

Andy Lei

Professional Competencies:

Forensic Engineer who investigates:

- Rear end, low speed and rollover vehicle crashes
- Biomechanics feasibility analysis
- Occupant dynamics and injury causation
- Workplace accidents and slip/trip/fall incidents

Product Design Engineer with expertise in:

- Biomedical and biomechanical design and analysis
- Mechanical design and product development
- Prototyping

Experience Summary

- Developing and designing surgical proposals for total knee replacements
- Extensive CAD modeling
- Prototyping and machining

Employment History:

Wolf Technical Services, Inc., Fishers, IN

Mechanical and Biomedical Engineer, Accident Reconstructionist (2022 to Present)

Expert analysis of automotive collisions, pedestrian strikes, bicycle and motorcycle accidents, and other incidents involving mechanics of motion with particular emphasis on rear end, low speed and rollover vehicle crashes. Forensic analysis of injury mechanisms, injury causation and prevention, as well as occupant dynamics. Performs biomechanic feasibility analysis of reported incidents as well as occupant kinematic analysis, aiding in the determination of who was driving a vehicle at the time of a crash. Investigates and analyzes slip/trip/fall incidents from a biomechanics perspective.

Expertise in mechanical and biomedical design, product development, biocompatibility, CAD modeling, software programming, mechatronics, controls engineering, instrumentation design, and statistical analysis. Assisting with the mechanical design of the Bougie-Integrated Endotracheal Intubation Stylet with a focus on the biomedical aspects. Also contributes in the areas of CAD modeling, prototyping and testing of the total system as well. In addition to the Bougie-IET Stylet, assists with the test fixture development, prototyping and CAD drawings on Wolf's program with the Navy, DARMS (Dynamically Adjustable Reel Mobility System), which is an aircrew-mounted self-adjusting tether system.





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DePuy Synthes, Warsaw, IN
Segmentation Design Contractor

(Nov 2021 – May 2022)

Created CAD models and product drawings from Computer Tomography (CT) images to develop and design surgical proposals for total knee replacements. Analyzed CT images to optimize personalized product design and improve patient outcomes.

Experience/Projects: Rose-Hulman, Terre Haute, Indiana

Compact Caulking Gun Project

Designed and created a compact caulking gun for construction use to enable users to easily reach confined spaces in construction zones that require sealant or paint from a caulk gun.

Biomedical Engineering Lab

Developed an experimental procedure to compare porcine tendon strengths to existing data on human ligaments. After identifying and extracting tendons for testing, recorded material properties in order to determine viability of a porcine replacement in humans.

Education:

Rose-Hulman Institute of Technology, Terre Haute, Indiana
B.S. Mechanical Engineering
Minor: Biomedical Engineering

2021

Continuing Education:

- HVE Forum, Engineering Dynamics Corporation February 2023
- Injuries, Anatomy, Biomechanics & Federal Regulation (SAE) August 2022
- Clearly Visible Optics, Lighting & Visibility for the Forensic Investigator June 2022
- Drone Pilot Ground School (UAV Coach) May 2022
- Bosch CDR Tool Technician Training (IPTM) May 2022
- Fundamental Techniques of Crash Investigation (IPTM) May 2022
 - Vehicle Lamp Examinations in Traffic Collisions
 - Safety Belt Examinations
 - Roadway Evidence
 - Tire Examinations – Tire and Wheel Forensics
 - Case Preparation and Courtroom Presentation

Software:

Proficient in PC-based systems, particularly: MATLAB, Python, C#, SolidWorks, Siemens Fast 3D Modeling



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Licenses and Certifications:

Bosch Certified Crash Data Retrieval (CDR) Technician
FAA Remote Pilot Certificate – Small Unmanned Aircraft System

Current and Former Affiliations, Memberships & Awards:

Ohio Traffic Accident Reconstruction Association (OTARA)
Society of Automotive Engineers (SAE) Member
American Society of Mechanical Engineering (ASME) Member
Rose-Hulman Academic Scholarship Recipient
Rose-Hulman Alpha Tau Omega Fraternity Membership Educator
Rose-Hulman Barbell Club Co-Founder

Expert Not Retained