

Turner Jennings

jennings.t@northeastern.edu | (603) 664-2080 | linkedin.com/in/tjennings2

Education

- 2022-Present **PhD in Mechanical Engineering** **Northeastern University, Boston, MA, USA**
Frequency-Domain Head Impact Mechanics and Evaluation of a Granular Energy Absorber for Helmets
Advisors: Dr. Sinan Müftü and Dr. Rouzbeh Amini
- 2017-2022 **B.S./M.S. in Mechanical Engineering** **Northeastern University, Boston, MA, USA**
Concentration in Mechanics and Design, minor in Mathematics

Research Experience

- 2022-Present **Graduate Research Assistant** **Northeastern University, Boston, MA, USA**
- Designed and built a custom modified Split-Hopkinson Pressure Bar technique to test the high-strain-rate response of particulate media for energy absorption in a helmet environment.
 - Validated a finite element model of high-velocity impact on a composite helmet shell in LS-DYNA.
 - Developed an apparatus for measuring helmet/head interface forces and measuring individual helmet fit.
 - Created a custom toolkit in Python and C++ for generating reduced order rigid body dynamics models of impact on a helmeted head.

Publications

7. **Jennings, T.**, Acosta, D., Amini, R., and Müftü, S. "Computational Evaluation of the Effects of Subject-Specific Helmet Fit on Blunt Impact Injury Risk." *Manuscript in Preparation*
6. **Jennings, T.**, Amini, R., and Müftü, S. "Toward a Consistent Basis for Describing the Free Vibration Modes of the Brain." *Manuscript in Review*
5. **Jennings, T.**, Tillman, A., Mukasa, D., Marchev, M., Müftü, S., and Amini, R. "Measurement and Assessment of Head-to-Helmet Contact Forces." *Manuscript in Review*
4. Pakzadmanesh, M., Salinas, S., Thomas, V., **Jennings, T.**, DelCiello, H., Vargas, A., Clarin, J., and Amini, R. "Mechanically Induced Deformation of Nuclei in the Tricuspid Valve Interstitial Cells: Experimental Measurements and Multi-scale Computational Simulation." *ASME Open J Eng.* August 2024; 3:031023
3. Vargas, A. I., Tarraf, S. A., **Jennings, T.**, Bellini, C., and Amini, R. (March 19, 2024). "Vascular Remodeling During Late-Gestation Pregnancy: An In-Vitro Assessment of the Murine Ascending Thoracic Aorta." *ASME. J Biomech Eng.* July 2024; 146(7):071004.
2. Clarin, J., Vargas, A., **Jennings, T.**, Salinas, S., Amini, R., Tjiptowidjojo, Y., Yelle, B., Jacobsen, M., Eide, T., Udberg-Helle, C., Olsen, T., Crossen, J., Prot, V., Skallerud, B., and Amini, R. (March 7, 2024). "An Experiential Learning Opportunity in Norway: Computation for Bioengineering and Mechanical Engineering Students." *ASME. J Biomech Eng.* May 2024; 146(5):051004.
1. **Jennings, T.**, Amini, R., and Müftü, S. "In-Silico Model Validation of Impact on a Composite Helmet Shell." *ASME Open J. Eng.* May 2024; 3:031012

Mentorship and Volunteering

Undergraduates directly mentored:

- 2023-2024 *Diego A.:* Development of subject-specific finite element head models in MATLAB and Python
- 2023-2024 *Lily B.:* Material sample preparation process development
- 2023 *Aidan T.:* Statistical modelling of helmet ergonomics data in MATLAB and R

Volunteering:

2023-2024	Letters to Pre-Scientists Paired with a middle school student pen pal sending regular letters to help them learn more about careers in STEM.
2023	Northeastern University Young Scholars Program Mentored two high school students during a six-week program mentoring them about the research process and critical skills for higher education.
2018-2021	FIRST LEGO League team coach Coached a team of 8-12 middle school students participating in robotics and design competition.

Awards

2022-2023	Sami Alsaif Doctoral Fellowship
-----------	---------------------------------

Conference Presentations

2024	Summer Biomechanics, Bioengineering, and Biotransport Conference (SB3C)	Lake Geneva, WI
2024	ARL Physics of Soldier Protection Program Annual Meeting	Boston, MA
2024	Winter Conference for Brain Research	Breckenridge, CO
2023	Summer Biomechanics, Bioengineering, and Biotransport Conference (SB3C)	Vail, CO
2023	ARL Physics of Soldier Protection Program Annual Meeting	Pittsburgh, PA
2023	Winter Conference for Brain Research	Snowbird, UT

Industry Experience

2020	Manufacturing Quality Intern Supervised the “Firewall” team, a cross functional group of 12-15 specialists from engineering, production, supply chain, and quality. Coordinated proactive and reactive quality control efforts to ensure more quality issues closed than opened every month.	Bosch Automotive Technologies, Amata City, Thailand
2019	R&D Engineering Co-op Developed an improved protein extraction system from concept to production, coordinating with contract manufacturers and consultants to create a functional and manufacturable design. The optimized system developed performed comparably to laboratory-grade benchtop equipment while costing less than \$1 to manufacture.	DOTS Technology Corp., Natick, MA, USA

Skills

-
- **Finite Element Analysis:** LS-DYNA, Altair Hypermesh, Paraview, ANSYS, ABAQUS
 - **Programming Languages:** MATLAB, R, Python, C++, HTML/CSS, Julia
 - **Software:** SolidWorks (CSWP – Mechanical Design), Simulink, Confluence, Jira, JMP Statistical Analysis
 - **Tools:** Split-Hopkinson Pressure Bar, 3D printing, laser cutting, soldering and PCB assembly, shop tools, hand tools

Affiliations/Memberships

American Society of Mechanical Engineers (ASME)

Northeastern University Mechanical and Industrial Engineering Graduate Student Council (MIE GSC)