

aperture

MICHAEL JORGENSEN

Managing Forensic Expert – Accident Reconstruction

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NOT FOR EXPERT DESIGNATION

EDUCATION

BSME	Bachelor of Science in Mechanical Engineering University of Nevada, Las Vegas, 2019
BGC	Bridge Graduate Certificate in Injury Biomechanics Wayne State University, Detroit, MI 2025
MSBE	Master of Science in Biomedical Engineering Wayne State University, Detroit, MI 2026

PROFESSIONAL CERTIFICATIONS

ACTAR	Accreditation as a Traffic Accident Reconstructionist with the Accreditation Commission for Traffic Accident Reconstruction (ACTAR) - Registration No. 3935
Injury Biomechanics	Bridge Graduate Certificate in Injury Biomechanics Wayne State University, Detroit, MI 2025
OSHA 30	30-hour Construction Safety and Health License No.: 31-602011114
Remote Pilot	Federal Aviation Administration Current through May 2027
EI	Nevada Board of Professional Engineers & Land Surveyors (EI #0T8245)

MEMBERSHIPS

Southwestern Association of Technical Accident Investigators (SATAI)

Michigan Association of Traffic Accident Investigators (MATAI)

Society of Automotive Engineers (SAE)

Nevada State Board of Professional Engineers and Land Surveyors (EI)

WORK EXPERIENCE

Aperture, LLC, 2025/Present
Managing Forensic Expert – Accident Reconstruction
6351 Hinson St., Ste. R
Las Vegas, NV 89118

Aperture, LLC, 2021/2025
Forensic Expert – Accident Reconstruction
6351 Hinson St., Ste. R
Las Vegas, NV 89118

American Bio Engineers, LLC, 2015/2021
Accident Reconstruction Specialist
6351 Hinson St., Ste. R
Las Vegas, NV 89118

2305 Historic Decatur Rd., Ste. 100
San Diego, CA 92106

7272 E Indian School Rd., Ste 540
Scottsdale, AZ 85251

PUBLICATIONS

Jorgensen, M., Swinford, S., and Jones, B., "Validation of Vehicle Speed Analysis Utilizing the iNPUT-ACE Camera Match Overlay Tool," *SAE Int. J. Adv. & Curr. Prac. in Mobility* 4(1):78-85, 2022, doi:10.4271/2021-01-0877.

Vigil C., Salboro C., Jorgensen M., Jones B., Brink J., Swinford S., "Validation of Utilizing a Self-Propelled Crash Sled to Simulate Occupant Accelerations in Minor Rear-End Impacts," SAE Technical Paper, 2022-01-0857, 2022, doi:10.4271/2022-01-0857.

Jorgensen, M., Swinford, S., Imada, K., and Farhat, A., "Evaluation of Several Tesla Dashcam Angles for Model 3 and Y via Reverse Project Photogrammetry," SAE Technical Paper 2025-01-8700, 2025, doi:10.4271/2025-01-8700.

Jorgensen, M., Sherman, D., Davis, A., Bass, C., Bir, C., "Sex-Specific ATD Assessments for Lower Extremity Injuries," Stapp Car Crash Conference, 2026

LECTURES PRESENTED

Video Evidence Symposium – 2021 iNPUT-ACE
"Advancements in Technology for Calculating Speeds"

SAE World Congress 2021 Digital Summit
"Validation of Vehicle Speed Analysis Utilizing the iNPUT-ACE Camera Match Overlay Tool"

SATAI 2023 Winter, Glendale, AZ
"Validation of Vehicle Speed Analysis Utilizing the iNPUT-ACE Camera Match Overlay Tool"

SAE World Congress 2025, Detroit, MI
"Evaluation of Several Tesla Dashcam Angles for Model 3 and Y via Reverse Project Photogrammetry"

Stapp Car Crash Conference 2025, Atlanta, GA
"Sex-Specific ATD Assessments for Lower Extremity Injuries"

Thesis Defense 2026, Detroit, MI
"Influence of Heel-To-Floor Gap on Lower Extremity Injury Risk in Frontal Automotive Impacts: Sex-Based Comparison of Hybrid III 5th Female and 50th Male ATDs"

SPECIALIZED TRAINING/SEMINARS ATTENDED

PhotoModeler Training instructed by *Dan Mills* (Las Vegas, NV, 2017)

ARC-CSI Crash Conference presented by *ARC-CSI* (Las Vegas, NV, 2017)

- Crashes in the Courtroom: Engaging the Jury and Surviving Motions to Strike
- Reconstruction from Body Worn Cameras
- Gap Acceptance: How Far Away Must an Approaching Vehicle Be Before a Driver Will Pull Out
- NTSB Highway Crash Investigations, Recent Cases and Issues
- Reconstruction and Injury Analysis in Low-Speed Inline Collisions
- Pedestrians and Nighttime Recognition
- Going Airborne: Deploying Drones
- Collision Scene Mapping using UAS Technology, a Field to Finish Approach
- Unmanned Aircraft: A Profession with a Profession
- Quantitative Study of Passenger Veh. Braking Performance During Emergency Application
- Overheating of Heavy-Duty Truck Brakes: Discs vs. Drums
- Pedestrian Walking Speeds- What Numbers to Use
- Pedestrian Crash Reconstruction Methodologies

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SATAI Conference presented by *Southwestern Association of Technical Accident Investigators* (Glendale, AZ, 2019)

- Nighttime Crashes on Unlit and Lighted Roads
- Driver's Acceleration Behaviors
- Pedestrian Walking Speeds What Numbers to Use?

SATAI Conference presented by *Southwestern Association of Technical Accident Investigators* (Glendale, AZ, 2020)

- Electric Scooters
- E-Scooter vs. Car Crash Test
- CDR System Operators / Analysis & Applications Course Series – The CDR 900 Interface and Toyota TechStream / PCS & VCH Data
- iNPUT-ACE Traffic Seminar

EDR Summit presented by *Collision Publishing* (Houston, TX, 2020)

- Bosch CDR Tool
- What Does "End of Event" Mean?
- Repowering & CDR Technician Review/Update
- Ignition Cycles
- Locomotive Event Recorder Downloads
- Crossing Signal Event Recorders
- Legal Challenges Regarding EDR Data in Testimony
- Traffic Signal as an EDR; Did it Record Your Crash
- How an Auto Insurance Carrier Claims Department Incorporates Crash Data into Investigations of Loss
- Testing and Validation of Toyota Vehicle Control History Data
- ATV Rollover
- Subaru ADAS System
- Pedestrian Automatic Emergency Braking (P-AEB)
- Can Autonomous Emergency Braking Data be "Event Data?"
- Tesla Update
- Berla Update
- Examples of Forensic Investigations Using the Berla Digital Tool
- Nissan Steering and Recording Threshold

PhotoModeler Training instructed by *Dan Mills* (Las Vegas, NV, 2020)

Video Evidence Training Symposium presented by *iNPUT-ACE* (virtual conference, 2021)

- Video Investigation Units – How the Media is Leveraging Open Source Intelligence to Conduct Forensic Video Examinations
- Civilian Oversight: The Influence of Video on Public Perception
- Video Examination and Admissibility in the Courtroom – Are you an Expert?
- Fusion of 3D Technologies and Imagery
- Advancements in Technology for Calculating Speeds
- From Expert to Expert Witness – A Defense Attorney's Perspective
- Defending Against Recent Challenges to Video Evidence
- Fast Forward: Emerging Trends in Video Evidence

Advanced HVE: Parts I & II virtual *HVE* Forum presented by *Anthony D. Cornetto, P.E., President* (virtual conference, 2021)

How To Use The Bosch CDR Pro Tool Kit instructed by *Crash Academy* (virtual, July 2022)

How To Perform a CDR Direct-to-Module Download instructed by *Crash Academy* (virtual, July 2022)

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Quantitative Physiology instructed by *Prof. Barb Presley* (Wayne State University, 2023)
- Basic principles of human physiology presented from the engineering perspective.
- Bodily functions, their regulation and control discussed in quantitative terms and illustrated by mathematical models where feasible.

Seminar in Biomedical Engineering instructed by *Dr. Harini Sundararaghavan* (Wayne State University, 2023)
- Lectures on biomedical engineering and related fields by guest speakers, faculty, and students.

Computer and Mathematical Applications in Biomedical Engineering instructed by *Dr. Mahendra Kavdia* (Wayne State University, 2024)
- Application of numerical methods in biomedical engineering.
- Programming algorithms and development of data analysis interfaces using Matlab and Excel.
- Development and refinement of mathematical models, binary data storage and round-off error, algorithm truncation error, and application of Taylor series for function approximation, error estimation, and algorithm development.
- Numerical methods for solving: roots of equations, systems of linear equations, system optimization, regression and interpolation, integration, differentiation, and ordinary and partial differential equations.
- Attention is focused on application of techniques within biomedical engineering.

Mathematical Modeling in Impact Biomechanics instructed by *Dr. Liying Zhang* (Wayne State University, 2024)
- Review of models created for impact simulations.
- Regional impact simulation models.
- Human and dummy models subject to various restraint systems.

Accident Reconstruction instructed by *Prof. Roger Barrette* (Wayne State University, 2024)
- Passenger car and light truck behavior in collisions.
- Recognition of roadway markings and vehicle damage used to analyze vehicle accidents and to use that evidence to reconstruct driver, vehicle and occupant dynamics at the time of the collision.

Biomechanics of Blast-Related Injuries instructed by *Dr. Dale Bass* (Wayne State University, 2024)
- New and old information developed by military researchers on injuries sustained by military personnel due to explosions or blasts caused by a variety of weapon systems.
- Injuries to body regions from head to foot are discussed.
- Particular emphasis is placed on injuries to the spine and lower extremities for the mounted soldier and on brain injury for both the mounted and dismounted soldier.
- Modeling of blast and blast-related effects on selected body regions.

Impact Biomechanics instructed by *Dr. Cynthia Bir* (Wayne State University, 2024)
- Biomechanical response of the body regions and the whole body to impact.
- Mechanisms of injury in blunt impact.
- Effects of restraints on injury reduction.
- Development of test surrogates such as dummies.

Advanced Topics: Impact Biomechanics instructed by *Dr. Cynthia Bir* (Wayne State University, 2025)
- Student led seminar for selected advanced topics in impact biomechanics
- Critical evaluation and review of literature

PC-Crash Las Vegas Workshop instructed by *Brad Heinrichs & Dr. Andreas Moser* (Las Vegas, NV, 2025)
- Basics, Loading EDR Speeds, Yaw, Synchronization & Impact Setup, Impact, Looking at the Results
- Working with Point Clouds, Camera Matching, Mapping Evidence, Video Matching, Automated Video Tracking
- Multibody Simulation, Rollovers, Pedestrian Impacts, Advanced Optimizer, Upcoming Software Revisions

Stapp Car Crash Conference presented by *Stapp Association* (Atlanta, GA 2025)
- Euro NCAP and the New Era of Vehicle Safety Assessment
- Proposed Reformulation of Brain Injury Criteria (BrIC) Using Head Rotation-Induced Brain Injury Thresholds Simulated and Derived Directly from a Subhuman Primate Finite Element Model
- Brain Strain Produced by Local Inertial Force Components
- Bridging HBM Connect® and ATD Chest Metrics Using Functional Mapping for Crash Application

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- Traumatic Brain Injury in Vulnerable Road Users: Analysis of German In-Depth Crash Data to Inform Targeted Prevention
- Comparison of Concussion Risk Functions Generated from Two Different Datasets
- Comparison of Skull Deformations During Head Drop Tests from Experimental Accelerometers and Finite Element Simulations
- Validation of Impact-Absorbing Pavement Under Head Oblique Impacts
- Qualifying Naturalistic Changes in Occupant Postures in Belt-Positioning Booster Seats Utilizing Pressure Mats
- Rear Row Frontal Airbags and Their Interaction with Rear-Facing and Forward-Facing Child Restraint Systems
- Pedestrian Injury Case Reconstruction Through Data Fusion and Machine Learning
- Human Detection Capability of Vehicle Front Sonar Sensors in Light and Small Passenger Cars and Minivan
- Automated Vehicle Safety Research at Waymo
- PMHS Sled Testing of Reclined Small Female Occupants: Pelvic Dynamics and Injury Evaluation
- A Preliminary Investigation of Costal Cartilage and the Costochondral Junction in Three-Point Bending
- Effect of Dual Lap Belt Load-Limiters in Reclined Frontal Impact Sled Tests with PMHS of Varying Anthropometry and Sex
- The Dynamic Behavior of a Seat Within a Vehicle During Under Body Blast
- Attenuation of Low-Density Projectiles by Fabric in High-Rate Impacts
- Improve Safety Balance Between Women and Men in Frontal Crashes Through Parametric Human Modeling and Adaptive Design Optimization
- Occupant Sex Equity and Vehicle Safety: Historical Activities, Research, and Countermeasure
- A 50th Percentile Female Human Body Model for Research on Equitable Occupant Protection
- Female PMHS Thoracic Biomechanical Response Corridors with Preliminary Consideration of the Influence of Breast Tissue in Frontal Impacts
- Transforming Roads, Unleashing Smart Technologies: Texas TRUST Project
- Pelvic Lap Belt Engagement of Small-Sized Females in Frontal Impacts Using Seat-Integrated Restraints and Vehicle Seats for Alternative Seating Positions
- Small Female Acceleration Response Corridors and Updated THOR-05F BioRank
- Sex-Specific ATD Assessments for Lower Extremity Injuries
- Comparison of Female and Male Post Mortem Human Subject Kinematic Responses and Injuries in Rear-Facing Seat Configurations in High-Speed Frontal Impacts

MATAI Conference presented by *Michigan Association of Traffic Accident Investigators* (Mount Pleasant, MI, 2026)
- Time / Distance analysis in reconstruction: Linking Speed, Motion and Position
- What the Evidence Really Says: Crash Reconstruction Without Bias
- BERLA Infotainment Systems
- Imaging Volvo CMV Engine Control Modules
- Heavy Vehicle Event Data Records, Systems and Imaging
- EDR Update
- Speed Limits and Traffic Laws: Why they Matter in Traffic Crash Investigations
- Trimble Technology and Crash Investigation
- Who was Driving? Rollover Crash Investigations and Case Review

RESEARCH

Mar 2018 — Performed and participated in instrumented oblique lateral minor impacts involving human female subjects and instrumented Hybrid III ATDs at angles of 45º, 60º, and 90º using 2005 to 2007 Toyota Camrys and Corollas in Las Vegas, NV.

Jun 2018 — Performed and participated in instrumented car-to-car rear-end impacts with human subject using 2005 to 2007 Toyota Camrys and Corollas in Las Vegas, NV.

Jan 2019 — Performed and participated in instrumented remote driver broad-side rollover collision between a Tahoe and Grand Marquis, a multiple vehicle rear-end impact with a Town car, motorcycle and Prius, and yaw testing with a Suburban in Glendale, AZ.

Jan 2019 — Performed and participated in rear-end impacts between an Impala and Grand Marquis with instrumented volunteers in Glendale, AZ.

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Jan 2020	Performed and participated in rear-end impacts between a 2012 Hyundai Genesis Coupe and a 1999 BMW 528i with instrumented volunteers in Glendale, AZ.
May 2020	Performed and participated in testing of various common camera systems with instrumented vehicles in Las Vegas, NV.
Sep 2020	Performed and participated in instrumented rear-end impacts between a Corolla and Camry with human volunteers in Las Vegas, NV.
Oct 2020	Performed and participated in instrumented lateral minor impacts between and Corolla and Camry with human volunteers in Las Vegas, NV.
Jan 2021	Performed and participated in impacts between a 2015 Hyundai Elantra and a 2015 Chevrolet Sonic with instrumented volunteers in Glendale, AZ.
Aug-Nov 2022	Performed and participated in instrumented testing of select Tesla built-in camera systems in Las Vegas, NV and Carlsbad, CA.

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