

# Nishan Parvez

Residency: Capital Region, NY

Contact: [nishanparvez@gmail.com](mailto:nishanparvez@gmail.com) | [linkedin.com/in/nishanparvez](https://www.linkedin.com/in/nishanparvez)

## Summary

Detail-oriented mechanical engineer with 5+ years of research experience in **computational solid mechanics**, **nonlinear finite element analysis (FEA)**, and **material modeling**. Expert in **Abaqus** and simulation of large deformation, damage, and failure of **soft tissue** and **elastomers**. Proficient in **scripting**, **custom material modeling (UHYPER)**, and **data post-processing** for virtual product development. Adept at cross-functional collaboration and developing digital workflows for advanced simulation environments.

## Education

**Rensselaer Polytechnic Institute (RPI), Troy, NY**

PhD in Mechanical Engineering, Aug 2020 – May 2025

**Miami University, Oxford, OH**

MSc in Mechanical Engineering, Aug 2018 – May 2020

**Bangladesh University of Engineering and Technology (BUET), Dhaka, Bangladesh**

BSc in Mechanical Engineering, 2013–2017

## Core Skills

- **FEA & Computational Mechanics:** Abaqus (static/dynamic), nonlinear soft material modeling, viscoelasticity, contact & large deformation
- **Programming & Automation:** Python, MATLAB, R, C; custom subroutines (UHYPER); scripting for pre/post-processing in Abaqus
- **Simulation & Modeling:** Virtual testing, composite mechanics, fatigue/fracture prediction, constitutive modeling, multiscale methods
- **Software & Tools:** ParaView, SolidWorks, AutoCAD, Linux & High Performance Computing environments
- **Team & Communication:** Interdisciplinary collaboration, research communication, technical presentations

## Research Experience

**PhD Researcher | RPI, Troy, NY (2020 – 2025)**

- Led simulation studies of **fibrous and soft network materials** under complex loading conditions.

- Developed custom material models for **nonlinear elastomeric behavior**, integrated with FEA software.
- Simulated damage and fracture using **advanced FEA techniques**, leveraging scripting and batch processing.
- Conducted **parameter sensitivity** and **model convergence** studies for FEA models.

#### Graduate Research Assistant | Miami University (2018 – 2020)

- Simulated **colloidal and composite structures** to optimize their performance.
- Applied **data-driven modeling** for identifying dynamic cluster formation in physical simulation data using Python-based machine learning workflows.

### Selected Publications

- “**Nonlinear elastic-plastic behavior of stochastic athermal fiber networks**” – *Soft Matter*, 2025, Physical Review Letter E, 2023, Soft Matter 2023.
- “**Damage Mechanism in soft fibrous materials**” – ISSS, 2025
- “**Physics-preserving neural networks for constitutive modeling**” – *Engineering with Computers*, 2025
- Detailed list: [Google scholar page](#)

### Presentations

- “Mechanisms of fracture of cellulose products” – MRS Annual Fall Meeting, 2024
- “Colloidal assembly pathways via manifold learning” – APS March Meeting, 2021
- “Notch insensitivity in network materials” – Society of Engineering Science, 2023

### Additional Highlights

- Developed internal tools for **batch simulation** and **pre-processing**.
- **Developed automated workflows** for post-processing and data analysis of large-scale FEA simulation of discrete models of soft materials in large deformation and damage.
- Strong foundation in **technical writing and presentation**.