

NOAH LA BARBA

Forensic Expert – Accident Reconstruction and Biomechanics

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EDUCATION

BSc — Bachelor of Science in Mechanical Engineering
California State University, Long Beach, 2019

Designed and constructed a low-cost ASTM D7136 low-velocity impact tester, which was added to the material science laboratory in the College of Engineering and used for testing and evaluation of material properties. Designed and conducted a finite element analysis on an adjustable transtibial prosthesis. Wrote an undergraduate honors thesis on the design of an internal wing surface cleaner to be used in the manufacturing of a Boeing 737.

Long Beach City College
- Human Anatomy (Fall 2021)
- Biology for Science Majors 2 (Fall 2019)
- Biology for Science Majors 1 (Summer 2019)

Johns Hopkins University
- Biosolid Mechanics (Summer 2026)
- Principles of Medical Imaging (Spring 2026)
- Orthopedic Biomechanics (Fall 2025)
- Statistical Methods and Data Analysis (Summer 2025)
- Physiology for Applied Biomedical Engineering II (Spring 2025)
- Mathematical Methods (Fall 2024)
- Biomimetics in Biomedical Engineering (Summer 2024)
- Physiology for Applied Biomedical Engineering I (Spring 2024)

WORK EXPERIENCE

April 2020 – Present — **Aperture, LLC** – Long Beach, CA, *December 2021 – Present*
(formerly Biomechanical Research and Testing, LLC, *April 2020 – December 2021*)
Accident Reconstructionist and Biomechanical Engineer

Performs accident reconstruction and biomechanical analyses and provides forensic consultation for injury-causing events, including accidents involving automobiles, heavy trucks, motorcycles, bicycles, pedestrians, and amusement park attractions. Conducts vehicle and scene inspections, performs engineering calculations, creates computer simulations, and produces written reports and presentations. Participates in research and testing, including vehicle impact tests, anthropometric dummy tests, vehicle component tests, and human subject tests.

ACCREDITATIONS AND CERTIFICATIONS

April 2025 — Collision Safety Institute, Inc.
Crash Data Retrieval Specialist (Bosch CDR, Hyundai-Kia EDR & Tesla EDR)

Oct. 2023 — Accreditation Commission for Traffic Accident Reconstruction (ACTAR)
Traffic Accident Reconstructionist – ACTAR #4703

PROFESSIONAL AFFILIATIONS

National Association of Professional Accident Reconstruction Specialists (NAPARS)
Society of Automotive Engineers (SAE)
Southwestern Association of Technical Accident Investigators (SATAI)

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RESEARCH AND TESTING

April 2026 — Performed and participated in a series of four angled frontal impacts with an instrumented crash sled. Three impacts were performed with an instrumented 50th percentile male Hybrid III ATD, and one impact was performed with an instrumented human volunteer. Sled dynamics and ATD/human motions/loading were documented and analyzed.

Feb. 2026 — Performed and participated in a series of three low speed rear-end impacts between a bullet Hyundai Sonata with five human occupants and a target Tesla Model 3 equipped with two instrumented human occupants, an instrumented 50th percentile male Hybrid III ATD, and an instrumented BioRID II ATD. Performed and participated in a series of two low speed rear-end barrier impacts with a Tesla Model 3 equipped with two instrumented human occupants, an instrumented 50th percentile male Hybrid III ATD, and an instrumented BioRID II ATD. Performed and participated in a series of two low speed frontal barrier impacts with a Tesla Model 3 equipped with two instrumented human occupants (including a pregnancy seat belt adapter on one occupant) and an instrumented 50th percentile male Hybrid III ATD. Performed and participated in official SATAI conference crash tests, which included: a moderate-speed rear-end impact between a remote-driven bullet Mitsubishi Mirage equipped with an instrumented 50th percentile male Hybrid III ATD and a target Tesla Model 3 equipped with a Rescue Randy dummy, an instrumented 50th percentile male Hybrid III ATD, and an instrumented BioRID II ATD; a three-vehicle chain-reaction rear-end collision between a human-driven Jaguar XE, a 2013 Suzuki SFV 650 Gladius equipped with a Rescue Randy dummy, and a Toyota Camry; a high-speed offset frontal impact between a remote-driven Toyota Camry and a remote-driven Hyundai Sonata equipped with an instrumented 50th percentile male Hybrid III ATD. Vehicle dynamics, vehicle damage, EDR data, and ATD/human motions/loading were documented and analyzed. All tests were performed in Glendale, AZ.

Results presented at SATAI Conference, February 26-28, 2026, Glendale, AZ

Jan. 2026 — Conducted a series of tests measuring the speed of a vehicle passing through an automatic car wash.

Dec. 2025 — Performed and participated in a series of tests to evaluate the dynamics of a roller coaster type amusement park ride. Data was collected from the ride in accordance with ASTM F2137 and analyzed in accordance with ASTM F2291.

Sept. 2025 — Conducted a series of tests dropping drywall samples onto a 50th percentile male Hybrid III ATD and male human volunteer. Head acceleration, neck loads, and lumbar loads were collected and analyzed.

March 2025 — Performed and participated in a low speed rear-end impact between a bullet Ford Crown Victoria and a target utility trailer attached to a Honda Pilot, with two human occupants in the Ford and two human occupants as well as an instrumented 50th percentile male Hybrid III ATD in the Honda. Performed and participated in official SATAI conference crash tests utilizing instrumented vehicles, trailers, and ATDs, which included: a high-speed offset rear-end collision between a remote-driven Ford Crown Victoria and a stationary target utility trailer attached to a Dodge Durango, a high-speed angled broadside collision between the front of a remote-driven Kia Rio and the right side of a stationary target utility trailer attached to a Honda Pilot resulting in a rollover event for the Kia, and a high-speed broadside collision between a remote-driven Dodge Durango and a stationary target Polaris RZR UTV. Vehicle dynamics, vehicle damage, EDR data, and ATD/human motions/loading were documented and analyzed. All tests were performed in Glendale, AZ.

Results presented at SATAI Conference, March 26-29, 2025, Glendale, AZ

March 2025 — Conducted a series of tests dropping a steel frame onto a 50th percentile male Hybrid III ATD. Head acceleration, neck loads, and lumbar loads were collected and analyzed.

Aug. 2024 — Conducted a series of tests measuring the force required to knock over a stack of wood planks on a hardware store shelf.

April 2024 — Conducted a series of tests dropping a swimming pool filter lid onto a 50th percentile male Hybrid III ATD. Head acceleration and neck load data was collected and analyzed.

Jan. 2024 — Performed and participated in a series of eight instrumented low speed rear-end impacts between a bullet Toyota Corolla and a target Kia Rio, with a 50th percentile male Hybrid III ATD and male human occupant in the bullet vehicle, and a BioRID II ATD and instrumented human occupants in the target vehicle. Performed and participated in a series of twenty instrumented motorcycle deceleration tests

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with a BMW R1250 RT. Performed and participated in official SATAI conference crash tests utilizing instrumented vehicles and ATDs, which included: a broadside impact between a Suzuki GSX-R750 and a moving Honda Civic target, a broadside impact between a Yamaha YZF-R1 and a moving Honda Civic target, a broadside impact between a Kawasaki Versys 650 and a moving Honda Civic target, and an angled frontal impact between a Kawasaki Versys 650 and a stationary Honda Civic target. Vehicle dynamics, vehicle damage, EDR data, and ATD motions/loading were documented and analyzed. All tests were performed in Glendale, AZ.

Results presented at SATAI Conference, January 3-6, 2024, Glendale, AZ

Dec. 2023 — Performed and participated in a series of tests to evaluate the dynamics of a roller coaster type amusement park ride. Data was collected from the ride in accordance with ASTM F2137 and analyzed in accordance with ASTM F2291.

Sept. 2023 — Conducted drop testing using 50th percentile ATD head form with various hair clips, simulating conditions in a rear-end collision in a 2012 Hyundai Accent seat. Utilized a triaxial accelerometer and angular rate sensor for data collection.

March 2023 — Performed and participated in a series of six instrumented low speed rear-end impacts between a bullet Honda Civic and a target Ford Focus, with instrumented human driver and 50th percentile male Hybrid III and BioRID ATDs in the target vehicle and three human occupants in the bullet vehicle. Performed and participated in official SATAI conference crash tests utilizing instrumented vehicles, human volunteers, and ATDs, which included: high-speed remote-driven Ford Escape to ATD pedestrian impact; high speed remote-driven 50% frontal offset between a Ford Escape and Chevrolet Impala; a lane change side-swipe between a Subaru Outback and a Mazda 5; a T-swipe between a Subaru Outback front bumper and Mazda 5 side; a narrow offset angled collision between the right front of a Mazda 5 and the left front of a Subaru Outback; an impact between the right front of a Subaru Outback and the partially open Mazda 5 driver's door. Vehicle dynamics, vehicle damage, EDR data, and human/dummy occupants motions/loading were documented and analyzed. Pre and post full-body MRI scans were conducted on the instrumented human driver in the low speed rear-end tests. All tests were performed in Glendale, AZ.

Results presented at SATAI Conference, March 1-4, 2023, Glendale, AZ

Feb. 2022 — Performed and participated in multiple crash tests, which included: front-to-barrier, rear-to-barrier, and rear end impacts with instrumented volunteers using a Honda Civic and Subaru Outback; remote driven Honda Civic to e-scooter impacts; offset rear-end impact with Honda Civics; a sideswipe between a Toyota Corolla and Honda Civic; rear-end impacts using Chevrolet Impalas; and an angled broadside between a Chevrolet Impala and Toyota Corolla with volunteers and an ATD. All tests were performed in Glendale, AZ.

Results presented at SATAI Conference, February 17-20, 2022, Glendale, AZ

PRESENTATIONS

Feb. 2022 — *SATAI 2022 Crash Test Data Presentation in Glendale, AZ*
Formal PowerPoint presentation presented to members of the SATAI organization consisting of documentation, data, and resultant findings from 2022 SATAI crash tests.

CONTINUING EDUCATION

July 2026 — *Recent Kia/Hyundai/Genesis ADAS/EDR Research*
Two-hour online lecture presented by Sundar Raman Nagarajan, Kent Boots and Shawn Harrington and hosted by NAPARS. Conducted July 10, 2025.

Feb. 2026 — *Southwestern Association of Technical Accident Investigators (SATAI) Conference in Glendale, AZ*
Topics Included: Calculating Speed from Audio with Application toward Passenger Vehicles, Commercial Vehicles, and Motorcycles. Using Signal Processing to Uncover Subtle Driver Actions. Firearm Ballistic Forensic Applications; Swipe Right on Evidence - Integrating Digital Evidence and Accident Reconstruction; Determining Speed from Delta-V in EDR Data; Crash Test Data Review. Conducted February 27-28, 2026.

May 2025 — *PhotoModeler Technologies Course in Long Beach, CA*
Two-day course covering various applications of PhotoModeler for accident reconstruction. Topics covered include an introduction to the PhotoModeler user interface, analyzing scene photographs, taking vehicle crush measurements from damage photographs, determining speeds from video, testifying to photogrammetry analysis, and analyzing video of video. Conducted May 7-8, 2025.

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April 2025 — *2025 Symposium on EDR Research and Training (NAPARS) in Newport Beach, CA*
Topics Included: Recent Past, Present, and Future of Bosch; The Effects of Power Loss on Toyota TSS Data; Toyota Safety Sense and Pre-Collision System; HVEDR Update and Heavy Truck Collision Mitigation; Electronic Data Case Studies; Polarity & Delta-V Magnitude from Speed Data; ADAS, Self-Driving Vehicles, and A/R; Compare EDR Data with CrashScan Data; CDR Analysis and Applications Update; Using Ignition Cycles and Odometer Values to Identify EDR Events, and Electronic Data Available from BMW Motorcycles; Calculating Lateral Displacement from Yaw Rate; Non-Traditional EDR Sources; Alternative Motorcycle Data Sources; EDR Lateral Delta-V Accuracy in IIHS Side-Impact Tests. Conducted April 22-24, 2025.

April 2025 — *Crash Data Retrieval (CDR) Technician Course from Collision Safety Institute*
Three-day course covering how to access and retrieve crash data from modules supported by the Bosch CDR tool, Hyundai and Kia modules which are supported by the GIT EDR tool, and Tesla modules which are supported by the Tesla EDR tool. Conducted April 8-10,2025.

March 2025 — *Southwestern Association of Technical Accident Investigators (SATAI) Conference in Glendale, AZ*
Topics Included: Drones and Photogrammetry for Crash Reconstruction; Intro to Trailers and Trailer Dynamics; Mathematically Integrating Yaw Rate and Lateral Acceleration to Determine Lateral Displacement; Monte Carlo Analysis; Hyundai-Kia EDR Tool Update; Crash Test Data Review. Conducted March 28-29, 2025.

March 2025 — *Finding A/B Stiffness Values from NHTSA Data*
Two-hour online lecture presented by Daniel Vomhoff III and hosted by NAPARS. Conducted March 7, 2025.

Jan. 2025 — *TBI in Low-Severity Crashes*
Two-hour online lecture presented by Stephen Wagner, DC and hosted by NAPARS. Conducted January 10, 2025.

Dec. 2024 — *Virtual Crash Live Classroom Training Course in Carlsbad, CA*
Three-day course covering the basic features of Virtual Crash. Topics covered include introduction to the Virtual Crash user interface, simulation inputs, building 3D environments, motorcycle simulations, and simulating EDR data. Conducted December 3-5, 2024.

Jan. 2024 — *Southwestern Association of Technical Accident Investigators (SATAI) Conference in Glendale, AZ*
Topics Included: 3D Technologies for Crash Scene Documentation, Motorcycle reconstruction Topics, Digital Forensics, The Biomechanics of Motorcycle Helmets, and Crash Test Data Review. Conducted January 5-6, 2024.

Oct. 2023 — *Principles of Data Acquisition from Diversified Technical Systems (DTS)*
Topics covered include an overview of various data acquisition techniques, guidelines for setting up and conducting tests, and training for specific software and hardware. Conducted October 19, 2023.

June 2023 — *Crash Data Retrieval (CDR) Technician Course from Collision Safety Institute*
Three-day course covering how to access and retrieve crash data from modules supported by the Bosch CDR tool, as well as Hyundai and Kia modules which are supported by the GIT EDR tool. Conducted June 26-28, 2023.

April 2023 — *Traffic Crash Reconstruction 2 from Northwestern University Center for Public Safety*
Topics covered include conservation of energy, special velocity calculations (for situations involving vehicle falls, flips, and rollovers), analyzing Event Data Recorder (EDR) information and applying such data to traditional reconstructions. Conducted March 13-April 9, 2023.

March 2023 — *Traffic Crash Reconstruction 1 from Northwestern University Center for Public Safety*
Topics covered include analyzing and interpreting information from a crash scene, and reconstructing crash situations using momentum and mechanics. Conducted February 6-March 5, 2023.

March 2023 — *Southwestern Association of Technical Accident Investigators (SATAI) Conference in Glendale, AZ*
Topics covered included vehicle system forensics, EDR updates, forensic photography, and vehicle speed analysis using iNPUT-ACE. Conducted March 1-4, 2023.

Jan. 2023 — *Vehicle Dynamics from Northwestern University Center for Public Safety*
Topics covered include the application of physics principles and equations of motion to traffic collision investigation and reconstruction. Conducted January 16-29, 2023.

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Dec. 2022 *Simcenter Madymo Introduction from Siemens*
Five-day course on the basic features of Madymo. Topics covered include introduction to the Madymo user interface, multibody systems and models, joint simulation, seat belt modeling and simulation, vehicle seat material characteristics, ATD positioning, FE modeling, contact definitions, airbag modeling, biomechanical data analysis, and data visualization. Conducted December 5-9, 2022.

Nov. 2022 *Crash Investigation 2 from Northwestern University Center for Public Safety*
Topics covered include proper collection and interpretation of information available at a crash scene, vehicle behavior in crashes, vehicle damage analysis, tire damage analysis, examining road marks, and preserving digital evidence from collision investigations. Conducted September 26-November 20, 2022.

Sept. 2022 *Crash Investigation 1 from Northwestern University Center for Public Safety*
Topics covered include obtaining information from witnesses and individuals involved in the crash, identifying and recording roadway and vehicle evidence, measuring and photographing the crash scene, and creating after-crash diagrams. Conducted July 25-September 18, 2022.

March 2022 *Zero to Hero in Cloud Compare from ai2-3D Forensics*
Two-day course on the basic features of Cloud Compare. Topics covered include how to edit point clouds, as well as how to combine, filter, transform, register and animate 3D data. Conducted March 22-23, 2022.

Feb. 2022 *Southwestern Association of Technical Accident Investigators (SATAI) Conference in Glendale, AZ*
Topics included: Human Factors – Nighttime Visibility, Human Factors – Retroreflectivity, Toyota Safety Sense and Vehicle Control History; Electric Scooter/Occupant Crash Test Results; Laser Scanner Comparisons, Laser Scanning & Photogrammetry. Conducted February 19-20, 2022.

Dec. 2021 *Crash Data Retrieval (CDR) Technician Course from Collision Safety Institute*
Two-day course covering how to access and retrieve crash data from modules supported by the Bosch CDR tool. Conducted December 7-8, 2021.

Last Updated: 09/01/2026

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