

Advanced Driver Training, General Motors, 2016