IMPACT ANALYSIS, INC
Biomechanics ♦ Accident Reconstruction

Eric McDowell, PE, PMP
Senior Engineer
emcdowell@impactanalysisinc.com

A member of the Impact Analysis, Inc. team since 2021, Eric McDowell's specialties include motor vehicle accident investigation and reconstruction. His accident reconstruction experience spans incidents involving passenger and commercial vehicles, buses, motorcycles, bicycles, pedestrians, and industrial equipment. He focuses on reconstructing high-severity, high-speed, and complex collisions across all impact configurations including front, rear, and side impacts. He specializes in crush energy analyses and 3D simulations using PC-Crash. Eric has extensive experience in the investigation and analysis of vehicle and heavy truck Event Data Recorder (EDR) data, including but not limited to vehicle dynamics and mechanics, driver input, and vehicle response to driver input. He utilizes 3D laser scanning technology to capture accident scenes and vehicles, processing scan data to create realistic 3D visualizations for analysis and courtroom presentation. Eric has experience setting up and executing full-scale crash tests for clients to support reconstruction analyses. In addition to accident reconstruction, he is skilled in the analysis and design of mechanical tools using Finite Element Analysis (ANSYS) and computer-aided design software (Solidworks, Creo 3.0, Rhino) for a variety of applications, including oil and gas products and services. He is also experienced in software coding and analysis (MATLAB).

Prior to working with Impact Analysis, Inc. Eric spent three years at Exponent as a Senior Engineer in the Vehicle Engineering division. Prior to Exponent, he worked as a lead mechanical engineer for two oil and gas services companies where he worked on product development and sustaining engineering projects such as the evaluation/upgrade/re-design/etc. of existing wireline tools, the design of the power supply section for a new wireline tool, and the upgrade of the field of view of a wellbore X-ray tool.

His academic background includes a Bachelor of Science in Engineering Science and Mechanics and a Master of Science in Engineering Mechanics, both from Virginia Polytechnic Institute and State University (Virginia Tech), where he earned multiple academic awards. His undergraduate senior design work involved the development of a piezoelectric energy harvesting device to operate in remote locations under low flow rates.

ACADEMIC CREDENTIALS & PROFESSIONAL HONORS

M.S., Engineering Mechanics, Virginia Polytechnic Institute and State University, 2014
B.S., Engineering Science and Mechanics, Virginia Polytechnic Institute and State University, 2013
2015 Baker Hughes Inc., Spotlight Award, in recognition of significant contribution to development of upgraded service earning BHI substantial revenue in North Sea Region
2013 Engineering Science and Mechanics, Dan H. Pletta Award
2013 Virginia Tech Accelerated Undergraduate/Graduate Degree Program (UG/G) for highly qualified VT undergraduate engineering students

LICENSES AND CERTIFICATIONS

Licensed Professional Engineer, Delaware, #24416
Bosch CDR Tool Technician Training by IPTM, 2019
Certified Crash Data Retrieval (CDR) Analyst, 2019
Project Management Professional, Project Management Institute
SAE Professional Development Program, Accessing and Interpreting Heavy Vehicle Event Data Recorders, August 2018
Northwestern University Center for Public Safety, Traffic Crash Reconstruction, July 2018

IMPACT ANALYSIS, INC
Biomechanics ♦ Accident Reconstruction

Eric McDowell, PE, PMP
Senior Engineer
emcdowell@impactanalysisinc.com

PRIOR EXPERIENCE

Senior Engineer, Exponent, 2018-2021
Mechanical Engineer, Visuray LLC, 2017-2018
Research Development Design Mechanical Engineer III, Baker Hughes Inc., 2014-2017
Graduate Teaching Assistant, Engineering Science & Mechanics/Materials Science & Engineering (ESM/MSE) Engineering Communications Program at Virginia Tech, 2013-2014

PROFESSIONAL AFFILIATIONS

SAE International
American Society of Mechanical Engineers - ASME

PUBLICATIONS

Paradiso, M. and McDowell, E., "Restitution and Crash Pulse Duration from Low-Speed Crash Tests," SAE Technical Paper 2023-01-0617, 2023, doi:10.4271/2023-01-0617.

Crosby, C., Skiera, J., Bare, C., Como, S. and McDowell, E., "Passenger Vehicle Response and Damage Characteristics of Front and Rear Structures during Low- to Moderate-Speed Impacts," SAE Technical Paper 2019-01-0415, 2019, doi:10.4271/2019-01-0415.

Abdelkefi A, Scanlon JM, McDowell E, Hajj MR. Performance enhancement of piezoelectric energy harvesters from wake galloping. Applied Physics Letters 2013; 103(3):033903.