SAYED TANVIR AHMED

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PROFILE

An ambitious Mechanical Engineering graduate prioritizing research-driven academic pursuits. Passionate about biomechanics, control systems, bio-fluid mechanics, and CFD simulations, with aspirations to pursue an M.Sc. in Biomedical Engineering.Proficient in ANSYS Fluent, ANSYS FEA, Matlab, and programming languages. A proactive collaborator with strong communication, leadership, and interpersonal skills.

RESEARCH INTEREST

- Bio-fluid mechanics
- Biomechanics
- Control Engineering
- Computational Fluid Dynamics (CFD)
- Concentrating Solar Power
- Physics Informed Neural Network

EDUCATION

Shahjalal University of Science and Technology, (SUST) , Sylhet — Jan 2019 - Jan 2024

BSc. In Mechanical Engineering

- **CGPA:** 3.51/4.00
- Presented research findings at international conferences

RESEARCH EXPERIENCE

Undergraduate Thesis — Jan 2023 - Jan 2024

Mechanical Engineering Department, SUST
Titled: Investigation on the potential of Hill Track Sites as solar fields for Concentrated Solar Powerplants incorporating Optical Efficiency as the primary parameter.
Supervisor: Tahmidul Haque Ruvo, Department of MEE, SUST

- Structured entire research scheme under supervision to conduct thesis within timeframe
- Modelled field layout using geographical data, Filtered and processed data with Python, used SolarPILOT to carry out the simulation
- Processed and visualized data using OriginLab and Tecplot, wrote a thesis report, and presented a conference paper

Research Assistant — Sep 2023 - Present

CAD-CAM Simulation Laboratory, Mechanical Engineering, SUST
Supervisor: Mostafa Rafid, Department of MEE, SUST

- Designed the entire research methodology under supervision
- Modeled required solid and fluid geometries, discretized computational domain using ANSYS ICEM CFD Meshing tool, and developed different boundary conditions
- Implemented ANSYS Fluent for conducting numerical simulations
- Processed and visualized data using OriginLab, Tecplot and ANSYS CFD-Post, wrote a research paper

Research Intern — Aug 2022 - Aug 2023

CAD-CAM Simulation Laboratory, Mechanical Engineering, SUST
Supervisor: A K M Ashikuzzaman, Department of MEE, SUST(Doctoral candidate, University of Minnesota, USA)

- Prepared Airfoil geometries, designed fluid domain, discretized computational domain using ANSYS ICEM CFD Meshing tool, and developed different boundary conditions
- Processed and visualized data using OriginLab and Tecplot, wrote multiple research paper, one poster paper accepted and two paper being reviewed

TEACHING EXPERIENCE

Mathematics Instructor **Sep 2021 - May 2023**

- Grade 11 & 12 (Canadian Curriculum)
- **Courses:** Mathematics IB SL1 & IB SL2, Mathematics HL, MathPower 10, Advanced Functions.

PUBLICATION HIGHLIGHTS

Peer-reviewed Conference Proceedings, (Elsevier SSRN and AIP publishing).

- Anwoy Talukder Ranjak, **Sayed Tanvir Ahmed**, A. K. M. Ashikuzzaman,Tahmidul Haque Ruvo, *Innvestigation of Optical Efficiency of the Concentrated Solar Power System Located on the Inclined Hillside Areas*, 14th International Conference on Mechanical Engineering (ICME2023), Department of Mechanical Engineering, BUET, Bangladesh. (Full Paper)
- **Sayed Tanvir Ahmed**, Tripta Sarker, Ratul Das, *Thermohydraulic Performance Optimization of Solar Air Heater via Tailored Invert L Shaped Rib: A CFD Investigation*, 2nd International Conference on Mechanical, Manufacturing and Process Engineering (ICMMPE-2024), Dhaka, Bangladesh.
- **Sayed Tanvir Ahmed**, Ratul Das, Tripta Sarker, Mahadi Hasan Shanto, *Aerodynamic Effects of Leading Edge Flap Angle on NACA 4412 Airfoil Performance at Low Reynolds Numbers: A CFD Investigation*, 2nd International Conference on Mechanical, Manufacturing and Process Engineering (ICMMPE-2024), Dhaka, Bangladesh.
- Tripta Sarker, Ratul Das, **Sayed Tanvir Ahmed**, *Numerical Investigation of the Hydraulic and Thermal Performance of Plain Fin Compact Heat Exchangers with Modified Flat Tubes*, 2nd International Conference on Mechanical, Manufacturing and Process Engineering (ICMMPE-2024), Dhaka, Bangladesh.

Works In Progress

- Numerical Investigation of Cerebral Artery Stenosis in Stroke Patients.
- Optimizing Thermohydraulic Performance of Solar Air Heaters Using Novel Rib Configurations.(Preparing the manuscript)

PROJECT

- Solar System Dynamics Simulator, Designed and developed entire software, used python 3. [**Under Stanford's CS106A**] (2023) (Link)
- Karel Robot, (7 projects), **(Under Stanford's CS106A)** (2023) (Link)
- Finite Difference Method (FDM) for Heat transfer and Solid Mechanics. used python 3. (Link)
- Gravity Light, [**Academic project under MEE-368 course**] (Link)

HONORS & AWARDS

- Champion in Mechnovation Depiction V3.0 CAD Competition, **MECHNOVATION - National Mechanical Festival, 2022**
- Placed 20th/1200 globally in ITPO, **International Theoretical Physics Olympiad, 2021**

TECHNICAL SKILLS

Programming Languages: Python, C, MATLAB

Simulation Software: ANSYS fluent, ANSYS Static Structural, SolarPILOT

CAD Software: SolidWorks, AutoCAD, Fusion 360, Ansys SpaceClaim

Other Software: STecplot, Origin Lab, Latex, Microsoft Office (Excel, PowerPoint & Word)

CERTIFICATION

- **Stanford University's Code in Place**, (3 Units), Obtained Section Badge & Diagnostic Badge Link
- **Supervised Machine Learning: Regression and Classification**, by DeepLearning.AI (Link)
- **Programming for Everybody**, by University of Michigan via Coursera (Link)
- **Autodesk Fusion 360**, by Autodesk, Inc. (Link)
- **Work Smarter with Microsoft Excel**, by Microsoft via Coursera (Link)

VOLUNTEER EXPERIENCE

Founder, **SUSTCADSociety, SUST**

- SUSTCADSociety, is a official CAD club, founded in 2023 for SUST students passionate about CAD, Simulation and manufacturing.

Assistant Organizing Secretary, **Public University Student Association Sunamganj**

- Planned and executed organizational events for seamless participant experience
- Organized complimentary academic sessions in schools and colleges in Sunamganj

General Member, **RoboSUST, SUST**

REFREES

- **Tahmidul Haque Ruvo**
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- **A K M Ashikuzzaman**
  Graduate Research Assistant
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