

MD AMIN HAQUE

Dhaka, Bangladesh
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Education

Bangladesh University of Engineering and Technology
Bachelor of Science in Mechanical Engineering
CGPA : 3.57 out of 4.0

April 2019 - July 2024

Relevant Coursework

- Solid Mechanics
- Mechanics of Machinery
- Machine Design
- Composite Materials
- Metallic Materials
- Bio Engineering

Standardised Test Scores

Graduate Records Examination (GRE)

Overall Score: 322/340 | Quantitative Reasoning: 165/170 | Verbal Reasoning: 157/170 | AWA: 5.0/6.0

September 2024

International English Language Testing System (IELTS)

Overall Score: 8.5/9.0 Listening: 8.5, Reading: 9, Speaking: 7.5, Writing: 8

October 2024

Areas of Interest

Fracture Mechanics, Behaviour of Materials, Composite Materials, Additive Manufacturing, Molecular Dynamics, Machine Learning, Computational Mechanics

Research Experience

Undergraduate Thesis: Atomistic Investigation of Crack Propagation and Parameterization of Cohesive Traction-Separation of Single Crystal Cobalt-Titanium Alloy

Supervisor: Dr. Mohammad Jane Alam Khan, Assistant Professor, BUET

- Conducted molecular dynamics simulations to study crack propagation in B2 phase Cobalt-Titanium alloy
- Analyzed stress distribution and lattice structure evolution during crack propagation using LAMMPS and OVITO across various temperature conditions.
- Generated temperature-dependent traction-separation curves using Python for cohesive zone modeling applications.

Publications and Conference Proceedings

1. Taaha Md Tanvir Hossain, Dastagir Rafi B, **Haque Md Amin**, Muhit M Abrar, “Automated Waste Sorting using Deep Learning and Robotic Manipulation: A Comprehensive Approach”, International Conference on Mechanical, Industrial and Materials Engineering (ICMIME) 2024, (Accepted)
2. **Atomistic Investigation of Crack Propagation and Parameterization of Cohesive Traction-Separation of Single Crystal Cobalt-Titanium Alloy (Manuscript to be submitted)**

Project Experience

Deep Learning Based Trash Sorting Robotic Arm

June 2022 – August 2022

Electromechanical System Design Coursework

- Designed and manufactured a 4-degree-of-freedom robotic arm for the automated sorting of various trash materials
- Deployed an image classification neural network (YOLOv9) to detect and categorize trash items accurately
- Applied inverse kinematics to compute the precise positioning of waste objects for sorting tasks.

Design and Fabrication of Shell and Tube Oil Cooler

November 2022 – February 2023

Heat Transfer Equipment Design Coursework

- Determined essential design parameters for the specific use case requirements.
- Designed and manufactured the shell-and-tube heat exchanger utilizing machine shop facilities.
- Tested the heat exchanger to ensure it met the required thermal and pressure specifications.

Relevant Experience

- Manufacturing Team Leader | Team Interplanetar** January 2022 - February 2023
- Lead the design and development of the 6-degree-of-freedom arm for the Mars Rover.
 - Oversaw the manufacturing of the rover body and science toolkit.
 - Represented the team in University Rover Challenge 2022 onsite in Utah, USA.
- SolidWorks Instructor | BUET Automobile Club** December 2022 - March 2023
- Lead a team of instructors to develop a course curriculum
 - Delivered lectures on SolidWorks focused on efficient 3D modeling
 - Guided students through hands-on sessions to cultivate their proficiency in CAD
- Mechanical Engineering Intern | Khulna Shipyard Ltd.** November 2023
- Gained in-depth knowledge of different processes involved in shipbuilding.
 - Received experience on various industrial systems such as overhead cranes, blast furnace, industrial machine tools and also various ship engines.
 - Learned about industry practices such as inventory management and quality control.

Technical Skills

1. **Programming:** Python, MATLAB, C
2. **Simulations:** LAMMPS, OVITO, Abaqus CAE
3. **Design:** SolidWorks (CSWA Certified), AutoCAD
4. **Machine Learning:** Pytorch, Tensorflow, Scikit-learn
5. **Data Analysis and Visualization:** Python (Numpy, Pandas, Matplotlib)
6. **MS Software:** MS Word, MS Excel, and MS PowerPoint
7. **Others:** Arduino, Latex

Awards and Achievements

- **2nd Runner-Up** in the Student Project Competition at the Energy Conference 2023, where we presented our proposal to enhance the wind map of Bangladesh using drones and recurrent neural networks (RNN) to improve site selection for wind farms.
- **1st Runner-Up** in BIDD Zenith Cup 2022, an intra-BUET idea competition, where we presented our idea of protecting kettle during flood using buoyancy-based floating devices.
- **Innovation Award** in the International Planetary Aerial Systems Challenge (IPAS) 2021 for designing a drone capable of surviving and performing in Martian conditions.
- **Award for Achievement in International Competitions**, by Directorate of Students' Welfare, BUET for securing prize in an international competition.
- **Semifinalist** at the Pre-Korea World Universities Debating Championship 2021 where I presented BUET and placed 8th in the tournament.

Leadership and Extra-Curricular Activities

- **Vice President | BUET Debating Club** July 2023 – August 2024
- **Joint Secretary | IMechE BUET Student Chapter** June 2023 – June 2024
- **Assistant Joint Secretary | BUET Automobile Club** June 2023 – June 2024

References

Dr. Mohammad Jane Alam Khan
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