Jubaer Tanjil Jami

Dhaka, Bangladesh —jamijubaer@gmail.com — +8801521535780 — Scholar—LinkedIn — Github — Website

EDUCATION

Bangladesh University of Engineering and Technology, Dhaka, Bangladesh   Feb 2020 — Jan 2025
Bachelor of Science in Mechanical Engineering   CGPA- 3.12/4.00

RESEARCH INTERESTS

Computational Mechanics | Machine Learning | Additive Manufacturing | Atomistic Simulations | Thermal Science

RESEARCH EXPERIENCE

Department of Mechanical Engineering, BUET   November 2023 - Present
Undergrad Thesis – Supervisor: Dr. Mohammad Jane Alam Khan

- **Title: An Atomistic Study of the Tensile Deformation of defective Carbon Nanotube reinforced Polyoxymethylene Composites**
- Investigating the mechanical behavior of defective CNT-reinforced Polyoxymethylene nanocomposites using molecular dynamics simulations, focusing on the impact of CNT morphology on composite strength and stiffness.
- Employed BIOVIA Material Studio to construct a nanocomposite unit cell and LAMMPS for simulations under tensile loading conditions. Trying to analyze atomistic interactions between CNTs and the PVC matrix.

IMMPACT Lab, Virginia Tech, VA   July 2024 - Present
Remote Research Intern – Advisor: Dr. Sourav Saha

- **Title: Data-Driven Discovery of Dimensionless Numbers and Governing Laws from Scarce Measurements for Predicting Fatigue Life**
- Developed and trained a model for dimensionless number discovery using the Buckingham Pi theorem to derive physically meaningful relationships from data.
- Applied gradient-based two-level optimization techniques to predict fatigue life in alloys with high accuracy.

SMALT Laboratory, University of Dayton, Ohio   November 2023 - Present
Remote Research Intern – Advisor: Dr. Abdullah Al Amin

- **Title: Predicting the influence of process parameters in keyhole porosity during laser powder bed fusion of metals using convolutional neural network using ANSYS Fluent & Deep learning.**
- Developed a YOLO v8-based keyhole detection system for laser powder bed fusion additive manufacturing, with a confidence score of 40-60%.
- Currently leading efforts to construct a computational fluid dynamics model for predicting pore formation in laser powder bed fusion additive manufacturing, enabling real-time prediction 5 microseconds ahead of actual pore formation.

RESEARCH PUBLICATIONS

Journal Manuscripts Under Preparation

- T. Mehereen, A.A. Nitu, **J.T. Jami**, M. A. Rahman. ***Molecular dynamics study of evaporation of low-GWP refrigerants over sinusoidal nanostructured surface***

Conferences

- **J.T. Jami**, T. Mehereen, M.T. Rahman, M. Alam. ***Design and Development of Leo: An Affordable Biomechanically Inspired Quadruped Robot with Cognitive Abilities.***
  - Presented at the IEEE International Conference on Power, Electrical, Electronics and Industrial Applications 2024- Conference proceedings to be published in IEEE Xplore Digital Library
  - Accepted for presentation at the International Mechanical Engineering Congress & Exposition (IMECE) 2024 Undergrad Expo organized by the American Society of Mechanical Engineers (ASME)

- T. Mehereen, S. Chanda, A. A. Nitu, **J.T. Jami**, R. R. Rahim, M.A. Rahman ***Molecular Dynamics Study of Liquid Condensation on Nano-structured Sinusoidal Hybrid Wetting Surfaces.***
  - Abstract accepted and presented at the 8th BSME International Conference on Thermal Engineering (ICTE) 2024- Conference proceedings to be published by AIP (American Institute of Physics)

- R. B. Dastagir, **J. T. Jami**, Shorup Chanda, M. Rahman, K. Dey, F. Hafiz, M. M. Rahman, M. Qureshi, and M. M. Chowdhury ***Innovative Approaches for Digitization and Accurate Rapid Test Interpretation: AI Solution through Smartphone***
  - Preprint published on arXiv, available at: *https://arxiv.org/abs/2411.18007*

RESEARCH GRANT

RISE Undergraduate Student Research Grant — RISE, BUET   April 2024

- Secured a research grant from the Research and Innovation Center for Science and Engineering (RISE), BUET, for the project An Atomistic Study of the Tensile Deformation of Carbon Nanotube–Polyvinyl Chloride Composite

TECHNICAL SKILLS

- **Programming Languages:** MATLAB, Python, JavaScript, C/C++, LaTeX
- **Robotics and Control Systems:** ROS (Robot Operating System), Arduino
- **Machine Learning and Computer Vision:** Tensorflow, PyTorch, Keras, OpenCV
- **Frameworks:** Express.js, React.js, Next.js, Sass, Tailwind, React Native
- **Technologies:** Git, Docker, Nginx, Unix
- **Database:** MongoDB, PostgreSQL, Firebase
- **Cloud Platform:** AWS(EC2, ECS, Amplify)
- **Computer Aided Design:** SolidWorks, AutoCAD
- **Simulation Software & Tools:**
    - **Molecular Dynamics:** LAMMPS, Ovito
    - **Computational Fluid Dynamics:** Ansys
- **Other Platforms:** Netlify, Heroku, Render

STANDARDIZED TEST SCORES

TOEFL iBT score: 101 (Reading 23, Listening 28, Speaking 23, Writing 27) | GRE score: 314 (162Q, 152V, 4 AWA)

PROFESSIONAL EXPERIENCE

Senior Frontend Engineer — ACS Future School $\hfill$ June 2023– Present

- **Built a world-class e-learning platform frontend** using Next.js, Tailwind CSS, and TypeScript.
- **Developed comprehensive dashboards** for clients, customers, and admins with integrated features like quizzes, videos, Zoom, and a Leetcode-like problem-solving IDE.
- **Contributed to system design** for smooth back-end integration and user experience.
- **Enabled easy course creation and launch for clients** through a Google Form-like interface within the admin panel.
- **Maintained website performance** through responsive bug fixes and management of multiple subdomains for diverse customer bases.

Junior Software Engineer — Inovace Technologies $\hfill$ Dec 2023 – June 2024

- Customized Flutter and Native applications to meet clients' needs for seamless app experiences.

Frontend Engineer — Warranty-Worx.com $\hfill$ Feb 2023– Dec 2023

- Managed the full project lifecycle, developing a bridge between clients and engineers while demonstrating proficiency in cross-platform app development using React Native for iOS and Android platforms.
- Developed user interfaces using React, SASS, and ContextAPI, crafting visually appealing and responsive front-end designs while collaborating with designers to ensure optimal user experience.
- Tested, debugged, and optimized user interface code for performance, functionality, SEO, and accessibility.

HARDWARE PROJECTS

Turbulated Hairpin Heat Exchanger
Solidworks, HTRI, Python $\hfill$ June 2023- September 2023

- **Collaborated** in a group project to manufacture a double pipe heat exchanger with a twisted tape turbulator, significantly **enhancing efficiency** through innovative design.
- Leveraged computer programs in Python to perform iterative processes, **optimizing design parameters.**
- **Presented** the project findings and meticulously documented the design and testing process, showcasing effective teamwork and engineering skills.

AWARDS AND HONORS

Second Runner Up $\hfill$ Jan 2023
Inter-University Project Showcase Competition by MEA, BUET
Regional Champion $\hfill$ October 2021
NASA Space Apps Challenge

LEADERSHIP & EXTRA-CURRICULAR ACTIVITIES

President- Multi-scale Mechanical Modeling and Research Network (MMMRN)
Vice President - American Society of Heating, Refrigerating and Air-conditioning Engineers (ASHRAE) BUET Student Chapter

REFERENCES

Dr. Mohammad Jane Alam Khan
Assistant Professor,
Dept. of Mechanical Engineering,
Bangladesh University of Engineering and Technology
Email: ronin@me.buet.ac.bd

Dr. Md Aman Uddin
Assistant Professor,
Dept. of Mechanical Engineering,
Bangladesh University of Engineering and Technology
Email: amanuddin@me.buet.ac.bd