Tanvir Hossain

Dhaka, Bangladesh tanvirrishad5065@gmail.com +8801764108869 Tanvir Hossain
Tanvir Hossain TH-Rishad

Education

Islamic University of Technology — *Gazipur, Bangladesh* Jan 2020 – June 2024
BSc in Mechanical Engineering

- **GPA**: 3.9/4.0 (3rd in class of 36)

Publications

- Ahmed, H., **Hossain, T.**, Ahmed, A., Hossain, Z. (2023). Investigation of Clamp Numbers and Positions to Mitigate Flow-Induced Vibration in High-Speed Superheated Steam Flow Through a Pipe Elbow.
  in preparation

Research Experience

1. ***Investigation of Clamp Numbers and Positions to Mitigate Flow-Induced Vibration in High-Speed Superheated Steam Flow Through a Pipe Elbow*** Jan 2024 – May 2024
Supervisor: Dr. Md. Zahid Hossain

- Modelled the methodology for testing clamp location and numbers in bent pipe section from a boiler outlet.
- Wrote a Python code using the FFT algorithm to test the dynamic behavior in the frequency domain.
- Selected the optimal fluid parameters and analyzed the result to get a 30% reduction in vibration in both acceleration and displacement.

2. ***Experimental Study on Non-linear Vibration of Sandwich Composite Specimen*** Aug 2023 – Dec 2023
Supervisor: Dr. Md. Zahid Hossain

- Fabricated two sandwich composite specimens of different lengths, each with a Butyl Rubber core sandwiched between two stainless steel plates.
- Designed a simple 3DOF spring mass damper system in MATLAB-Simulink and compared the simulation plot with the experimental setup result.
- Wrote a Python code using the FFT algorithm to extract the experimental setup data and test the frequency domain's dynamic behavior to detect non-linearity.

3. ***Supercritical CO2 Recompression Brayton Power Cycle cascaded with Transcritical CO2 Ejector Refrigeration Cycle and Flash Tank Enhanced VAR system*** Jan 2024 – May 2024
Supervisor: Dr. Mohammad Monjurul Ehsan

- Analyzed the exergy destruction across the components using CoolProp library in Python.
- Cascaded the Flash tank enhanced the Absorption refrigeration system to get a 3% reduction in overall exergy destruction.
- Illustrated the Ph diagram, integrated power and cooling cycle, and exergy analysis using Adobe Illustrator.

Research Interests

- Legged Robots
- Dynamic Locomotion
- Humanoids
- Controller Design
- Mechanical Vibration
- Robot Manipulation

Skills

- **Design and Simulation**: SOLIDWORKS, ANSYS
- **Programming**: ROS, Python, Arduino
- **Control and Automation**: MATLAB, LABVIEW, Ardupilot

Projects

4 Degrees of Freedom Robotic Arm for Picking and Sorting Objects Jan 2023 – Jan 2024
Undergraduate Capstone Project
Supervised by Dr. Md. Rezwanul Karim

- Finalized the control system architecture for the robotic arm using a Laptop as the power source and Arduino Mega as the Microcontroller.
- Built a GUI interface in Python using the Tkinter library to test the actuators.
- Wrote the arm manipulation code in Python using Numpy based on a fixed motion array.
- Manufactured the project testbed and objects using plywood.

Chassis of Project Altair Mars Rover - Musafir June 2023 – Jan 2024
European Rover Challenge 2023, Kielce, Poland

- Designed a 45kg Mars rover chassis frame on SOLIDWORKS using SS steel.
- Tested load-carrying capacity and structural dynamics using ANSYS to maintain it under 400kg.
- Designed the placement for electric box and the science module.

Electric Box of Project Altair Mars Rover June 2023 – Jan 2024
European Rover Challenge 2023, Kielce, Poland

- Designed a vertical cabinet system electric box SOLIDWORKS using 10mm thick plywood for ease of access.
- Tested load-carrying capacity and structural dynamics using ANSYS.
- Created slots and holes on the box on both side for direct access to the arm and the science module.

Leadership Activities

- Chief Editor - IUT Robotics Society October 2023 – July 2024
- Chassis Design Architect - Project Altair June 2023 – May 2024
- Chief of Robotics - IMechE IUT Student Chapter August 2023 – May 2024

Achievements

- International Rover Challenge 2024 - Best Science Team, India (Team Achievement) 2024
- International Rover Challenge 2024 - 6th Position, India (Team Achievement) 2024
- European Rover Challenge 2023 - 17th Position, Poland (Team Achievement) 2023
- International Rover Design Challenge 2022 - 13th Position, Virtual (Team Achievement) 2022
- European Rover Challenge 2021 - 10th Position, Virtual (Team Achievement) 2021
- OIC Partial Scholarship, Bangladesh 2020

Certifications

- Supervised Machine Learning: Regression and Classification June 2024
  Stanford Online, Coursera
- ERC Space and Robotics Industry Standard Practice Program September 2023
  European Space Foundation
- Industrial Training Course June 2023
  BPDB, Rajshahi, Bangladesh

Reference

Dr. Md. Zahid Hossain
Professor of Mechanical Engineering
Islamic University of Technology
Email: zahidmce@iut-dhaka.edu

Dr. Md. Rezwanul Karim
Professor of Mechanical Engineering
Islamic University of Technology
Email: rezwanul@iut-dhaka.edu