

Wesley D. Grimes, BSME, P.E.
Engineer
COLLISION ENGINEERING ASSOCIATES, INC.

2812 N. Norwalk, Suite 123
Mesa, Arizona 85215
(480) 655-0399

EDUCATION

Brigham Young University, 1978 - 1979, Engineering courses

Arizona Tech, 1981, Computer programming

Mesa Community College, 1986 - 1989, Engineering courses

Arizona State University, 1988 - 1992, Mechanical Engineering, BSME

Accident Investigation Practices Subcommittee Workshop I, SAE, 1985

Analytical Reconstruction of Automobile Crashes Using a 3-D Simulator, SAE Seminar 1987

Accident Reconstruction Photogrammetry Workshop, SAE, 1990

Commercial Vehicle Accident Investigation and Reconstruction, Arkansas State University, 1993

Automobile Vehicle Dynamics, SAE Seminar 1994

Low Speed Rear Impact Collision TOPTEC, SAE, 1994

Optics, Vision and Automotive Engineering, SAE, 1995

The 1995 ATB Model User's Colloquium

Mechanics of Heavy-Duty Trucks and Truck Combinations, UMTRI, 1995

Sensor Design for Automobile Air Bag Systems, SAE, 1995

Biomechanics of Impact, AAAM, 1995

The 1996 ATB Model User's Colloquium

Low Speed Collision TOPTEC, SAE, 1996

Heavy Vehicle Underride Protection TOPTEC, SAE, 1997

The 1997 ATB User's Group Conference

EDUCATION - continued

Airbag Design and Performance TOPTEC, SAE, 1997

Side Impact TOPTEC, SAE, 1998

Occupant Protection TOPTEC, SAE, 1998

Crash Data Recorder - Vetronix Corporation CDR Training Seminar, 2000

World Reconstruction Exposition 2000 (WREX2000), Texas A & M, 2000

Braking Performance of Heavy Commercial Vehicles, SAE, 2000

Theoretical and Applied Vehicle Dynamics, EDC, 2001

Accident Reconstruction TOPTEC: Special Topics, SAE, 2001

Passenger Vehicle Rollover TOPTEC: Causes, Prevention and Injury Prevalence, SAE, 2002

SATAI Spring Conference, 2003

Institute of Police Technology and Management, CDR Tool - User Certification Course, 2004

Arc Second Incorporated, Operation & Application of the Vulcan measuring system, 2004

The 2004 ATB User's Group Conference

Detroit Diesel Training Center, 8876 DDEC Reports/Data Extraction, 2004

CDR Data Analyst Course, 2006

iWitness Close Range Photogrammetry Training, Photometrix Pty Ltd., 2007

Caterpillar Electronic Technician (ET) Course, 2008

CDR Technician Course, 2008

CDR Data Analyst Course, 2008

Human Factors in Traffic Crashes, 2009

FARO Focus 3D Training Class, 2013

Institute of Police Technology and Management, Online Bosch CDR Technician, 2014

EDUCATION - continued

Preserving and Analyzing Information from Heavy Vehicle EDRs, Northwestern University, 2015

Accessing and Interpreting Heavy Vehicle Event Data Recorders, SAE, 2015

International Association of Forensic and Security Metrology Annual Conference, 2015

The World Reconstruction Exposition 2016 (WREX 2016), Orlando, Florida, May 2-6, 2016

ARC-CSI Crash Conference, Las Vegas, NV, 2016

Digital Forensics of Heavy Vehicle Event Data Recorders, The University of Tulsa, Tulsa, OK, 2016

Reconstruction and Analysis of Rollover Crashes of Light Vehicles, SAE, 2016

Vehicle Crash Reconstruction Methods, SAE, 2016

Accessing and Interpreting Heavy Vehicle Event Data Recorders, SAE, 2016

Commercial Vehicle Braking Systems, SAE, 2016

Applying Automotive EDR Data to Traffic Crash Reconstruction, SAE, 2016

Vehicle Dynamics for Passenger Cars and Light Trucks e-Seminar, SAE, 2016

Hands-on Heavy Duty Communications Protocols and Programming, The University of Tulsa, Tulsa, OK, 2016

sUAS Drone Pilot Ground School/Flight Proficiency, 2017

Pix4D User Workshop, Pix4D, San Rafael, CA, 2017

Pix4D Intermediate User Workshop, Pix4D, San Rafael, CA, 2017

Preserving and Analyzing Information from Heavy Vehicle EDRs, Northwestern University, 2017

FARO Scene 7 Update Training, 2017

Accessing and Interpreting Heavy Vehicle Event Data Recorders, SAE, 2018

Applying Automotive EDR Data to Traffic Crash Reconstruction, SAE, 2018

The Virtual CRASH Interface, vCRASH Academy, 2018

Simulation Basics, vCRASH Academy, 2018

EDUCATION - continued

Reconstruction and Analysis of Motorcycle Crashes, SAE, 2018

Virtual CRASH 3-Day training class, Gainesville, FL, December 2018

Human Factors for Traffic Crash Reconstruction, Crash Safety Solutions, 2019

Comprehensive Air Brake Systems Interactive E-Training Program, Bendix, March 2019

Comprehensive Air Brake Systems (3-Day) Training Program, Bendix, April 2019

Basic Tire Mechanics and Inspection, SAE, 2019

Tire Forensic Analysis, SAE, 2019

Accessing and Interpreting Heavy Vehicle Event Data Recorders, SAE, 2019

Advanced Technology Training of Higher-level Driver Assistance & Safety Systems, Including Bendix Diagnostic Software, Bendix, May 2019

Photogrammetry and Analysis of Digital Media, SAE, 2019

Photogrammetry 4 Forensics, ai2-3D Forensics, 2020

Applying Automotive EDR Data to Traffic Crash Reconstruction, SAE, 2020

Obtaining Chip-level Data from Modules, NAPARS, 2020

Analysis of ECM Data in New Freightliners, NAPARS, 2020

Accident Reconstruction, The Autonomous Vehicle and ADAS, SAE, 2020

sUAS Crash Investigation training, Aerial metrics, 2021

Pix4D for Crash and Crime Scene Investigation, Pix4D, 2021

Diamond Logic Builder Level 2 Retail Course (8982), NAVISTAR, 2021

OTHER ACTIVITIES / PRESENTATIONS / AWARDS

Session Co-organizer for SAE at the annual SAE World Congress, Accident Reconstruction: Technology and Animation, 1991 - 2000

Instructor - The HVE Developers Conference in San Francisco, CA, 1996

Instructor - *Car Crashes and Occupant Injuries*, AAAM Course, 1997

Instructor - The HVE Developers Conference in Scottsdale, AZ, 1997

Accident Reconstruction: Animation vs Simulation, Nevada Trial Lawyers Association, 1 CLE credit, August 1997

Accident Reconstruction and the Seat Belt Defense, Teilborg, Sanders & Parks, P.C., 1 CLE credit, November 1997

Tractor Trailer Jackknife Avoidance and Decision Driving Techniques, Wisconsin Decision Driving Center, 1998

Instructor - *3-D Human Simulation use GATB*, The HVE Forum in New Orleans, LA, 1998

Instructor - The HVE Developers Conference in New Orleans, LA, 1998

Instructor - The HVE Developers Conference in Atlanta, GA, 1999

Instructor - The HVE Conference in San Diego, CA, 2000

Instructor - The HVE Conference in Santa Fe, NM, 2001

Received the Forest R. McFarland Award as “A Key Contributor to the SAE International Congress Meeting, 1991-2000,” presented 2002

Instructor - The HVE Conference in New Orleans, LA, 2002

Instructor - SATAI Spring Conference in Las Vegas, NV, 2003

Instructor - The HVE Conference in Las Vegas, NV, 2003

Using ATB Under the HVE Environment - A Case Study, The ATB User's Group Conference in Salt Lake City, UT, 2004

Instructor - The HVE Forum in San Francisco, CA, 2004

HTTG Heavy Truck Brake Testing in East Liberty, OH, 2004

Instructor - The HVE Forum in Miami, FL, 2005

OTHER ACTIVITIES / PRESENTATIONS / AWARDS - continued

Instructor - *Advanced Case Studies using HVE*, The HVE Forum in Miami, FL, 2005

Instructor - The HVE Forum in Phoenix, AZ, 2006

Instructor - *Advanced Case Studies using HVE*, The HVE Forum in Phoenix, AZ, 2006

Instructor - The HVE Forum in San Antonio, TX, 2007

Instructor - *Advanced Case Studies using HVE*, The HVE Forum in San Antonio, TX, 2007

Instructor - The HVE Forum in San Diego, CA, 2008

Instructor - *Advanced Case Studies using HVE*, The HVE Forum in San Diego, CA, 2008

Instructor - *Advanced Digital Photography for Accident Reconstruction*, SATAI Conference in San Diego, CA, November, 2010

Instructor - The HVE Forum in Scottsdale, AZ, 2011

Instructor - *Advanced Case Studies using HVE*, The HVE Forum in New Orleans, LA, 2012

Instructor - *Using 3D Laser Scanners in Accident Reconstruction*, International Association of Forensic and Security Metrology Annual Conference, 2015

Motorcycle Crash Test Team Member - ARC-CSI Crash Conference, Las Vegas, NV, 2016

Instructor - *Advanced Digital Photography for Accident Reconstruction*, ARC-CSI Crash Conference, Las Vegas, NV, 2016

ARC-CSI - Motorcycle Drag Factor Testing, Las Vegas, NV, 2016

Instructor - *Two Blocks of Instruction: CloudCompare, Photo Substitution Work flow*, FARO Scene 7 Update Training, 2017

Instructor - *Using Pix4d in Accident Reconstruction*, IAFSM Conference, Atlanta, GA, 2017

Instructor - *Vehicle Crash Reconstruction: Principles and Technology*, SAE Course, Phoenix, AZ, 2017

Instructor - *Vehicle Crash Reconstruction: Principles and Technology*, SAE Course, Segundo, CA, 2018

Instructor - *Vehicle Crash Reconstruction: Principles and Technology*, SAE Course, Aberdeen Proving Ground, MD, 2018

Instructor - *Vehicle Crash Reconstruction: Principles and Technology*, SAE Course, Herndon, VA, 2018

OTHER ACTIVITIES / PRESENTATIONS / AWARDS - continued

Instructor - *Accident Reconstruction with Heavy Vehicle Event Data Recorders*, MSC Recon, Mesa, AZ, 2018

Instructor - *Vehicle Crash Reconstruction: Principles and Technology*, SAE Course, Phoenix, AZ, 2018

Instructor - *A Moving Picture's Worth a Thousand Words: Animated Accident Reconstruction*, Arizona Association for Justice, Phoenix, AZ, 2018

Instructor - *Vehicle Crash Reconstruction: Principles and Technology*, SAE Course, Phoenix, AZ, 2019

Instructor - *Heavy Vehicle Topics*, SATAI Summer Conference, July, 2019

Instructor - *Vehicle Crash Reconstruction: Principles and Technology*, SAE Course, Denver, CO, 2019

Instructor - *Advanced Applications of Heavy Vehicle EDR Data*, SAE Course, Oxnard, CA, 2019

Instructor - *Vehicle Crash Reconstruction: Principles and Technology*, SAE Course, Scottsdale, AZ, 2020

Instructor - *Using Freightliner New Cascadia ECM Data in Accident Reconstruction*, NAPARS, 2020

Instructor - *Advanced Applications of Heavy Vehicle EDR Data*, SAE Course, Oxnard, CA, 2021

PROFESSIONAL AFFILIATIONS

Societies:

Association for the Advancement of Automotive Medicine, AAAM

Society of Automotive Engineers, SAE

Member, Accident Investigation and Reconstruction Practices Committee, SAE, 1982-2012

Vice President, ATB User's Group, 1996, 1997

National Association of Professional Accident Reconstructionists, NAPARS

Southwest Association of Technical Accident Investigators, SATAI

American Society of Media Photographers, ASMP

International Association of Forensic and Security Metrology, IAFSM

Registrations/Certificates:

Professional Engineer, Arizona certificate no. 26907

Professional Engineer, Louisiana license no. 31362

Society of Automotive Engineers, Accident Reconstruction Certificate, 2016

FAA Drone Airman Certificate

PROFESSIONAL EXPERIENCE

Crash Reconstruction/Analysis:

Engineering analysis and collision reconstruction of vehicle crashes, including passenger vehicles, heavy trucks, motorcycles, bicycles, etc. Air brake performance and operation. Skid testing of passenger cars and heavy trucks. Analysis of collisions, rollovers, tire disablements, vehicle crush, vehicle dynamics, restraint systems, and other issues.

Documentation of Crash Evidence:

Documentation of vehicle damage, vehicle components, collision scene evidence, sight lines, slopes, elevations, etc. Air brake component documentation. Documentation of the restraint system usage. Forensic mapping of crash scenes and vehicle damage using total stations, photogrammetry, and the FARO Focus 3D laser scanner. Photogrammetry using iWitness, Photomodeler, as well as reverse-projection techniques. Photographic documentation of crash scene evidence, vehicle damage, visibility and sight lines. Forensic photography; including night-time photography, macro photography, etc.

Electronic Vehicle Systems:

CDR tool for airbag control module imaging (downloading), including vehicles manufactured by GM, Ford, Chrysler and others supported by the CDR tool kit. Heavy truck ECM imaging, including Detroit Diesel, Caterpillar, and Cummins Engine Control Modules. The Link/Radlinski ABS Expert tool kit for heavy trucks and trailers.

Computer Analysis:

Computer analysis of vehicle crashes, handling, and avoidance using HVE, (EDCRASH, EDSMAC4, EDSMAC, EDVTS, EDSVS, EDGEN, SIMON, EDVDS, EDVSM, GATB, READDATAFILE, GBF, SMAC, CRASH3, HVOSM, PHASE IV, GUARD, ATB, iWitness, Photomodeler, and others.

EMPLOYMENT HISTORY

February 1994 - Present

Collision Engineering Associates, Inc., Mesa, Arizona.

Nov. 1979 - April 1980 & July 1981 - February 1994

Cromack Engineering Associates, Inc., Tempe, Arizona.

PUBLICATIONS, JOURNALS, PROCEEDINGS AND TRANSACTIONS

“Field Application of Photogrammetric Analysis Techniques: Applications of the FOTOGRAM Program,” SAE Paper No. 861418, Society of Automotive Engineers, Detroit, Michigan, September, 1986.

“Computer Animation Techniques for Use in Collision Reconstruction,” SAE Paper No. 920755, Society of Automotive Engineers, Detroit, Michigan, February, 1992.

PUBLICATIONS, JOURNALS, PROCEEDINGS AND TRANSACTIONS - continued

“Classifying the Elements in a Scientific Animation,” SAE Paper No. 940919, Society of Automotive Engineers, Detroit, Michigan, February 1994.

“Using ATB in Collision Reconstruction,” SAE Paper No. 950131, Society of Automotive Engineers, Detroit, Michigan, February 1995.

“Analysis of Acceleration in Passenger Cars and Heavy Trucks,” SAE Paper No. 950136, Society of Automotive Engineers, Detroit, Michigan, February 1995.

“Programming FORTRAN Applications For HVE,” SAE Paper No. 960889, Society of Automotive Engineers, Detroit, Michigan, February 1996.

“Developing a Crush Profile Estimate by Balancing Impact Forces,” SAE Paper No. 970942, Society of Automotive Engineers, Detroit, Michigan, February 1997.

“Using ATB Under the HVE Environment,” SAE Paper No. 970967, Society of Automotive Engineers, Detroit, Michigan, February 1997.

“Documenting Scientific Visualizations and Computer Animations Used in Collision Reconstruction Presentations,” SAE Paper No. 980018, Society of Automotive Engineers, Detroit, Michigan, February 1998.

“3-Dimensional Simulation of Vehicle Response to Tire Blow-outs,” SAE Paper No. 980221, Society of Automotive Engineers, Detroit, Michigan, February 1998.

“Low Speed Acceleration of the Kenworth T600 Tractor Truck,” SAE Paper No. 980366, Society of Automotive Engineers, Detroit, Michigan, February 1998.

“Low Speed Acceleration of the Freightliner FLD-120 Tractor Truck,” SAE Paper No. 1999-01-0092, Society of Automotive Engineers, Detroit, Michigan, March 1999.

“The Effect of Crash Pulse Shape on Occupant Simulations,” SAE Paper No. 2000-01-0460, Society of Automotive Engineers, Detroit, Michigan, March 2000.

“Low-Speed Acceleration of a Kenworth T2000 Tractor-Truck with Autoshift Transmission,” SAE Paper No. 2000-01-0470, Society of Automotive Engineers, Detroit, Michigan, March 2000.

“The Importance of Crash Pulse Data When Analyzing Occupant Kinematics Using Simulations,” WP# 2000-2, Engineering Dynamics Corporation, Beaverton, Oregon, 2000.

“Extracting Tire Model Parameters From Test Data,” WP# 2001-4, Engineering Dynamics Corporation, Beaverton, Oregon, 2001.

“Heavy Truck Brake Designer Validation Testing,” WP# 2005-2, Engineering Dynamics Corporation, Beaverton, Oregon, 2005.

PUBLICATIONS, JOURNALS, PROCEEDINGS AND TRANSACTIONS - continued

“Analyzing the Trip-Phase of Soft-Soil Rollovers,” SAE Paper No. 2006-01-1558, Society of Automotive Engineers, Detroit, Michigan, April 2006.

“Extracting Tire Model Parameters from Test Data,” SAE Paper No. 2006-01-1399, Society of Automotive Engineers, Detroit, Michigan, April 2006.

“Accident Reconstruction Analysis,” *The Claim Adjuster’s Automobile Liability Handbook*, Chapter 9, West-A Thompson Reuters Business, 2009.

“Updated Heavy Truck Air Chamber Force Data Charts,” *Accident Reconstruction Journal*, Volume 26, No. 6, November/December, 2016.

“Evaluation of The Mide Slam Stick X as a Low-Cost Accelerometer and Data Acquisition System for Vehicle Crash Testing,” *Collision Magazine*, Volume 11, Issue 2, February 2017.

“Motorcycle Crash Testing: Advanced Boot Camp Was Born,” *Collision Magazine*, Volume 11, Issue 2, February 2017.

“Acceleration Testing of 2016 Kenworth T680 with Automated Manual Transmission in Auto Mode,” SAE Paper No. 2017-01-1418, Society of Automotive Engineers, Detroit, Michigan, March 2017.

“Acceleration Testing of 2016 Freightliner Cascadia with Automated Manual Transmission in Auto Mode,” SAE Paper No. 2017-01-1426, Society of Automotive Engineers, Detroit, Michigan, March 2017.

“Acceleration Testing of 2011 MCI J4500 45 foot Motor Coach,” SAE Paper No. 2019-01-0409, Society of Automotive Engineers, Detroit, Michigan, April 2019.

“Acceleration Testing of 2000 Van Hool 45 Foot Motor Coach,” SAE Paper No. 2019-01-0431, Society of Automotive Engineers, Detroit, Michigan, April 2019.

“Evaluation of the Heavy Vehicle Event Data Recorder for the Freightliner New Cascadia with Detroit Diesel Engines,” SAE Paper No. 2019-01-0636, Society of Automotive Engineers, Detroit, Michigan, April 2019.