Kyle B. Heer, M.S., P.E.

Compass Consulting Engineers P.C.
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EDUCATION

Colorado School of Mines – Golden, Colorado
- M.S. Mechanical Engineering (Biomechanics) 2015 – 2017

University of Tulsa – Tulsa, Oklahoma
- B.S. Engineering Physics (Mechanical) 2004 – 2008

ACCREDITATIONS

- Professional Engineer (PE), Colorado #58054
- FAA Certified UAS Remote Pilot – 2019
- Heavy Vehicle Event Data Recorder Download Technician and Analyst – March 2021
- Crash Data Retrieval (CDR) Certified Download Technician – August 2021

PROFESSIONAL EXPERIENCE

Compass Consulting Engineers P.C. – Westminster, Colorado (2018 – Present)
Principal, Senior Engineer
- Injury Causation Analysis – Determine likelihood of injury causation for a given incident
    - Review medical records; medical imaging of clinically diagnosed injuries
    - Reconstruct incident dynamics and applied forces
    - Assess established mechanisms for the injuries relative to the dynamics of the incident
    - Utilize widely accepted forensic biomechanical methods, mathematical injury criteria, and published scientific research
- Biomechanical Incident Reconstruction – Determine the cause and/or sequence of events leading to injury
    - Review medical records; medical imaging of clinically diagnosed injuries
    - Investigate, measure, analyze objective physical evidence (including nature/location of injury)
    - Assess established mechanisms for the diagnosed injuries
    - Reconstruct incident dynamics and applied forces necessary to generate observed injuries & additional physical evidence
- Motor Vehicle Accident Reconstruction - Investigate, reconstruct, and analyze motor vehicle accidents including pedestrian impacts, bicycles, motorcycles, commercial vehicles and pedestrian impacts, and other incidents leading to personal injury
    - Collect and evaluate available objective evidence (vehicle / site inspections, incident video, etc.)
    - Determine vehicle dynamics, delta-V, pre-impact driver actions
    - Occupant kinematics / dynamics analysis
    - Light signal sequencing / timing analysis
- Event Data Recorder (EDR) Data Retrieval and Analysis
- Surveillance / Body Worn Camera / Dash-Mounted Camera Video Analysis
- Full-scale instrumented dynamic motor vehicle testing and data analysis
    - Instrumentation suite includes capability for simultaneous data collection of vehicle CAN-BUS communication, steering wheel torque, brake pedal force, GPS, accelerometer
- Expert Witness Testimony for litigation

Colorado School of Mines – Golden, Colorado
Student, Master of Science, 2015 – 2017

- Biomechanics coursework and research focus
  - Experimental methods in biomechanical research: experiment design, biomechanical data collection (motion capture, electromyography, 6-axis ground reaction forces), hypothesis testing, kinematic/kinetic musculoskeletal modeling, inverse dynamics calculations
  - Computer simulation of musculoskeletal mechanics, tissue modeling, joint mechanics, experimental validation of computational techniques
  - Statistical applications of probabilistic analysis methods to biomechanical systems and analyses
- Master's Thesis: *Lower-Limb Exoskeleton Emulator for Accelerated Development of Gait Exoskeletons*
  - Design and implementation of a haptic research platform capable of real-time torque delivery and sensing for sagittal-plane lower-limb joints of the wearer.
  - Investigation of external elastic potential energy storage during gait to aid and improve gait patterns in impaired populations

FlightSafety International – Broken Arrow, Oklahoma
Mechanical Engineer, 2008 – 2014

- Design, prototype, and manufacture of electromechanical simulated avionic cockpit instruments and their integration into in-house-manufactured FAA Level D certified full-flight simulators for pilot training.
- Modified and documented existing designs for cost-reduction, ease of manufacture and ease of assembly.
- Piloted use of 3D scanning hardware and data conversion software training to manipulate point cloud data into parametric models.

PROFESSIONAL AFFILIATIONS

- American Society of Biomechanics (ASB)
- Society of Automotive Engineers (SAE)
- American Society of Mechanical Engineers (ASME)
- National Association of Professional Accident Reconstruction Specialists, Inc. (NAPARS)

SPEAKING ENGAGEMENTS

- Colorado Defense Lawyers Association – 2024
  - *Forensic Biomechanics: Methods, Applications, and Deliverables*

ADDITIONAL PROFESSIONAL ACTIVITIES

- Colorado Defense Lawyers Association Trial Academy – 2025
- International Research Conference on Biomechanics of Injury (IRCOBI) Annual Conference - 2024
- "Video Analysis", Presented by Josh Guthrie, 2-hour training, 2024 NATARI Joint Annual Conference - 2024
- "Portable and Economical Scanning for Collision Reconstruction", Presented by Eugene Liscio, 2-hour training, 2024 NATARI Joint Annual Conference - 2024
- Colorado Defense Lawyers Association Trial Academy – 2024
- Siemens Simcenter MADYMO Software, 40-hour training – 2023
- Heavy Vehicle Event Data Recorder (HVEDR) Use in Traffic Crash Investigation Course – 2021
- HVE Forum by Engineering Dynamics Corporation, 2020 – Austin, TX
- HVE Forum by Engineering Dynamics Corporation, 2019 – Las Vegas, NV