



TEXAS TECH UNIVERSITY

Department of Industrial, Manufacturing,
& Systems Engineering™



Dr. Suman Chowdhury
Assistant Professor
TTU IMSE

AWARD ANNOUNCEMENT

Suman Chowdhury, Ph.D.

2023 NSF CAREER Award

**“Unifying Neuroscience and Biomechanics Paradigms for
Modeling Brain and Muscle Responses to Mechanical Impacts”**

“The award aims to provide a computational and theoretical framework that can transform brain-muscle interaction dynamics into a mathematically-grounded engineering framework, with the purpose of creating unprecedented fundamental knowledge on traumatic brain injury mechanisms and associated functional impairments.” Award Citation





Edward E. Whitacre Jr. College of Engineering

Dr. Suman K. Chowdhury received a five year, \$585,473 NSF CAREER Award for his proposal titled “Unifying Neuroscience and Biomechanics Paradigms for Modeling Brain and Muscle Responses to Mechanical Impacts” from NSF's Division of Chemical, Bioengineering, Environmental & Transport System.

This award's overarching goal is to provide a computational and theoretical framework to investigate brain and muscle responses to mechanical impacts, with the purpose of creating unprecedented scientific knowledge on multiscale brain injury mechanisms and associated functional impairments. The research impacts the convergence of engineering and medicine, particularly the goal of transforming brain-muscle interaction dynamics into a mathematically-grounded engineering framework. This research requires methods and knowledge from various disciplines, including neuroscience, biomechanics, human factors, and control engineering.

This five-year award will also support the development of a multi-disciplinary research-education ecosystem by strengthening the interdisciplinary field of neuro-biomechanics in bioengineering, industrial engineering, mechanical engineering, and chemical engineering at Texas Tech University through course development, involvement of graduate and undergraduate students in the proposed research activities, and K-12 outreach activities.

For more information on TTUIMSE visit: <https://www.depts.ttu.edu/imse/> or call 806.742.3543.



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