Tajwar Razib

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Objective

I am a research-driven scholar with a solid background in Thermodynamics, Heat Transfer, Molecular Dynamics, Additive Manufacturing, Control System, and expertise in Machine Learning. My work combines computational and data-driven approaches to investigate energy systems and thermal processes. In an effort to broaden my scope of research, I am committed to interdisciplinary exploration and academic advancement in various scientific domains.

Education

Bachelor of Science (BSc) in Mechanical Engineering March 2026 [Expected]
Bangladesh University of Engineering and Technology (BUET)
Current CGPA: 3.69 out of 4.00 [Upto 6th Semester]

Technical Skills

- **Programming Language**: Python, C, C++
- **Software**: MATLAB, AutoCAD, SolidWorks, COMSOL, LAMMPS
- **Plot Analysis Tools**: OriginPro, Tecplot, xyExtract, Polymath Professionals

Projects

Project 1 Saylobot: Digital Data Acquisition System for Saybolt Viscometer

Here, my team automated the reading taking from the Saybolt Viscometer with the necessary sensors and Arduino program. I was the CAD designer for the project.

Project 2 Shell and Tube heat exchanger with inclined baffles

My team and I built a Shell and Tube heat exchanger with an inclined baffle. I was the Python programmer for heat exchange analysis.

Undergraduate Thesis

Machine Learning based Comparative Study of Waste Heat Recovery in Combined Organic Rankine Cycle-Gas Turbine and Conventional Steam Turbine Powerplants Applying Metaheuristic Algorithm for Working Fluid Mixture Optimization

Journal Publications

Preprints & Under Review

- **T. Razib**, A. Saha. *A Comprehensive Thermodynamic Analysis of a Bottoming Organic Rankine Cycle.* au.176124781.14639217

Manuscripts in Preparation

1. Physics Informed Disentanglement of Multimodal Data on Additive Manufacturing by Variational Auto-Encoder.

2. Comparative Analysis of PI and PID Controllers for Traction Motors in Hybrid Electrical Vehicles Using Multi-Objective Optimization via NSGA-III.

Conference Proceedings

- Thermodynamic Analysis of a Bottoming Organic Rankine Cycle for Waste Heat Recovery. *BSME 2024*
- A Comprehensive Study on Energy, COP, and Exergy of a Coupled ORC-VCC Cogeneration System Employing Dual Working Fluids. *ICME 2025*

Manuscripts Submitted

1. Application of Bayesian Optimization on Design and Working Parameters of an Inclined baffle Shell and Tube Heat Exchanger. *ASTFE 2026*
2. Application of Improved Particle Swarm Optimization (PSO) on a Gas Turbine Model. *ICME 2025*
3. A Comparative Analysis of Basic and Regenerative Organic Rankine Cycle with a Reactive Flow Model. *ICME 2025*

Certificates

COMSOL
Machine Learning and Deep Learning
ML Terminology and Process

Leadership and Outreach

Vice President, Multiscale Mechanical Modeling and Research Network (MMMRN) June 2025–Present
Organize research-related programs and networking with alumni

Treasurer, BUET Automobile Club (BAC) March 2025–Present
Manage financial records, budgeting, and fundraising coordination.

Director, BUET Debating Club (BUETDC) April 2025 – Present
Lead event planning and member engagement initiatives.

Vice Chairperson, G17 UAC Bangladesh March 2024– Present
Handle recruitment, onboarding, and team communications.

Engine and Powertrain Sub-team Member, Team Automaestro September 2023 – July 2024
Worked on the design, testing, and optimization of engine components.

References

Dr. Md Ehsan
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