



ALEXANDER E. SCALER

PROFESSIONAL BIOGRAPHICAL OUTLINE

BACKGROUND

Mr. Scaler is a Mechanical Engineer that specializes in the reconstruction and forensic analysis of commercial and passenger vehicle collisions. He has a wealth of experience and training with automotive systems such as engine repair, automatic and manual transmissions, steering, suspension, electrical, braking system, and engine performance. He also has significant experience with the complexities of vehicle dynamics through both theoretical and real-world testing as a professional racecar driver in the motorsport environment. Mr. Scaler is fluent in engineering equipment including tools such as BOSCH Crash Data Retrieval (CDR) and three-dimensional laser scanning to document and preserve crash evidence. He also conducts research and stays up to date in the fields of occupant protection, Advanced Driver Assistance Systems (ADAS), and automotive performance and their relevance to crash scenarios. Mr. Scaler leans heavily on both his educational background as well as his real-world experience with motorsports engineering to analyze complex collisions at a level beyond what a textbook can provide.

Mr. Scaler earned a Bachelor of Science in Mechanical Engineering with a concentration in Aerospace Engineering at Rutgers University School of Engineering, New Brunswick, New Jersey. While he was an engineering student, Mr. Scaler spent time designing, building, driving and competing in a variety of high-performance vehicles at the professional level. His experience involves all categories of automobile performance from handling and stability, chassis design, drivetrain optimization, aerodynamics, suspension geometry, tire dynamics, and driver ergonomics and safety. He is also a knowledgeable fabricator with experience using machining equipment to build custom components. From over 15 years of experience in vehicle repair, maintenance, and design, Mr. Scaler brings a unique perspective to the forensic engineering industry. He spends his spare time driving vehicles and using data acquisition to optimize handling performance at racetracks across the country.

AREAS OF EXPERTISE•

- Accident Reconstruction
- EDR (Black Box) Imaging & Analysis
- 3-Dimensional Laser Scanning
- Forensic Video Analysis
- Race Car Driving and Vehicle Dynamics
- Vehicular Handling and Stability
- Race Car Design and Construction
- Onboard Vehicle Data Analysis
- Onboard Vehicle Diagnostics
- Computer-Aided Design (CAD)
- Computer-Aided Machining (CAM)

PROFESSIONAL COURSES TAKEN

- Crash Investigation 1, Northwestern University Center for Public Safety
- Crash Investigation 2, Northwestern University Center for Public Safety
- Bosch CDR Tool Technician, University of North Florida Institute of Police Technology and Management
- Event Data Recorder Use in Traffic Crash Reconstruction for Engineers, Ruth Consulting

EDUCATION

- Bachelor of Science with High Honors in Mechanical Engineering, Rutgers School of Engineering, 2020

PROFESSIONAL AFFILIATIONS

- Society of Automotive Engineers (SAE)
- National Association of Professional Accident Reconstruction Specialists (NAPARS)

PROFESSIONAL EXPERIENCE

January 2021 – Present | ARCCA, Incorporated | Forensic Engineer

- Investigate and reconstruct passenger and commercial vehicle collisions
- Apply handling and stability principles to evaluate vehicle behavior in real-world collisions
- Preserves scene and vehicle evidence through capturing three-dimensional laser scanning hardware and software
- Perform data retrieval and analysis from vehicle on-board Event Data Recorders
- Research, analyze, and test the effectiveness of occupant protection systems
- Utilize reconstruction software to analyze collisions and three-dimensional scan data
- Perform vehicle and site inspections
- Conduct research and pioneer the latest technology in motorsports biomechanics to optimize driver performance

2016 – Present | Advantage Motorsports | Professional Racecar Driver

- Conduct extensive tests to determine ideal vehicle dynamics for a variety of different racecars – including, but not limited to, tire construction and compounds, suspension geometry, shock absorber settings, aerodynamic devices, transmission gearing, engine tuning, driver ergonomics, steering settings, and hydraulic braking design.
- Create baseline parameters for suspension components through on-track testing of the vehicle's handling and stability
- Drive to collect consistent data to determine variations in car setup
- Develop motion characteristics and settings of a 3 axis Simcraft racing simulator
- Competitive racecar driver in the following categories: Spec Miata, Formula Vee, Formula Enterprise, Formula 1600, Formula F, Vintage Formula Ford, Porsche Boxster, and Sprint Karts

Driving Instructor & Data Analysis Engineer

- Instruct and coach a variety of racecar drivers competing in Porsche Club of America (PCA), BMW Car Club of America (BMW CCA), Formula Race Promotions (FRP) Pro Series, International Motor Sports Association (IMSA), Sports Car Club of America (SCCA), Vintage Racer Group (VRG), and recreational track days
- Use a combination of onboard vehicle data acquisition and video to identify practical areas of improvement for each individual driver
- Mentor young racers looking to climb the ladder to the professional racing level

Motorsports Engineer

- Design and incorporate driver safety devices into new and existing racecars to reduce crash related injuries
- Design and manufacture one of the first disc brake packages for the Formula Vee class that is currently the industry standard in national competition

- Design a computer-controlled, remote suspension adjustment tool for motorsports using the C++ programming language, Arduino microcontroller, and 3d printed components that reacts to live onboard data readings
- Design various mechanical and aerodynamic devices for a land speed racing vehicle seeking to break records above 300 mph
- Participate in vehicle drivetrain tuning and optimization through dynamometer testing
- Use onboard data acquisition tools to determine vehicle performance limits and diagnose mechanical issues
- Lead a team that specializes in the maintenance and construction for racecars for motorsports competition
- Design and construct unique and innovative racecars to compete in national competition
- Create improvements in all areas of racecar performance and measure the effect through post-test data analysis

2016 – 2020 | Powerslide Motorsports | Professional Racecar Driver, Motorsports Engineer

- Operate and manage a professional race shop that constructs both modern and vintage race cars
- Led all at-track activities to ensure a safe and successful performance from all customer cars
- Complete vehicle restorations and maintenance for both street and motorsports use
- Modify street vehicles for motorsports use
- Construct racecars from raw materials through machining, fabricating, and welding
- Handle client interactions and set the standard for customer service

RELATED VEHICLE DYNAMICS / AUTO RACING EXPERIENCE

2020

- Awarded the Stevenson Wood Cup by the South Jersey Region SCCA
- SCCA Northeast Majors Conference Champion, Formula Vee
- Current SCCA Formula Vee Record Holder
- SCCA National Championship Runoffs, Formula Vee

2019

- Formula Race Promotions F1600 Pro Series
- Team USA Scholarship Finalist
- Mazda Road to 24 Scholarship Nomination
- Offered a professional instructor position at the Porsche Track Experience in Birmingham, Alabama
- SCCA National Championship Runoffs, Formula F

2018

- Multiple SCCA lap records set in the Formula Vee class
- SCCA National Championship Runoffs Podium Finish, Formula Vee



2017

- Driver of the Year Award – South Jersey Region SCCA
- Winner of the GP Four Pro Championship
- SCCA Northeast Majors Conference Champion, Formula Enterprise
- SCCA National Championship Runoffs, Formula Enterprise

2015 - 2016

- SCCA National Championship Runoffs, Formula Vee

2005 - 2014

- National Sprint Kart Racing with the World Karting Association
- Motocross Racing