
Consultant in Mechanics and Biomechanics

Results-driven senior research and testifying expert with 35+ years' experience delivering data and analysis to clients through measurement, research, development, and use of advanced models and simulations.

- Investigation of injury and accident scenes to gather relevant data, development of quantitative models for impact injury, blast effects, vehicle collisions, industrial accidents, and premises injury
 - Development of situation models, accident scene models and device models, and evaluation the strengths and weaknesses of inferences from those working models.
 - History of authoring technical documents and reports, peer-reviewed articles, and presentations.
 - Daubert/Robinson challenged but never excluded.
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Professional Experience

Consultant in Mechanics and Biomechanics. Baltimore, MD

Independent Consultant, Litigation expert, Injury Biomechanics and Intellectual property, August 2009 to Present

- Investigated and testified on biomechanics in consumer product liability suit based on Chinese-made inflatable pool slide; won \$20M verdict in Massachusetts. (Aleo v Toys-R-Us)
- Investigated and testified on biomechanics in consumer product liability suit based on Chinese-made inflatable pool slide; won \$4M verdict in Missouri. (Grantham v Wal-mart)
- Investigated and testified on biomechanical factors in injury, including product, premises, and transportation litigation.
- Provided expert testimony, developed finite element models, and made pressure measurements on bicycle seats in support of \$3+M patent infringement claims in the U.S., Italy, and China.
- Provided court testimony, deposition testimony, and reports in Patent infringement and validity actions including Inter-partes reviews. (IPR).

ASRC Federal, Fort Detrick, MD

Principal Clinical Research Analyst - Blast Injury Research Coordinating Office, November 2022 to Present

As Project Manager and Subject Matter Expert on blast injuries, advised and inspired research teams by completing scientific reviews and building comprehensive summaries of injury and biomechanical literature associated with injuries caused by explosive blast exposure. Supported administrative requirements.

- Led four-member team to generate more than 10 project status reports for presentation to upper-level command; reviewed proceedings of three scientific meetings by Blast Injury Research Coordinating Office, and accumulated diverse scientific data into a 250-page annual report.
- Reviewed project status for funded Phase III SBIR on protecting service members during training with heavy weapons.

Johns Hopkins University Medical School, Department of Radiology, Baltimore, MD

Research Faculty, November 2018 to November 2022

Developed a motion analysis product aimed at Parkinson's Disease. Devised measurement system to assess motion defects and wavelet-based analysis methods to identify motion defects from accelerometry.

- Partnered with cross-functional team of eight neurologists, engineers, and radiologists to pioneer low-cost instrumentation system for diagnosis and status evaluation in Parkinson's disease patients; designed remote diagnosis technology using standard evaluation methods augmented by wavelet transforms.
- Collaborated with staff radiologists and neurologists to publish two journal articles; delivered five podium presentations at national meetings.

Timothy P. Harrigan

Johns Hopkins University Applied Physics Laboratory, Baltimore, MD

Senior Professional Staff, August 2009 to November 2022

Defined and adjusted scope, milestones, and deliverables for up to three DoD projects annually valued at up to \$2M.

Authored or co-authored five refereed scientific papers and seven presentations.

- Guided technical efforts in a team of five research engineers to plan computational models for analysis of human torso and head impact injuries resulting from IED and projectile threats; conveyed injury risk estimates to DoD sponsors.
- Validated computational models for stress and pressure estimates against explosive and shock-tube tests measurements from phantoms and post-mortem human subjects; produced SBIR on underwater explosive exposure, authored research paper, gained NSF XSEDE program support, and attained access to four U.S. Government high-performance computing systems.
- Augmented anatomically accurate computational models for analysis of nonlethal weapons (Rubber bullets and Tasers); collaborated with sponsor to apply project changes and gained buy-in for a revised tool to enhance nonlethal weapons development.

Foster-Miller Inc, Waltham, MA

Senior Engineer, January 2005 to August 2009

- Provided computational analysis within a team developing Injury mitigating seating for military vehicles subjected to underbody blast, as part of a SBIR program that resulted in a fielded seat.
- Provided design and analysis support for medical device development including insulin pumps and deployable heart valves.

Exponent Failure Analysis Associates, Houston, TX and Natick, MA

Senior Engineer, January 2000 to January 2005

- Provided analysis, reports, and testimony in transportation, industrial, and product liability litigation.
- Provided analysis and experimental data in research on total joints, spinal augmentation, and other medical devices.

Academic Career to 2000:

Director of Research with University of Texas at Houston Department of Orthopedic Surgery in Houston, TX and University of Missouri-Kansas City Medical School Department of Orthopedics in Kansas City, MO, and **Research Associate** with Massachusetts Institute of Technology Department of Mechanical Engineering in Cambridge, MA.

Education & Credentials

Doctor of Science in Mechanical Engineering | *Massachusetts Institute of Technology, Cambridge, MA*

Doctoral Thesis: Bone Compliance and Its Influence in Human Hip Joint Lubrication

Master of Business Administration, Marketing & Entrepreneurship | *University of Houston, Houston, TX*

Bachelor of Science in Mechanical Engineering | *Massachusetts Institute of Technology, Cambridge, MA*

Certifications

Registered Professional Engineer, State of Texas #86769

Registered Patent Agent, US Patent and Trademark Office, Registration #51,784

Patents

Collision Damper, US Patent 8,820.493 B2

Suit designs and doffing methodologies for personal protective equipment to prevent spread of infectious agents to healthcare workers, US Patent 10,524.525 B2

Suit designs and doffing methods for personal protective equipment, EP3039977B1

Case List (Partial)

Cases where I have given reports, deposition or court testimony in the last several years

- Reyes v Yonkers, Wrongful death, New York, 2022
- Rios v. Academy Bus, Personal Injury, New York, 2020
- Paragon 28 v Wright Medical, IPR report 2019
- Canales v. Zimmer, Product Liability, Texas, 2019
- Djokovic v. Kurkulis, Personal Injury, New York, 2019
- Gonzales v. Palin, Personal Injury, New York, 2018
- McBride v. Walgreens, Personal Injury, New York, August 2017
- Intelliquit v. Bedfont, Intellectual property lawsuit, April and May 2017.
- Whitehill v. Town of Marblehead, Personal Injury Suit, court testimony for the plaintiff, Lawrence, MA, 2015
- Zimmer v. Four Mile Bay, IPR report and deposition, 2015
- ICON v. Specialized Inc., Patent Suit, Deposition for the plaintiff, Chicago, 2015
- Hologic v. IZI, Patent Suit, deposition and court testimony for the defense, Boston, 2011
- Aleo v. SLB Toys et al, Product Liability suit, deposition and court testimony for the plaintiff, Salem, MA 2011
- Grantham v. Wal-Mart et al, Deposition for the plaintiff, Baltimore, MD 2011
- Childress v. Tidewater, Personal Injury Suit, Deposition for the defense, New Orleans, LA, 2009
- Biomet v. Smith & Nephew, Patent Suit, Deposition testimony for the defense, Washington DC, 2008
- Layssard v. United States of America, Automotive Injury Suit, Rapides Parish, LA, Automotive Injury Case, Deposition Testimony for the defendant, 2007.
- Manders v. Inamed Corp, US District Court, Western District of Pennsylvania, Patent suit, Deposition testimony for the defendant, 2007