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Curriculum Vitae

Henry V. Vega, P.E., ACTAR

Senior Forensic Engineer

OVERVIEW

Mr. Vega is a licensed Professional Mechanical Engineer, an ACTAR accredited accident reconstructionist, and a certified FAA UAV Pilot, and an Associate Member of the Audio Engineering Society. Mr. Vega has been working in failure analysis and accident reconstruction since 1998 and holds a Bachelor of Science in Mechanical Engineering from Northern Illinois University.

He has extensive experience investigating accidents involving commercial and passenger vehicles, motorcycles, farm equipment, ATV's, and pedestrians. He is certified in downloading and analyzing CDR data used in vehicle accident reconstruction analysis. Also, conducts heavy vehicle engine control module download, ECM. He has used photogrammetric methods, digital mapping, and three-dimensional computer simulations to support opinions in accident reconstruction. He has used forensic audio/video analysis in shooting and forensics reconstructions. And published three methods and developed the equation to determine vehicle speed from dash camera audio. Also developed a method of combining sUAV (drone) or terrestrial images with laser scans to produce high-quality colonized and accurate three-dimensional computer models that are used in accident reconstruction and forensics settings.

Mr. Vega is also actively conducting joint research with collision investigators in the United Kingdom regarding audio from staged vehicle collisions and e-Scooters as well as conducting joint research with a Canadian forensics' investigator regarding firearm audio analysis using body worn cameras and other consumer available video camera recording devices.

AREAS OF EXPERTISE

- Vehicle Accident Reconstruction
- Vehicle/Pedestrian Accident Reconstruction
- Vehicle equipment, mechanical component failure
- EDR & HVEDR data imaging and analysis
- Computer reconstruction, simulations, photogrammetry, and audio/video analysis
- 3DS-Max | Audition | After Effects | AutoCAD | CloudCompare | Cyclone 360 | FARO Scene | iZotope | MATLAB | PC-Crash 3D | Premiere Pro | RealityCapture | ReCap | PhotoModeler | ScenePro | VBox

EDUCATION

- May 1997 **Northern Illinois University** – DeKalb, IL
Bachelor of Science, Mechanical Engineering
- May 1994 **College of Lake County** – Grayslake, IL
Associate of Science, Pre-Engineering

EMPLOYMENT HISTORY

- Sept. 2026 - **Lumina Forensics, LLC – Naperville, IL**
Present **Senior Forensic Engineer**
Reconstruction analysis of low and high-speed collisions involving vehicles and pedestrians. Specializing in the evaluation of incidents using the audio and video tracks from on-board dash cameras and surveillance cameras to generate a 3-dimensional simulation using various analytical software's such as iZotope, Matlab, PC-Crash and 3DS-Max. Using audio generated by vehicle tires rolling and/or skidding on roadway pavement to determine vehicle speeds. Also, using dash camera audio to determine a vehicle's turn signal and horn activations in a pre and post collision timeline. Determination of firearm shooting incidents captured by surveillance and body-worn cameras to determine firing sequence and using multilateral to determine location of the shooter. Conducted and published audio research regarding vehicle speed determined from commercial and passenger vehicle tires. Current audio research includes motorcycles, e-scooters, and firearm discharges of various calibers.
- Nov. 2021 - **JS Forensic Consulting, LLC – Joliet, IL**
Aug. 2026 **Forensic Engineer & Accident Reconstructionist**
- Nov. 2020 - **JS Forensic Consulting, LLC – Carlsbad, CA**
Dec 2021 **Research Engineer**
- Mar 2010 - **Semke Forensic – Orland Park, IL**
Oct 2020 **Senior Mechanical Engineer**
Performed mechanical failure analysis with emphasis in vehicular accident reconstruction. Image capture and analysis of passenger vehicle Event Data Recorder. Digital mapping of accident scene with total station equipment, FARO Focus scanner, and Phantom 4 drone. Created 3D computer simulations of vehicle accident events with PC-Crash and 3DS Max software. Processed vehicle and accident scene digital mapping with AgiSoft photogrammetric software. Conducted dynamic vehicle testing to evaluate dynamic results.
- Jan 2009 - **Donan Engineering Co., Inc. – Louisville, KY**
March 2010 **Senior Mechanical Engineer**
Responsible for mechanical engineering related failures with emphasis in vehicular accident reconstruction. Mapped accident scene with total station equipment and conducted vehicle accident reconstruction analysis.
- Feb 2007 - **Rimkus Consulting Group – Westmont, IL**
Dec 2008 **Senior Consultant**
Provided vehicle accident reconstruction analysis, including the causes and countermeasures of vehicle accidents with the use of scientific methodologies and computer simulation software. Provided forensic mapping of vehicle accident sites, inspection of vehicles, analysis, and reporting of findings to clients. Evaluated the mechanical functions of commercial vehicles involved in vehicle accidents. Conducted downloads of passenger and commercial recorders for the purpose of vehicle accident reconstruction.
- Sep 2005 - **EFI Global – San Antonio, TX**
Jan 2007 **Project Manager**
Performed vehicle accident reconstruction analysis, which included full scale vehicle collision testing used for the purpose of vehicle accident reconstruction research. Responsibilities included analysis and preservation of evidence and producing technical

reports. Conducted moisture intrusion and water damage evaluation of component failures used in residential plumbing applications.

Jan 2003 - **Verifact Corporation** – San Antonio, TX
Apr 2005 **Project Manager**

Provided consulting services to legal clients pertaining to technical investigations in Vehicle Accident Reconstruction, mechanical failure analysis, product liability investigations, fire causation, component testing, safety analysis, and equipment design using a pendulum test fixture. Researched, designed, tested, and implemented a vehicle battery cut off system used in vehicle collision.

Mar 2001 - **Sargent and Lundy** – Chicago, IL
Nov 2002 **Pipe Stress Analyst Associate Project Manager**

Conducted wind, thermal, and seismic simulations on piping used in the power industry. Responsibilities included on-scene investigations, analysis, and production of technical reports for piping support loads, forces, and stresses generated by computer simulations.

Nov 2000 - **Stilson Consulting** – Grayslake, IL
Sep 1998 **Project Manager**

Provided consulting services to legal clients pertaining to technical investigations in Vehicle Accident Reconstruction, mechanical failure analysis, seatbelt component testing, and vehicle roof crush analysis using a pendulum test fixture. Researched, designed, tested, and implemented seatbelt testing.

PUBLICATIONS AND PRESENTATIONS

- Vega, H., Suway, J., and Engleman, K., "A Novel Method for Using RealityCapture in a Forensic Setting," SAE Technical Paper 2022-01-0820, 2022. doi: 10.4271/2022-01-0820
- Englemn, K., Vega, H., Suway, J., and Desai, E., "Positional Accuracy of Portable GPS Devices during Different Ride Conditions," SAE Technical Paper 2022-01-0828, 2022
- Henry V. Vega, Justin Ngo, Krystina Engleman, Jeffrey Suway, "Speed Determination Using Audio Analysis of Dash Camera Video for Vehicle Accident Reconstruction," SAE Technical Paper 2023-01-0632, 2023.
- Henry V. Vega. and Jeffrey Suway, "Validation of the Arnold Render for Creation of Physically Correct Lighting Models," SAE Technical Paper 2023-01-0618, 2023.
- Vega, H., Ngo, J., Hatab, Z., Cornetto, A., Engleman, K., Hunter, E., 'Speed Determination Using Audio of Dash Camera Video from Passenger Vehicle Tires Frequencies for Vehicle Accident Reconstruction,' SAE Technical Paper 2025-01-8682.
- "Speed Determination Using Audio Analysis"; Lectured on using audio from dash and surveillance cameras to determine vehicle speed and events. This class was approved for 7 ACTAR Continuing Education Units – CA2RS, Glendora, California.
- "Speed Determination Using Audio Analysis"; Lectured on using audio from dash and surveillance cameras to determine vehicle speed and events. This class was approved for 7 ACTAR Continuing Education Units – CA2RS, Napa, California,
- "Speed Determination Using Audio Analysis Using audio data from the dash camera to reconstruct the collision"; Lectured on using audio from dash and surveillance cameras to determine vehicle speed and events. LEVA, Coeur d'Alene, Idaho.
- Vega, H., Cornetto, A., Ngo, J., Hatab, Z., Hunter, E., 'Speed Determination Using Audio of Dash Camera Video from Commercial Vehicle Tires Frequencies for Vehicle Accident Reconstruction,' SAE Technical Paper 2026-01-0536.

- “Schleiren Photography”; Lecture on making the invisible become visible for forensics analysis. Forensic Photography Symposium 2026.
- “From the Muzzle to Microphone: Gunshot Audio Analysis,” Lectured on using audio from various recording devices and officer body cameras – ACSR & IAFSM, Boulder, Colorado.
- “Speed Determination Using Audio Analysis”; Lectured on using audio from dash and surveillance cameras to determine vehicle speed and events & “From the Muzzle to Microphone: Gunshot Audio Analysis,” Lectured on using audio from various recording devices and officer body cameras – SATAI, Glendale, Arizona.
- “Speed Determination Using Audio Analysis”; Lectured on using audio from dash and surveillance cameras to determine vehicle speed and events “From the Muzzle to Microphone: Gunshot Audio Analysis,” Lectured on using audio from various recording devices and officer body cameras – Leica Geosystems – Public Safety & Forensics Conference, Coventry, England.
- “Speed Determination Using Audio Analysis”; Lectured on using audio from dash and surveillance cameras to determine vehicle speed and events “From the Muzzle to Microphone: Gunshot Audio Analysis,” Lectured on using audio from various recording devices and officer body cameras – Illinois Division International Association for Identification (IDIAI) 2026, Downers Grove, IL.

CONTINUING EDUCATION

- Traffic Accident Reconstruction I. 2004.
- Vetronix Crash Data Retrieval (CDR) System Certified Technician. 2004.
- ARC-CS Crash Conference. 2006.
- Electrical Arson Fire Investigation. 2006.
- Traffic Accident Reconstruction II. 2007
- Heavy Vehicle Crash Reconstruction. 2007.
- Hazardous Waste Operations and Emergency Response Certification, Level D. 2008
- Bendix Air Brake Product School Training. 2008.
- HVE Training. 2008.
- WI IAAI Basic Fire Investigating. 2009.
- Bosch Crash Data Retrieval (CDR) System Certified Analyst. 2009.
- PC-Crash Simulation Training. 2010.
- PhotoModeler Training. 2010.
- Bosch Crash Data Retrieval (CDR) System Certified Analyst. 2011.
- Investigation of Gas and Electric Appliance Fires. 2011.
- IL IAAI Fire Investigator Seminar. 2012.
- Finite Element Analysis. 2012.
- Vibration Modal Analysis. 2012.
- Piping Engineering. 2012.
- Horizontal Curve Safety. 2012.
- Forensic Engineering-Metallic Material Failures. 2012.
- IATAI Human Factor for Traffic Accident Reconstruction. 2012.
- IATAI Annual Conference. 2012.
- IL IAAI Fire Investigator Seminar. 2013.
- Heavy Vehicle EDR. 2013.
- PC-Crash 9.2 Rollover/Validations. 2013.
- IL IAAI- Vehicle Fire Seminar. 2014.
- PC-Crash 9.2 Collision Theory. 2014.
- Truck Fires. 2014.
- Liquefied Natural Gas Fundamentals. 2014.
- Residential Propane Gas Explosion Case Study. 2014.
- Anatomy of Wastewater Tank Explosion. 2014.

- Root Cause. 2014.
- Forensic Analysis of Stair Decent Falls. 2014.
- Failure Appraisement. 2014.
- Marine Accident Reconstruction. 2014.
- Explosion and Chemical Accident Investigations. 2014.
- Fundamentals of Digital Images and Video Processing with MatLab. 2015.
- Motor Vehicle Accident Reconstruction - Tire, Brake, and Steering Failures. 2015.
- Human Factors in Forensic Analysis of Accidents. 2015.
- FARO Scanning. 2016.
- Advanced Crash Reconstruction Utilizing Human Factors Research. 2017.
- Introduction to Bumper Damage Analysis. 2017.
- Fundamentals of Acoustics. 2017.
- iNPUT-ACE Video Analysis Training. 2018.
- 3DS Max and MaxScript. 2018.
- Pedestrian Collision Investigation. 2018.
- iNPUT-ACE Reverse Projection. 2019.
- HVE Training. 2020.
- PC-Crash Tips and Tricks. 2020.
- PC-Crash EDR Data. 2020.
- PC-Crash Video Data. 2020.
- LightPoint Scientific - Enhanced Analysis of Point Cloud Data. 2021.
- Advanced Troubleshooting & Vehicle Systems for CDR/EDR Operator Technician. 2021.
- Forensic Analysis and Enhancement of Digital Audio. 2022.
- Advanced Forensic Audio Enhancement and Processing. 2022
- Audio Authentication for Forensic Casework. 2023
- World Reconstruction Exposition – Conducted Pedestrian Crash Test 8,11,12,14,16,18. 2023
- Leica Scanning & Registration Training 2023.
- Hyundai, Kia, & Tesla EDR Training. 2023.
- Shooting Reconstruction. 2023.
- Photography for Accident Reconstruction, Product Liability, and Testing. 2023.
- Allan Moore, Determining Vehicle Speed from Audio Recording. 2024.
- 2024 HVE Forum.
- PC-Crash Video Analysis using 15.0. 2024.
- 2025 HVE Forum – HVE and Blender Training.
- LEVA – Video Analysis in Collision Reconstruction. 2025
- 2025 ITAI – Full scale vehicle crash testing and audio analysis in the United Kingdom. 2025.
- Field to Lab: Managing Video Evidence Workflow – LEVA. 2025.
- Speed Determination from Dashcam Video – LEVA. 2025.
- Shots Fire (2.0): Identifying Gunfire in Digital Video and Audio Recordings – LEVA. 2025.
- Acoustic Gunshot Multilateration: From Audio Recording to Shooter Location – LEVA. 2025.
- DVR Extraction Essential: A Hands-On Workshop – LEVA. 2025.
- Matlab Signal Processing Onramp – MathWorks Training Servies 2025.
- Forensic Photography Symposium 2026.
- 2026 HVE Forum – Blender Training.