

Ella Webb

Forensic Expert

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EDUCATION

BSBME	Bachelor of Science in Biomedical Engineering Purdue University, West Lafayette, IN, May 2021
MSME	Master of Science in Mechanical Engineering University of Alabama, Tuscaloosa, AL, August 2023

MEMBERSHIPS AND CERTIFICATIONS

Texas Department of Public Safety Private Investigator

FAA Remote Pilot in Command Small Unmanned Aircraft Systems (sUAS) Certification

Society of Automotive Engineers (SAE)

SAE Accident Reconstruction Certification

Bosch© CDR Tool Technician Training by IPTM Certification

Southwestern Association of Technical Accident Investigators (SATAI)

Purdue University's Women in Engineering Program (WIEP), Alumni

WORK EXPERIENCE

Jul. 2021 – Current — Aperture LLC, Forensic Expert

- Analyze and reconstruct passenger and commercial vehicle accidents
- Inspect vehicles and equipment, conduct measurements, and photograph the scene and vehicles involved
- Download and analyze vehicle event data recorder (EDR) data to support collision reconstruction and injury causation analysis
- Utilize various tools including the FARO scanner, drones, AutoCAD, 3DReshaper, etc. to create to-scale vehicle and scene diagrams for exhibits
- Use video analysis techniques or vehicle download data to perform complex calculations for determining vehicle speed, momentum, acceleration, and driver reaction times
- Conduct comprehensive review of medical records to correlate documented injuries with crash dynamics and biomechanical loading conditions
- Apply biomechanical principles to analyze occupant kinematics during vehicle collisions
- Correlate crash dynamics with injury patterns using principles of impact biomechanics
- Evaluate seatbelt usage, airbag deployment, and interior contact dynamics in relation to injury patterns

May, 2020 – Aug., 2020 — Catalent Pharma Solutions, Business Analytics Intern

- Distilled datasets to create example case studies for the scientific community using Minitab
- Evaluated Catalent system data for data management, accessibility, and data integrity
- Developed a central PowerBI repository for project database across network to include savings forecast

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Aug., 2019 – March, 2020 Purdue University Biomedical Engineering Dept., Thermodynamics Researcher and Author

- Conducted research on thermodynamics and computational modeling education
- Developed new examples of thermodynamic principles based in bioengineering contexts

July, 2018 – Aug., 2018 Nvision Biomedical Technologies, Engineering Intern

- Modified spinal surgical instruments to improve upon ergonomics of surgical procedures based on surgeon feedback
- Used Solid Works to model bone staple injectors for orthopedic procedures
- Utilized reiterative design and feedback to improve design models
- Prepared company demonstrative presentations for bone compression screw specialists

CONTINUING EDUCATION AND TRAINING

Sept. 2025	Society of Automotive Engineers (SAE), "Injuries, Anatomy, Biomechanics & Federal Regulation" – Online
Aug. 2025	National Association of Professional Accident Reconstruction Specialists (NAPARS), "Head and Brain Injuries in Auto Vs. Cyclist Accidents" – Online
Apr. 2025	Society of Automotive Engineers (SAE), "Vehicle Crash Reconstruction: Principles and Technology" – Fairfax, VA
Mar. 2025	PhotoModeler Technologies Approved Course – Dallas, TX
May 2024	Society of Automotive Engineers (SAE), "Advanced Vehicle Dynamics for Passenger Cars and Light Trucks" – Online
Dec. 2023	Bosch© CDR Tool Technician Training by Institute of Police Technology and Management - Online
Sep. 2023	Society of Automotive Engineers (SAE), "The Fundamentals of Automotive All-Wheel Drive System" – Online
Jun. 2023	Society of Automotive Engineers (SAE), "Introduction to Brake Control Systems: ABS, TCS, and ESC" – Online
May 2023	Society of Automotive Engineers (SAE), "Applying Automotive EDR Data to Traffic Crash Reconstruction" - Online
Apr. 2023	Society of Automotive Engineers (SAE), "Driver Distraction from Electronic Devices: Insights and Implications Web Seminar Replay" – Online
Dec. 2022	Simcenter Madymo Introduction – Online
Aug. 2022	Society of Automotive Engineers (SAE), "The Fundamentals of Vehicle Dynamics" – Online

PUBLICATIONS

Kazmierczak, A., Umale, S., Visalli, A., Webb, E. et al., "*Aggregation of Cervical Loads in Rear Impact Crash Tests and Comparison to Activities of Daily Living*," SAE Technical Paper 2025-01-8708, 2025, doi:10.4271/2025-01-8708.

RESEARCH AND TESTING

Jan. 2024 Performed and participated in one of eight low speed rear-end impacts between an instrumented bullet Toyota Corolla and target Kia Rio, with a male human volunteer and Hybrid III 50th percentile male ATD in the bullet Corolla and instrumented humans and BioRID II ATD in the target Rio. Conference topics included: 3D technologies for crash scene documentation, motorcycle reconstruction topics, digital forensics, the biomechanics of motorcycle helmets, and crash test data review.
SATAI Conference, January 4-6, 2024, Glendale, AZ

May 2026 Performed and participated in a series of low-speed crash tests involving a truck tractor–semi-trailer combination and both a Ford F-150 pickup truck and a GMC Acadia SUV. A total of seven crash tests were performed using various impact configurations, including sideswipe collisions between the right side of the tractor–trailer and the left side of the Ford F-150 and GMC Acadia, as well as rear-end

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collisions involving the front of the tractor and the rear of the Ford F-150. The tractor–trailer was operated by a human volunteer, while the Ford F-150 and GMC Acadia were occupied by a combination of instrumented human volunteers and anthropomorphic test devices (ATDs). Instrumentation was used to measure and record regional body forces and/or accelerations of human volunteers and ATDs throughout the testing program. The tests were recorded using a combination of stationary, aerial, and onboard camera equipment.
TDAC Conference, May 5-6, Fort Worth, TX

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