

MD ANAWRUL KABIR FAHAD

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RESEARCH INTERESTS

Scientific machine learning that stays reliable outside its training conditions, from detecting failure on unseen operating regimes to correcting trained models cheaply. I also bring hands-on experience running GPU computing infrastructure and building research software.

EDUCATION

Chittagong University of Engineering & Technology (CUET)

B.Sc. in Mechanical Engineering (in progress)

Chattogram, Bangladesh

Apr 2022 – Present

PUBLICATIONS

Journal Articles (under review)

- [J1] Optimizing evaporation heat transfer predictions of low GWP R455A in an industrial plate heat exchanger via machine learning. *International Journal of Refrigeration*, under review, 2026.
- [J2] Machine learning based prediction of the condensation heat transfer of low GWP refrigerant R1336mzz(E) in an industrial plate heat exchanger. *International Journal of Refrigeration*, under review, 2026.

Conference Papers (under review)

- [C1] **M. A. K. Fahad** and M. A. M. Hossain. Localized forgetting in parameter-efficient adaptation of a frozen physics-informed airfoil surrogate. *10th BSME International Conference on Thermo-Fluid Engineering*, under review, 2026.

In Preparation

- [P1] An updated residual entropy scaling model for the viscosity of CF3I (R131I).

RESEARCH EXPERIENCE

Machine Learning for Refrigerant Heat Transfer

Ongoing

Advisor: Monowar Wadud Hridoy, Dept. of Mechatronics and Industrial Engineering, CUET

Chattogram, Bangladesh

- Developed models that predict heat transfer of two low GWP refrigerants from Saga University experiments. [J1, J2]
- Tested models on operating conditions left out of training, showing that standard validation overstates generalization. [J1, J2]
- Carried out the measurement uncertainty analysis and data quality checks for the R455A study. [J1]

Localized Forgetting in Parameter-Efficient Adaptation of a Physics-Informed Surrogate

Undergraduate thesis

Advisor: Prof. Dr. Md. Abu Mowazzem Hossain, Dept. of Mechanical Engineering, CUET

Chattogram, Bangladesh

- Adapted a released physics-informed airfoil surrogate to conditions beyond its training range with low rank updates. [C1]
- Generated CFD reference data in SU2 and compared eight adaptation methods on accuracy and forgetting. [C1]

RESEARCH COMPUTING & SOFTWARE

Poridhi.io

Remote, Bangladesh

Junior Software Engineer, GPU computing platforms (Intern, May – Jun 2025)

May 2025 – Jul 2026

- Partnered with the team to move **AI Studio**, a GPU workspace platform, from AWS to a Kubernetes cluster on the company GPU server, cutting start time from 10–15 to 3–5 minutes.
- Supported six concurrent users on one GPU server by giving each an isolated 8 GB slice of GPU memory.
- Created the web interface of **TensorCode**, a teaching platform where learners run CUDA, Triton and PyTorch code on GPUs.
- Co-developed **TensorRAG**, a visual tool that lets learners build ML training pipelines from Python steps and watch each step run.
- Worked across frontend, backend and infrastructure and onboarded new interns with their first tasks.

PropBench | Open source software, in development

[GitHub](#)

- Building a desktop tool for developing and validating thermophysical property models on top of CoolProp.

TECHNICAL SKILLS

Programming: Python, TypeScript, Go, SQL

Scientific Computing: PyTorch, scikit-learn, XGBoost, SU2, REFPROP, CoolProp

Systems: Kubernetes, Docker, AWS, Temporal

AWARDS & COMPETITIONS

Champion, Break The Monolith Hackathon **Finalist and Rising Team Award**, API Avengers, CUET

2025

7th Place, Brain Station 23 AI Engineering Hackathon **9th Place**, NSU TechFest WebXtreme

2025

Contestant, ICPC Dhaka Regional Preliminary and CUET IUPC **Recognition**, Robo Soccer

2022 – 2023