



**COLLISION
AND INJURY
DYNAMICS**

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TYLER L. SHAW, MSBE

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Professional Competence

Analysis of protective headgear used in vehicles and sports. Head injury analysis relative to the performance of helmets. Biomechanical analysis of injury. Vehicular collision analysis and reconstruction, specializing in bicycles, motorcycles, and pedestrians. Subspecialties include automotive brake systems, vehicle performance testing and analysis, and computer simulated collision analysis.

Education and Certification

Bachelor of Science in Mechanical Engineering

- San Diego State University; 2009

Master of Science in Bioengineering, Emphasis in Biomechanics

- San Diego State University; 2014

Accreditation Commission for Traffic Accident Reconstruction

- ACTAR Certified #4087

M1 Motorcycle License Endorsement

Certified Motorcycle Road Racing Competition License through WERA, CVMA, and AFM Organizations

ISO Certified Helmet Testing Technician – DOT Standard; 2017

League of American Bicyclists, League Cycling Instructor (LCI); 2015

United Bicycle Institute, Certified Bicycle Technician; 2015

Engineering Dynamics Corporation

- EDC Reconstruction; 2012
- Vehicle Dynamics – Physics Simulation Analyst; 2011

Engineer-in-Training/FE No. 13-295-39, California; 2011

Collision Safety Institute, CDR Airbag Module Technician and Analyst; 2010

Training

Association for the Advancement of Automotive Medicine – AIS15 and Injury Scaling: Uses and Techniques; 2018

Association for the Advancement of Automotive Medicine – Annual Scientific Conference; 2017, 2018



National Football League – Helmet Challenge Symposium 2019

Society of Automotive Engineers

- Reconstruction and Analysis of Motorcycle Crashes; 2018
- Reconstruction and Analysis of Rollover Crashes of Light Vehicles; 2018
- Vehicle Crash Reconstruction: Principles and Technology; 2018
- Vehicle Frontal Crash Occupant Safety and CAE; 2017
- Injuries, Anatomy, Biomechanics & Federal Regulation; 2016
- Accessing and Interpreting Heavy Vehicle Event Data Recorders; 2011

Sports Concussion Institute – Concussion Summit; 2017

Southwestern Association of Technical Accident Investigators, Inc

- Fall Conference; 2014, 2016
- Seminar; 2012

Spine Research Institute of San Diego – Whiplash Injury Biomechanics & Traumatology; 2015

L.A. County Bicycle Coalition – Bicycling Traffic Skills 101; 2015

CA2RS

- 1st Quarter Training; 2011, 2015
- Conference; 2011

Northwestern University Center for Public Safety – Preserving and Analyzing Information from Heavy Vehicle EDRs; 2013

TASS Americas – MADYMO Introduction Course; 2012

ARC-CSI Crash Conference; 2011, 2012

Professional Experience

2016 – Present

Collision and Injury Dynamics, Inc. (Senior Staff Engineer)

Analysis, reconstruction, and presentation of results of vehicular accident cases. Conduct vehicle and scene inspections, documentation, and analysis of forensic data from accident vehicles and accident scenes, involving laser total station and 3D scanning operations, and computer simulation and trial preparation.

2016 – Present

ACT Labs LLC (Helmet Test Technician)

Conduct motorcycle helmet tests in accordance with DOT FMVSS 218 test standard. Conduct bicycle helmet tests in accordance with CPSC 16 CFR Part 1203 safety standard and ASTM protective headgear standards.

2014 – 2016

Momentum Engineering Corp. (Forensic Engineer)

Accident reconstruction, including heavy trucks, automobiles, motorcycles, bicycles and pedestrian accidents. State-of-the-art computer simulation and animation production. Engineering services including vehicle and site inspections, re-enactments, visibility studies, traffic signal analysis, vehicle dynamics, rollover dynamics, crash testing, mechanical failure analysis and design evaluation.



2013 – 2014

Stoptech (Engineer)

Perform engineering tasks related to the design and manufacture of high-performance brake systems, including calipers, rotors, and associated components. Serviced applications including aftermarket, armored vehicles, racing, and OEM customers. Involved in all stages of product planning, design, development, and manufacturing engineering.

2010 – 2013

Casteel Accident Reconstruction (Collision Analyst)

Provided reconstruction services to governmental and private sector clients in the areas of traffic collision causation, analysis, and reconstruction. The primary user of three-dimensional computer simulation software programs used to analyze pre- through post-vehicle dynamics, preliminary data analyst, and scene/vehicle modeling.

2010 – 2010

Expertise Engineering (Associate Engineer)

Performed product design engineering tasks for multiple customers, including 3D CAD work, materials selection, bill of materials assembly and review, cost reduction, design and drawing review, and evaluation of production feasibility.

2009 – 2010

Aluminess Products, Inc. (Design Engineer)

Performed design and production engineering tasks for high-quality aluminum automotive accessories for mass-production, including producing complete 3D CAD assemblies, producing bill of materials, and performing cost-reduction analysis and manufacturing feasibility analysis on designs.

2008 – 2009

Sunlight Direct (Engineering Intern)

Implemented design project for development of segmented acrylic parabolic mirror, design and production engineering tasks for sophisticated solar tracking platform.

2006 – 2007

Jim Wolf Technology (Production Assistant)

Machined and assembled high-quality automotive racing parts.

Teaching Experience

Southwestern Association of Technical Accident Investigators, Inc. (SATAI): Bicycle Helmets; 2016
Lecture to San Diego County Sheriff Department Traffic Deputies: Pedestrian Accident Reconstruction; 2012
Presentation for San Diego Police Department Traffic Division: Pedestrian Collision Reconstruction; 2011

Organizations

American Association for the Advancement of Automotive Medicine
American Society of Testing and Materials, F08.53 Headgear Subcommittee
California Association of Accident Reconstruction Specialists
League of American Bicyclists
Society of Automotive Engineers
Southwestern Association of Technical Accident Investigators
Licensed Motorcycle Roadracer with AFM, CVMA, WERA organizations

Forensic Qualifications

Testimony in Superior Courts of California



Biographical Sketch

Mr. Shaw was born in San Diego, California, where he attended San Diego State University and obtained his Engineering degrees. He is an avid motorcyclist, holding a road racing competition license with various organizations, and commuting on a motorcycle nearly every day for over a decade. Mr. Shaw is also an automotive racing enthusiast, having driven with various amateur racing organizations. Mr. Shaw bicycles often, both for commuting and recreation, and participates in charity rides and "centuries". His academic passion is studying the biomechanics of protective gear for motorcycles and bicycles, in order to advance the safety for the sports that he enjoys.

Mr. Shaw's master's thesis topic involved analyzing the biomechanics of injury mitigation performance for a new motorcycle helmet design.

Reports and Publications

"Quantifying Engine Braking for Various Common Street Motorcycles", H. Jansen, B. LeBlanc, C. Wilhelm, T. Shaw, A. Lowii, Society of Automotive Engineers 2020-01-0880, 2020.

Assisted with Testing: "An Analysis of EDR Data in Kawasaki Ninja 300 (EX300) Motorcycles," Ed Fatzinger, Society of Automotive Engineers 2017-01-1436, 2017.

ASTM F08.53 Low Velocity Impact Helmet Tests – 2017 Update – A Presentation for American Society of Testing and Materials F08 Committee Meeting; 2017.

Oblique Impact Response of Elastomeric Damper Matrix Helmets – A Presentation for American Association for the Advancement of Automotive Medicine 61st Annual Conference; 2017.

Assisted with Testing: Motorcycle Crash Testing (16 Crash Tests), California Association of Accident Reconstruction Specialists, 2017.

Bicycle Helmets – A Presentation for Southwestern Association of Technical Accident Investigators Fall Conference; 2016.

Fatzinger, EC, Shaw TL, Landerville JB, "The Effects of Power Interruption on Electronic Needle-Display Motorcycle Speedometers," SAE Publication 2016-01-1474, 2016.

Master's Thesis: "Biomechanic Analysis of Injury Mitigation Performance for Novel Helmet Design," Montezuma Publishing, 2014.

Assisted with Testing: "Acceleration and Braking Performance of Transit Style Buses," James English and Roman Beck, Society of Automotive Engineers 2012-01-0618, 2012.

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