



Résumé of
WILLIAM M. BORTLES, B.S.M.E.

Kineticcorp™

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EXPERIENCE:

Principal Accident Reconstructionist: Kineticcorp, LLC, Greenwood Village, CO. 2013 to Present.
Senior Engineer – Accident Reconstruction: Kineticcorp, LLC, Greenwood Village, CO. 2011 to 2013.
Engineer - Accident Reconstruction: Kineticcorp, LLC, Denver/Greenwood Village, CO. 2005 to 2011.
Project Engineer: Atlantic Industrial Technologies, Inc., Islandia, NY. 2004 to 2005.

EDUCATION:

Bachelor of Science. Mechanical Engineering, University of Colorado at Boulder. 2002.
Mr. Bortles is currently pursuing a graduate certificate in Information Assurance and Cybersecurity with a Specialty in Digital Forensics.

CERTIFICATIONS:

Full Accreditation Traffic Accident Reconstructionist #2257
Accreditation Commission for Traffic Accident Reconstruction (ACTAR)
Crash Data Retrieval (CDR) System®, Technician, Data Analyst, Technician Mentor/Trainer

AWARDS:

Engineering College – Dean’s List, University of Colorado at Boulder. Fall 2001.
Carl H. Giroux Scholarship, University of Colorado at Boulder. 2001 to 2002.

ACCIDENT RECONSTRUCTION: Mr. Bortles has investigated and reconstructed hundreds of vehicular accidents. Through this work and research within the field of accident reconstruction, he has gained experience in the following areas:

- Mr. Bortles has investigated and reconstructed accidents involving pedestrians, bicycles, motorcycles, off-highway vehicles, passenger cars, buses, commercial vehicles, articulated tractor-trailer combinations, and passenger and freight trains. He has also reconstructed vehicular accidents involving wildlife, roadside barriers and terrain features. Mr. Bortles has reconstructed multiple accidents involving post-collision fires. He has also reconstructed numerous single vehicle loss-of-control and rollover accidents.
- Mr. Bortles has published peer-reviewed research in the Society of Automotive Engineers (SAE) Accident Reconstruction Session on the topics of event data recorders, vehicle-to-vehicle crashes, crash-test analysis, vehicle system forensics and 3D visualization modeling techniques. Mr. Bortles also serves as a peer-reviewer for research papers submitted to the Occupant Protection: Accident Reconstruction, Integrated Safety Systems and Event Data Recorders sessions for the SAE World Congress.
- Mr. Bortles is a member of the SAE’s *Crash Data Collection and Archiving Committee*. This committee is responsible for developing and maintaining SAE standards, recommended practices and informational reports related to safety-relevant data.
- Mr. Bortles is a certified Bosch Crash Data Retrieval (CDR) System® Technician, Data Analyst and Technician Mentor/Trainer. He is experienced in the retrieval and analysis of data from rollover sensors, restraint and powertrain control modules from passenger vehicles and light trucks. Mr. Bortles has trained others to become certified Level 1 and 2 CDR Technicians.
- Mr. Bortles is certified to perform forensic data acquisitions and analyses from passenger vehicle infotainment, navigation and telematics systems. These include the General Motors *OnStar™* system, the Ford *Sync™* and *MyFord Touch™* systems, the Chrysler *Uconnect™* system, the BMW *ConnectedDrive™* system, and the Toyota *Entune™* system.
- Mr. Bortles has expertise in accessing, recovering and interpreting data from commercial vehicle Event Data Recorders (EDRs) and Engine Control Modules (ECMs). He successfully completed training from the University of Tulsa’s *How to Interpret Commercial Vehicle Event Data Recorders* and the Society of Automotive Engineers’ *Accessing and Interpreting Heavy Vehicle Event Data Recorders* courses.
- Mr. Bortles inspects heavy truck systems, including air brake systems, to determine their condition and relevance to an accident. He has completed Commercial Vehicle Safety Alliance (CVSA) seminars for *Brake Certification* as well as *Out of Service Criteria* presented by the Colorado Motor Carriers Association.

PROJECT ENGINEERING: At Atlantic Industrial Technologies, Mr. Bortles designed and oversaw production of numerous custom hydraulic and pneumatic systems, controls and power transmission equipment for use in industrial, infrastructure, military and entertainment applications.

AUTOMOTIVE ENGINEERING: During his undergraduate studies at the University of Colorado at Boulder, Mr. Bortles participated in the SAE Collegiate Design Series as a member of CU’s Mini Baja team. He designed the chassis and roll cage of an off-road vehicle, fabricated components and assisted in the testing the vehicle. At the 2002 West Regional, he competed as a driver in the four-hour off-road endurance race against a field of approximately 100 international teams.

PROFESSIONAL AFFILIATIONS: National Association of Professional Accident Reconstruction Specialists (NAPARS), Society of Automotive Engineers (SAE), Southwestern Association of Technical Accident Investigators (SATAI).

William M. Bortles, B.S.M.E.
Principal Accident Reconstructionist

Kineticorp™

Publications

- **Bortles, William**, Daniel Koch, Gray Beauchamp, David Pentecost, George S. Rayburn, Ryan Hostetler, “Event Data Recorder Performance During High Speed Yaw Testing Subsequent to a Simulated Tire Tread Separation Event,” Technical Paper Number 2019-01-0634, Society of Automotive Engineers, Warrendale, PA, 2019.
- **Bortles, William**, Ryan Hostetler, “Performance of Event Data Recorders Found in Toyota Airbag Control Modules in High Severity Frontal Oblique Offset Crash Tests,” Technical Paper Number 2019-01-0633, Society of Automotive Engineers, Warrendale, PA, 2019.
- Beauchamp, Gray, David Pentecost, Daniel Koch, **William Bortles**, “Speed Analysis of Yawing Passenger Vehicles Following Tire Tread Detachment,” Technical Paper Number 2019-01-0418, Society of Automotive Engineers, Warrendale, PA, 2019.
- **Bortles, William**, Sean McDonough, Connor Smith, Michael Stogsdill, “An Introduction to the Forensic Acquisition of Passenger Vehicle Infotainment & Telematics Systems Data,” Technical Paper Number 2017-01-1437, Society of Automotive Engineers, Warrendale, PA, 2017.
- **Bortles, William**, David Hessel, William Neale, “Application of 3D Visualization in Modeling Wheel Stud Contact Patterns with Rotating and Stationary Surfaces,” Technical Paper Number 2017-01-1414, Society of Automotive Engineers, Warrendale, PA, 2017.
- **Bortles, William**, Wayne Biever, Neal Carter, Connor Smith, “A Compendium of Passenger Vehicle Event Data Recorder Literature and Analysis of Validation Studies,” Technical Paper Number 2016-01-1497, Society of Automotive Engineers, Warrendale, PA, 2016.
- Beauchamp, Gray, Dana Thornton, **William Bortles** Nathan Rose, “Tire Mark Striations: Sensitivity and Uncertainty Analysis” Technical Paper Number 2016-01-1468, Society of Automotive Engineers, Warrendale, PA, 2016.
- **Bortles, Will**, Neale, William T.C., “The Misunderstood Witness – Event Data Recorders for Heavy Vehicles,” *American Bar Association – Tort Trial & Insurance Practice Section, Automobile Law Committee News*, Spring 2013.
- Rose, Nathan A., Neal Carter, David Pentecost, Tilo Voitell, **William Bortles**, “Using Data from a DriveCam Event Recorder to Reconstruct a Vehicle-to-Vehicle Impact,” Technical Paper Number 2013-01-0778, Society of Automotive Engineers, Warrendale, PA, 2013.
- **Bortles, Will**, Neale, William T.C., “Automotive Event Data Recorders: Ushering in a New Era of Accident Reconstruction,” *American Bar Association – Tort Trial & Insurance Practice Section, Automobile Law Committee News*, Summer 2012.
- Neale, William T.C., Terpstra, Toby, **Bortles William. M.**, “Evaluation of Discrete Vehicle Accident Sounds for use in Accident Reconstruction.” *Proceedings of Meetings on Acoustics*, Vol. 5 (2008).
- Neale, William T.C., Terpstra, Toby, **Bortles William. M.**, “Analysis of Commonly Witnessed Vehicle Accident Sounds *in situ*.” *The Journal of the Acoustical Society of America* Vol. 124:4, (Oct. 2008): 5aNS5.
- Rose, Nathan A., Beauchamp, Gray, **Bortles, Will**, “Quantifying the Uncertainty in the Coefficient of Restitution Obtained with Accelerometer Data from a Crash Test.” Technical Paper 2007-01-0730, Society of Automotive Engineers, Warrendale, PA, 2007.

Committee Publications

- Society of Automotive Engineers: Data Collection and Archiving Standards Committee. **William Bortles**: Sponsor/Task-Force Leader, SAE J1674_201807 “Early Acquisition and Preservation of Information in a Motor Vehicle Crash.” July, 2018 Revision, Warrendale, PA, 2018.

Acknowledged Research and Forensic Testing

Mr. Bortles has conducted crash testing of EDR supported vehicles in car-to-car and car-to-pedestrian crash tests. He has also conducted forensic testing of passenger vehicle, heavy truck and motorcycle dynamics, tire disablements and acoustics. That testing includes:

- High speed tire disablement testing involving full and partial tread separations, Bennett, CO.
 - *Published by Gray Beauchamp, et al. "A Comparison of 25 High Speed Tire Disablements Involving Full and Partial Tread Separations" Technical Paper 2013-01-0776, Society of Automotive Engineers, Warrendale, PA, 2013.*
- CDR supported vehicle car-to-pedestrian crash testing, Longmont, CO, April 20, 2011.
 - *Presented at the 2011 ARC-CSI Crash Conference by Patrick Cillo.*
- Denver Police Department C.V.P.I. directional control and yaw testing, Denver, CO, July 16, 2007.
 - *Published by Gray Beauchamp, et al. "Determining Vehicle Steering and Braking from Yaw Striations," Technical Paper 2009-01-0092, Society of Automotive Engineers, Warrendale, PA, 2009.*
- Restitution Modeling for Crush Analysis
 - *Published by Nathan A. Rose, et al. "Restitution Modeling for Crush Analysis: Theory and Validation," Technical Paper 2006-01-0908, Society of Automotive Engineers, Warrendale, PA, 2006.*

Invited Lectures & Technical Seminars Instructed

- "Event Data Recorder Performance During High Speed Yaw Testing Subsequent to a Simulated Tire Tread Separation Event," Technical Paper Number 2019-01-0634, Society of Automotive Engineers Word Congress Experience, Detroit, MI, April 11, 2019.
- "Performance of Event Data Recorders Found in Toyota Airbag Control Modules in High Severity Frontal Oblique Offset Crash Tests," Technical Paper Number 2019-01-0633, Society of Automotive Engineers Word Congress Experience, Detroit, MI, April 11, 2019.
- "Investigating Crash and Vehicular Crimes Using 21st Century Techniques: Event Data Recorders and Modern Digital Forensics," Informational Session, Colorado School of Mines, Denver, CO, April 19, 2018.
- "Effectively Conveying Accident Reconstruction and Biomechanical Concepts," American Bar Association – Tort Trial & Insurance Practice Section, 2018 Emerging Issues in Motor Vehicle Product Liability Litigation, Phoenix, AZ, April 4, 2018.
- "An Introduction to the Forensic Acquisition of Passenger Vehicle Infotainment & Telematics Systems Data," Technical Paper Number 2017-01-1437, Society of Automotive Engineers Word Congress Experience, Detroit, MI, April 5, 2017.
- "Application of 3D Visualization in Modeling Wheel Stud Contact Patterns with Rotating and Stationary Surfaces," Technical Paper Number 2017-01-1414, Society of Automotive Engineers Word Congress Experience, Detroit, MI, April 4, 2017.
- "A Compendium of Passenger Vehicle Event Data Recorder Literature and Analysis of Validation Studies," Technical Paper Number 2016-01-1497, Society of Automotive Engineers Word Congress, Detroit, MI, April 14, 2016.
- "Entertainer, Navigator and Historian: Vehicle Data – Forensic Retrieval and Privacy/Data Ownership Issues," American Bar Association – Tort Trial & Insurance Practice Section, 2016 Emerging Issues in Motor Vehicle Product Liability Litigation, Phoenix, AZ, April 7, 2016.
- "What You Need to Know about Event Data Recorders," Webinar: Washington Defense Trial Lawyers, June 28, 2013.
- "Heavy Truck Accidents: Preserving Electronic Event Data," Colorado Motor Carriers – Safety Management Council Meeting, June 6, 2013.
- "Event Data Recorder 101 – An Introduction and Application of Data," For Credit Continuing Education Webinar Offered by Kineticcorp, May 3, 2013.
- "Emergency Response and Accident Investigation: Documenting Vehicle Evidence and Preserving Event Data." United Parcel Service (UPS) – Management & Driver Safety Training, Denver, CO, April 10, 2013.
- "Event Data Recorder 101 – An Introduction and Application of Data," For Credit Continuing Education Webinar Offered by Kineticcorp, March 15, 2013.
- "The Evolution of the Event Data Recorder." Guest Lecturer. Biomechanical Engineering Department, Wayne State University, Detroit, MI, April 12, 2011.
- *Bosch Crash Data Retrieval (CDR) System[®] Technician Level 1 & Level 2 Certification Course.* Instructor. Kineticcorp, Greenwood Village, CO, March 8, 2011.

Last Revised: April 15, 2019

Technical Conferences and Seminars Attended

- *Society of Automotive Engineers World Congress Experience*. Accident Reconstruction Session, Event Data Recorders Session, Human Factors in Driver Vision and Lighting Session, Detroit, MI, April 9-11, 2019.
- *2019 EDR Summit*. Collision Publishing & Collision Safety Institute, Houston, TX. March 4-6, 2019.
- *Bosch Crash Data Retrieval (CDR) System® Technician Train the Trainer Certification*. Collision Safety Institute, Houston, TX, March 3, 2019.
- *Human Factors in Traffic Crashes – Analysis of Driver’s Responses*. Presented by Jeffrey W. Muttart, Ph.D., Crash Safety Solutions, LLC., Sponsored by the Southwestern Association of Technical Accident Investigators, Phoenix, AZ, January 20-24, 2019.
- *2018 EDR Summit*. Collision Publishing & Collision Safety Institute, Houston, TX. March 5-7, 2018.
- *Society of Automotive Engineers World Congress Experience*. Accident Reconstruction Session, Event Data Recorders Session Detroit, MI, April 4-5, 2017.
- *2017 EDR Summit*. Collision Publishing & Collision Safety Institute, Houston, TX. March 6-8, 2017.
- *The Digital Forensics of Heavy Vehicle Event Data Recorders*, University of Tulsa – Continuing Engineering & Science Education, Tulsa, OK, February 14-16, 2017.
- *Society of Automotive Engineers Word Congress*: Accident Reconstruction Session, Event Data Recorders Session, Detroit, MI, April 13-14, 2016.
- *2016 CDR User’s Summit*. Collision Publishing & Collision Safety Institute, Houston, TX. January 25-27, 2016.
- *Vehicle System Forensics*. Berla Corporation, San Jose, CA. September 28 – October 1, 2015.
- *2015 CDR User’s Summit*. Collision Publishing & Collision Safety Institute, Houston, TX. January 26-28, 2015.
- *Acquiring and Analyzing Data from Sensors and In-Vehicle Networks Seminar*, Society of Automotive Engineers, Troy, MI, October 23-24, 2014.
- *Society of Automotive Engineers World Congress*. SAE, Detroit, MI, April 9, 2014.
- *2014 CDR User’s Summit*. Collision Publishing & Collision Safety Institute, Houston, TX. January 27-29, 2014.
- *Applying Automotive EDR Data to Traffic Crash Reconstructions*. Society of Automotive Engineers, Norwalk, CA. December 10-12, 2013.
- *Bosch Crash Data Retrieval (CDR) System® Technician Train the Trainer Certification*. Collision Safety Institute, Houston, TX, January 20, 2013.
- *Accessing and Interpreting Heavy Vehicle Event Data Recorders*. Society of Automotive Engineers, Oxnard, CA. October 22-26, 2012.
- *Heavy Vehicle Crash Reconstruction*. Northwestern University – Center for Public Safety, Evanston, IL. May 14-18, 2012.
- *2012 CDR User’s Summit*. Collision Publishing & Collision Safety Institute, Houston, TX. January 16-18, 2012.
- *Motorcycle Safety Foundation – Basic Rider Course*. T3RG Motorcycle Schools, Aurora, CO, September 10-11, 2011.
- *Society of Automotive Engineers World Congress*. SAE, Detroit, MI, April 12-13, 2011.
- *Bosch Crash Data Retrieval (CDR) System® Technician Train the Trainer Certification*. Collision Safety Institute, Houston, TX, January 20-21, 2011.
- *2011 CDR User’s Summit*. Collision Publishing & Collision Safety Institute, Houston, TX. January 17-19, 2011.
- *How to Interpret Commercial Vehicle Event Data Recorders (EDRs)*, University of Tulsa – Continuing Engineering & Science Education, Tulsa, OK, November 15-19, 2010.
- *The ATV Safety Institute E-Course*, ATV Safety Institute, September 9, 2010.
- *2010 CDR User’s Summit*, Collision Publishing & Collision Safety Institute, Houston, TX, January 25-27, 2010.
- *CVSA Out of Service Seminar*, Colorado Motor Carriers Association, Denver, CO, August 27, 2009.
- *Bosch Crash Data Retrieval (CDR) System® Analyst Course*, Collision Safety Institute, Golden, CO, December 9-12, 2008.
- *Bosch Crash Data Retrieval (CDR) System® Technician Course*, Collision Safety Institute, Golden, CO, December 8, 2008.

- *Tire Mechanics & Modeling*, Colorado State University – Race Vehicle Dynamics Laboratory (presented by Dr. Patrick Fitzhorn, Director), Denver, CO. March 20, 2008.
- *2008 HVE Forum*, Engineering Dynamics Corporation, San Diego, CA, February 18-22, 2008.
- *Active Safety Technology: Paving the Road to Accident-Free Driving Telephone/Webcast*, National Highway Traffic Safety Administration (NHTSA), March 1, 2007.
- *CarSim 7 Training*, Mechanical Simulation Corporation (Presented by Thomas Gillespie), December 13, 2006.
- *CVSA Brake Certification Seminar*, Colorado Motor Carriers Association, Denver, CO, July 27, 2006.
- *Chassis & Suspension Component Design for Passenger Cars & Light Trucks Seminar*, Society of Automotive Engineers, Troy, MI, July 24-26, 2006.