Sam Shokrani, Ph.D.

Senior Consultant

229 West 28th Street, 9th Floor
New York, NY 10001

(646) 755-9259

ExpertWitness@rimkus.com

Background

Dr. Sam Shokrani received a B.S. in Mechanical Engineering from Sharif University of Technology and a M.S. and Ph.D. in Mechanical Engineering from the University of Connecticut (UConn). His primary areas of consulting expertise include human injury biomechanics, as well as motor vehicle injury assessment.

Dr. Shokrani's doctoral research was in biomechanics, focusing on tissue stimulation, injury mechanism analysis, soft tissue mechanics, and multi-scale computational modeling to better understand the Disorder of Gut-Brain Interactions (DGBIs). He developed and verified experimental testing frameworks, designed additive-manufactured fixtures, and created a precise image-processing framework that identified auxetic behavior of colon tissue under specific deformation modes. Through his research, Dr. Shokrani has experience in designing and conducting experimental tissue testing, processing and analyzing complex datasets, and developing and evaluating multi-scale and multi-modal computational models including finite element (FEM) simulations. He has published multiple peer-reviewed papers in reputable journals, collaborated across research disciplines, and taught biomechanics and advanced mechanics courses to hundreds of graduate and undergraduate students.

Professional Experience

- **Rimkus** **2026 – Present**
  - Senior Consultant

    Evaluates and analyzes accidents to provide insights into injury occurrence. Assists clients in understanding how people get hurt and whether the claimed injury is consistent with accident dynamics. Performs motor vehicle injury assessment and other accidental events, including motor vehicle collisions, pedestrian and bicycle impacts, sports and recreational injury evaluations, workplace incidents, and product injury analysis by assessing occupant kinematics, restraint use, seating position, and interactions with vehicular structures and systems (e.g., airbags). Conducts accident reconstruction using analytical techniques, mathematical dynamics modeling, and computer animation and simulation in biomechanics to quantify forces, motions, and injury potential. Downloads and analyzes vehicle EDR data; documents/measures vehicle damage (including 3D scanning when applicable) to integrate physical evidence with biomechanical principles. Provides biomechanical assessment in premises liability matters through site inspections, slip/trip/fall analysis, and gait/locomotion analyses on walkways, stairs, and ramps to evaluate injury plausibility. Performs ergonomics and occupational injury analysis to assess task demands, exposure, and mechanism-based injury risk, and collaborates with the Rimkus legal nurse consultants to review medical history and determine whether pre-existing pathologies contributed to the reported condition.

- **University of Connecticut (UConn)** **2025 – 2026**
  - Post-doctoral Research Fellow
    Engineered a DIC image processing framework to analyze strain fields and mechanical properties of biological tissues, enabling quantitative assessment of tissue deformation under controlled loading. Developed experimental protocols and designed fixtures for tissue biomechanical testing to define tissue injury, validate computational models, generating comprehensive datasets for injury mechanism analysis that led to the discovery of colon auxetic response in the circumferential distension.

- **xAI Corp.** **2025 – 2026**
  - Data Lead (TTL)
    Executed data generation projects critical to developing advanced AI models. Proactively managed large-scale distributed teams and workflows, accomplishing complex analytical projects in engineering data pipelines. Designed and executed end-to-end data generation workflows, identifying and resolving operational bottlenecks, and managed a distributed network of contributors.

- **xAI Corp.** **2024 – 2025**
  - Mechanical Engineering Specialist
    Provided technical consulting by analyzing and validating AI-generated engineering codes, ensuring adherence to industry standards for accuracy, efficiency, and technical rigor across mechanical and biomedical applications.

- **University of Connecticut (UConn)** **2021 – 2024**
  - Research Assistant (Ph.D.)
    Developed injury mechanism investigations using validated FEM simulations to predict stress distributions, tissue deformation, and mechanical failure thresholds in biological systems under various loading scenarios. Developed mathematical models in Python to simulate disease progression and injury development due to multiple biomechanical factors, applying analytical methods to determine critical risk factors. Designed and executed quasi-static, controlled mechanical testing protocols on biological specimens using custom fixtures, analyzing load-displacement data and high-speed imaging to characterize tissue mechanical response.

- **Sharif University of Technology Bio/Solid Mechanics Laboratory** **2018 – 2020**
  - Student Researcher
    Investigated fracture mechanics and failure analysis of bonded joints as a function of strain rate and geometric parameters using combined finite element analysis and experimental fracture testing in Abaqus.

- **Sharif University of Technology R&D Center** **2017**
  - R&D Engineer Intern
    Determined robotic fixture layouts in CATIA, optimized production line for automotive mechanical subassemblies, and implemented the design into the production line.

Education and Certifications

- **Mechanical Engineering, Ph.D.:** University of Connecticut (UConn) (2024)
- **Mechanical Engineering, M.S.:** University of Connecticut (UConn) (2022)
- **Mechanical Engineering, B.S.:** Sharif University of Technology (2020)
- **Graduate Certificate:** Leadership certificate at John Lof Leadership Academy at UConn (2024)
- **The American Society of Mechanical Engineers (ASME):** Member (2023-Present)

Continuing Education

- **Institute of Police Technology and Management (IPTM):** Bosch© CDR Tool Technician Training, Online (2026); At-Scene Traffic Crash/Traffic Homicide Investigation, Online-Accelerated (2026); Advanced Traffic Crash Investigation, Online-Accelerated (2026); Event Data Recorder Use in Traffic Crash Reconstruction, Level I-Online (2026); Traffic Crash Reconstruction, Online (2026); ACTAR Test Preparation, Comprehensive-Online (2026)
- **National Council of Examiners for Engineering and Surveying (NCEES):** Fundamentals of Engineering (FE) Practice Exams (2026); Principles and Practice of Engineering (PE) Practice Exams (2026)

Presentations

- **“Understanding mechanotransduction of the distal colon and rectum by multiscale and multimodal computational modeling.”** SB3C conference, Lake Geneva, WI (2024).
- **“Understanding mechanotransduction of the distal colon and rectum by multiscale and multimodal computational modeling.”** SB3C conference, Vail, CO (2023).

Publications

- Shokrani, Amirhossein, et al. **"Colorectum and Embedded Networks of Nerve Fibers Present Auxetic Responses During Uniaxial Circumferential Extension."** *bioRxiv* (2025): 2025-04.
- Shokrani, Amirhossein, et al. **"Methods for quantitative analyses of nerve fiber deformation in the myenteric plexus under loading of mouse distal colon and rectum."** *Medical Engineering & Physics* (2025): 104444.
- Shokrani, Amirhossein, et al. **"Understanding mechanotransduction in the distal colon and rectum via multiscale and multimodal computational modeling."** *Journal of the Mechanical Behavior of Biomedical Materials* (2024): 106771.
- Shokrani, Amirhossein, et al. "C" **“Predicting the micromechanics of embedded nerve fibers using a novel three-layered model of mouse distal colon and rectum"[J. Mech. Beha. Biomed. Mater. 127 (2022) 105083].”** *Journal of the Mechanical Behavior of Biomedical Materials* 154 (2024): 106286.
- Shokrani, Amirhossein, et al. **“Monitoring osteoarthritis: A simple mathematical model.”** *Biomedical Engineering Advances* (2022): 100050.
- Shokrani, Hanieh, et al. **"Artificial Intelligence behind Biomedical Engineering of Polysaccharides."** *Current Opinion in Biomedical Engineering* (2023): 100463.
- Shokrani, Hanieh, Amirhossein Shokrani, and Mohammad Reza Saeb. **“Methods for Biomaterials Printing: A Short Review and Perspective.”** *Methods* (2022).
- Shokrani, Hanieh, et al. **"Polysaccharide-based nanocomposites for biomedical applications: a critical review."** *Nanoscale Horizons* 7.10 (2022): 1136-1160.