Tahmid Hasan Oni

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Education

Bangladesh University of Engineering and Technology (BUET) Dhaka, Bangladesh
Bachelor of Science(B.Sc.) in Mechanical Engineering *March 2018 - May 2023*
CGPA in last 60 credit hours **3.79/4.00**(U.S. Equivalent)

Relevant Courses: Heat Transfer, Fluid Mechanics, Refrigeration and HVAC Systems, Nuclear Engineering, Control Engineering, Advanced Thermodynamics, Internal Combustion Engines, Theory of Structures, Production Process, Machine Design, Electro-mechanical System Design.

Standardized Test Scores

- **GRE** Overall **316** (Quant- 163 , Verbal-153, Analytical Writing- 3.5/6)
- **IELTS** Overall- **7.5** (Listening- 7.5, Reading-8.5, Writing-7, Speaking-7.5)

Research Interests

• Materials Science • Manufacturing • Advanced Materials • Machine Learning • Heat Transfer

Research Experience

- **Undergraduate Thesis** *May 2022 -May 2023*
  Supervisor: Prof. Dr. Mohammad Arif Hasan Mamun, Dept. of Mechanical Engineering, BUET
  Topic: Study of the thermal performance of a converging-diverging microchannel heat sink with triangular ribs.
  - Conducted a comprehensive numerical analysis for a proposed model of microchannel heat sink (MCHS) to enhance heat transfer efficiency. This study elucidated the interplay between different geometrical parameters and provided insights into the optimization of thermal performance and hydraulic efficiency.

- **Term Thesis of Control Engineering** *Nov 2022 -May 2023*
  Supervisor: Prof. Dr. Sumon Saha, Dept. of Mechanical Engineering, BUET
  Topic: Designing of the Temperature Control System of a Residential Geyser using P, PI & PID controller. (DOI:10.13140/RG.2.2.21842.53443)
  - This paper investigated and analyzed control systems for residential water geysers, utilizing P, PI, and PID controllers in order to maintain geyser temperature at a particular set point. Evaluated controller performance in terms of temperature control, stability, and response time, using MATLAB/Simulink simulations.

Professional Experience

- **Sonargaon University (SU)** Dhaka, Bangladesh
  Lecturer *Jul 2024 - Present*
  - Working as a full-time faculty and teaching Fluid Dynamics, Engineering Thermodynamics, Mechanics of Machinery, etc., and their related labs.

- **National Polymer Industries Ltd.** Dhaka, Bangladesh
  Industrial Trainee *Oct 2022-Nov 2022*
  - Gained hands-on experience in a leading Bangladeshi plastic industry, was responsible for conducting inspections and monitoring power generation and heat recovery equipment.

Publications

Conference Proceeding

• **Oni, Tahmid Hasan** and Hasan Mamun, Mohammad Arif,"A Study of the Thermal Performance of a Converging-Diverging Microchannel Heat Sink with Triangular Ribs". (DOI:10.2139/ssrn.4862430)

Conference: 14th International Conference on Mechanical Engineering (ICME 2023).
Published in SSRN | Elsevier (June 12, 2024).

Projects

- **Tomato Leaf Disease Detection Using Machine Learning**: Developed a machine learning model to accurately identify, classify, and predict 9 different diseases in tomatoes by analyzing leaf images utilizing advanced image processing techniques and convolutional neural network (CNN) for early diagnosis and management in agriculture.
- **Breast Cancer Prediction Using Machine Learning**: Developed a predictive model for breast cancer diagnosis using a dataset with 33 tumor characteristics. Conducted data pre-processing, EDA, and model evaluation to identify crucial features and improve diagnostic accuracy.
- **Heart Disease Prediction Using Machine Learning**: Developed a Decision Tree-based machine learning model to predict heart disease using TensorFlow, leveraging a dataset from Kaggle. Implemented data preprocessing, feature engineering, and model evaluation techniques to achieve accurate predictions.
- **Potato Disease Diagnosis Using Machine Learning**: Developed and trained a convolutional neural network (CNN) model to predict early blight, late blight, and healthy conditions of potato leaves.
- **Thermo-Fluid Equipment Design (Marine Engine Oil Cooler)**: Used Solidworks for design and HTRI for optimizing design parameters according to system demand. Analyzed and calculated the design parameters of a heat exchanger (STHX) for manufacturing and built a scaled-down prototype. (DOI:10.13140/RG.2.2.18487.09126)
- **Air-Conditioning System Design for a Home**: Performed comprehensive cooling load calculation and recommended an air-conditioning system for a residential building by utilizing ASHRAE guidelines and databook.
- **Solar Tracker**: Used SolidWorks, Proteus, Arduino Uno, Photo resistive Sensor, and Solar panel, in order to develop an electromechanical system that can track the sun's position in order to face the solar panel directly towards it for maximum solar efficiency. (DOI:10.13140/RG.2.2.21225.10085)
- **Line Following Robot(LFR) and RC Fury Car**: Used SolidWorks, Arduino Uno, Arduino IDE, Sonar sensor, Motor driver, and IR Sensors in order to develop a robot that can navigate in a predefined path autonomously while avoiding obstacles and can race through challenging terrains and adverse environmental conditions

Skills Summary

- **CAD Softwares**: SolidWorks, Autocad
- **Simulation Softwares**: ANSYS Workbench, COMSOL Multiphysics, SolidWorks Simulation, EnergyPlus
- **Programming Languages**: Python, MATLAB, C, Arduino
- **Office Application**: Microsoft Office Suit, LaTex
- **Other Softwares**: Tecplot 360, Proteus, HTRI
- **Soft Skills**: Project and Time Management, Teaching, Leadership, Writing, Public Speaking

Selective Certifications

- **Advanced Learning Algorithms** *July 2024*
  Stanford University / Coursera
  - Gained proficiency in building and training neural networks with TensorFlow for real-world AI applications. Also, building and using decision trees and tree ensemble methods, including random forests and boosted trees.
  - Acquired expertise in machine learning best practices, including model evaluation, tuning, and a data-centric approach to enhance model performance and generalization.
- **Supervised Machine Learning: Regression and Classification** *June 2024*
  Stanford University / Coursera
  - Building and training supervised machine learning models in Python for prediction and binary classification tasks, including linear and logistic regression and optimizing regression models.
- **Python for Everybody Specialization** *May 2020*
  University of Michigan / Coursera
  - Utilizing core Python programming tools and data structures.
- **Introduction to Programming with MATLAB** *June 2020*
  Vanderbilt University / Coursera
  - Covers fundamental programming concepts, control structures, functions, various data types, and their handling, as well as MATLAB's robust matrix operations and file input/output capabilities.
- **Image Processing Onramp** *Aug 2020*
  MathWorks
  - Using MATLAB for image manipulation, segmentation, preprocessing, and postprocessing to enhance image analysis. Also developing classifi- cation metrics and batch processing for automated image handling.

Reference

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