Daniel B. Honeycutt

MSME, P. E.

Senior Consultant

Mr. Daniel Honeycutt is a mechanical engineer with a strong passion for applying scientific principles to understand and explain complex technical problems. He specializes in physics-based simulation, crashworthiness, fluid flow including aerodynamics, vehicle dynamics, design, testing, and accident reconstruction. Mr. Honeycutt has extensive experience analyzing vehicle rollovers involving passenger vehicles, commercial vehicles, and race cars.

Prior to joining ESi, Mr. Honeycutt worked in the NASCAR industry, where he held engineering and leadership roles focused on vehicle engineering, research, development, and performance for racing organizations.

Since joining ESi, Mr. Honeycutt has been actively involved in investigations across a wide range of industries, including aviation, automotive, and intellectual property matters. He is a patent holder and has published peer-reviewed research in the areas of vehicle engineering, simulation, and the aerodynamics of sports equipment.

Education

MS, Mechanical Engineering. University of North Carolina at Charlotte. 2020

BS, Mechanical Engineering. Mississippi State. 1998

Licenses & Certifications

- State of Alabama P.E. License 051212
- State of Georgia P.E. License 048912
- State of North Carolina P.E. License 043180
- State of South Carolina P.E. License 40140
- NCEES 16-053-76

Contact Information

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ESi North Carolina

3310 Green Park Circle
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Areas of Specialization

- Vehicle Rollovers
- Vehicle Crashworthiness
- Vehicle Dynamics and Simulation
- Mechanical Engineering
- Computational Fluid Dynamics (CFD)
- Finite Element Analysis (FEA)
- Vehicle Aerodynamics
- Automotive Research
- Accident Reconstruction
- Failure Analysis and Troubleshooting
- Carbon Monoxide Exposure – Vehicles
- Vehicle Maintenance
- Motorsports
- Intellectual Property Matters

Positions Held

Engineering Systems Inc., Charlotte, North Carolina, 2019-Present

- Team Leader, Auto Marine Design
- **University of North Carolina at Charlotte, Charlotte, North Carolina, 2026-present**

Adjunct Faculty, Department of Mechanical Engineering and Engineering Sciences

Richard Childress Racing, Welcome, North Carolina, 2016-2019

- Aerodynamicist and Lead Aerodynamics Test Engineer

NASCAR Research & Development Center, Concord, North Carolina, 2001-2016

- Senior Director, Aerodynamics, Simulation, Design & Prototyping
- Director of Vehicle Engineering

Lockheed Martin, Marietta, Georgia, 1998-2001

- Design Engineer, Structural Analysis Engineer, Test Engineer

Continuing Education

- **Hyundai-Kia & Tesla EDR Tools Technician** – Institute of Police Technology and Management, University of North Florida. Taught in Aurora, IL, 2026
- **Safety Belt Examinations** - Institute of Police Technology and Management, University of North Florida. Taught in Aurora, IL, 2026
- **Event Data Recorder Update and Analysis** – Ruth Consulting, 2023
- **Commercial Vehicle Crash Investigation** – Institute of Police Technology and Management, University of North Florida, 2022
- **Traffic Signal Timing Records Interpretation & Analysis** – Traffic Signal Academy, University of Tennessee, 2020
- **Traffic Crash Reconstruction** – Northwestern University Center for Public Safety, 2019
- **Case Preparation and Courtroom Presentation –** Institute of Police Technology and Management, University of North Florida, 2019
- **Roadway Evidence** – Institute of Police Technology and Management, University of North Florida, 2019
- **Safety Belt Examinations** – Institute of Police Technology and Management, University of North Florida, 2019
- **Tire Examinations** – **Tire and Wheel Forensics** – Institute of Police Technology and Management, University of North Florida, 2019

- **Vehicle Lamp Examinations in Traffic Collisions** – Institute of Police Technology and Management, University of North Florida, 2019
- **Bosch CDR Tool Technician Training** – Institute of Police Technology and Management, University of North Florida, 2019
- **Air and Foundation Brake Training** – Bendix Commercial Vehicle Systems LLC, Brake Training School, 2019
- **HVE Accident Reconstruction Software Training** – Engineering Dynamics Corporation, HVE Forum, 2020, 2021, 2022

Professional Affiliations/Honors

National Society of Professional Engineers

- Member

Society of Automotive Engineers (SAE)

- Member and Reviewer

Project Experience

- Simulated heavy vehicle and passenger vehicle rollovers using a physics-based vehicle dynamics program.
- Directed analysis of alternative roof structure designs using Finite Element Analysis (FEA).
- Performed complex physics-based vehicle accident reconstructions using automated tools and classical hand calculation methods.
- Member of the team responsible for the aerodynamic development of the 2018 Daytona 500-winning racecar.
- Presenter at the Society of Automotive Engineers 2017 World Congress: “Closed Wheel Race Vehicle Aerodynamic Lift-Off.”
- Led the design team in charge of new racecar designs as Director of Vehicle Engineering at NASCAR for which the primary focus was crashworthiness and occupant safety.
- Engineer and project leader for research of racecar driver exposure to carbon monoxide (CO). The team included medical doctors and engineers. Designed and implemented a test laboratory to measure the effectiveness of scrubber devices and produced a scrubber device design and specification for the NASCAR industry.
- Authored the aerodynamic and design standards for the NASCAR body approval process for the OEMs (Original Equipment Manufacturers: GM, Chrysler, Ford, Toyota). Directed the NASCAR OEM body approval process.

- Planned and conducted numerous NASCAR multi-car track tests. The planning stages included conducting CFD (computational fluid dynamics), vehicle dynamics simulations, component design, and wind tunnel testing.
- Designed and analyzed military aircraft structures. Performed durability and damage tolerance analysis using FEA and proprietary analysis software.

Publications

Honeycutt, D., Rogers, G., Yang, S., and Chinni, J., “Comparison of a Tractor-Semitrailer Rollover Test and HVE Simulations,” SAE Technical Paper 2024-01-2487, 2024.

Honeycutt, D., Uddin, M. Prediction of disc golf drivers’ aerodynamic characteristics using Reynolds Averaged Navier Stokes computational fluid dynamics. *Sports Eng* 26, 29 (2023). https://doi.org/10.1007/s12283-023-00420-w.

Honeycutt, D. and Uddin, M., "Closed Wheel Race Vehicle Aerodynamic Lift-Off," SAE Int. J. Passeng. Cars - Mech. Syst. 10(2):573-579, 2017, https://doi.org/10.4271/2017-01-1516.

Patents

Air Deflecting System for Automobiles, U.S. Patent No.: 7,517,004 B2. Inventor: Daniel Barry Honeycutt, May 22, 2008