Azizul Haque

Research Assistant

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PROFILE

Is looking to work in fields of engineering disciplines. As an undergraduate student, he has worked on several personal and group-based engineering projects- including control engineering, electrical engineering, and Arduino-based projects. Additionally, during his research career has gathered and applied knowledge of Artificial Intelligence, Medical Imaging and Data Processing, and Computational Fluid Dynamics. He is keen on using his knowledge to pursue a career in innovative engineering and work as part of a team.

EDUCATION

Masters of Science in Medical Imaging and Data Processing 2022 – present
Friedrich-Alexander-University Erlangen-Nuremberg,
2nd Semester Running Germany

Bachelor of Science in Electrical and Electronics Engineering (B.Sc in EEE) 2016 – 2019
North South University Dhaka, Bangladesh

WORK EXPERIENCE

Research Assistant 01/2022 – present
Assisted in several research-based projects including Skin Cancer Detection Using Deep Learning, Multiple Sclerosis Segmentation, ASD Detection using MRI Data, Airfoil Generation and Model Order Reduction for Aircraft Wing Shape Optimization, COMSOL Multiphysics & Ansys Fluent Modeling.

Also helped in research involving computational fluid dynamics (CFD) and dynamic mode decomposition (DMD).

Freelance Tutor 2016 – present
Self-employed Dhaka, Bangladesh
Tutored numerous high school students and helped them achieve good grades in their respective classes.

Intern at North South University Power Station 2019 – 2019
North South University Dhaka, Bangladesh
Worked as an intern at the North South University power station on his 10th trimester. Learned about the workings of various substation components such as control panel batteries, jacket water circuits, intercoolers, alternators etc and also about various employee roles in a real work environment.

FEILDS OF INTEREST

Artificial Intelligence ●●●○○
Machine Learning, Deep Learning, Medical Imaging, and Data Processing

Computational Fluid Dynamics ●●●●○
Model Order Reduction, Physical model Designing, and Simulation

Hardware & Electrical Design Engineering ●●●○○
Analog and digital signal processing, Circuit design and analysis, Microcontroller programming

Control Engineering ●●○○○
PLC

SOFTWARE SKILLS

Python ●●●○○
Machine Learning, Data science

MATLAB ●●●●○
Signal processing, control systems, simulink etc.

COMSOL Multiphysics ●●●○○
Finite element analysis, multiphysics simulation, 2D/3D model design

Ansys Fluent ●●○○○
Fluid system simulation with advanced physics modeling and accuracy

HTML, CSS, JavaScript ●●●○○

Microsoft office ●●●●○
Word, PowerPoint Presentation, Excel

RESEARCH

Multiple Sclerosis, Prostate Cancer and ASD Segmentation and Detection 01/2023 – present
These projects involve using Artificial Intelligence (AI) for detection and segmentation.

Development of the Efficient Algorithms to optimize of the Solar Thermal state of the Photovoltaic Panel by analyzing the generated dynamic mathematical model 01/2023 – present
This project proposes a mathematical model of the PV panel based on the state-space model, which focuses on identifying and minimizing hot spots in the panel.

Model Order Reduction for Aircraft Wing Shape Optimization (CTRG-21/SEPS/15) 08/2022 – 12/2022
Airfoil Generation and Optimization
This project involves using Generative Adversarial Networks (GANs) to generate airfoils and then optimizing them using model order reduction techniques.

Model Order Reduction for Aircraft Wing Shape Optimization (CTRG-21/SEPS/15) 01/2022 – 10/2022
Predicting aerodynamic coefficients by supervised learning

Skin Cancer Detection Using Deep Learning 06/2021 – present
Researching deep learning methods such as CNN (convolutional neural network) and transfer-learning to detect skin cancer.

NOTABLE PUBLICATIONS/PROJECTS

Estimating Aerodynamic Data via Supervised Learning 03/03/2023
IEEE
Estimating Aerodynamic Data via Supervised Learning is using machine learning to predict an aircraft's aerodynamic characteristics based on input parameters, helping to improve aircraft performance and reduce design/testing costs.

Automatic Temperature Control System
(Control Engineering)
A PID-based MATLAB simulated controller for detecting temperature changes in indoor environments and alerting users when the temperature is too high or too low.

Four-way Traffic Light Controller
An Arduino-based project that uses an IR sensor for four-way traffic light control by measuring vehicle density in a given road.

Soil Fertility Analyzer
An Arduino-based project that quantifies the fertility of soil by measuring various properties using a combination of sensors.

Line Following Robot
An Arduino-based self controlled robot that follows a set path in a straight line.

Arduino based Wireless Doorbell
An Arduino microcontroller and a wireless transmitter send a signal to a receiver, which then activates a chime or buzzer to indicate that the doorbell has been pressed.

CERTIFICATES

25th INTERNATIONAL CONFERENCE ON COMPUTER AND INFORMATION TECHNOLOGY
Certificate of appreciation for successfully presenting a conference paper

PLC Programming and Industrial Automation
North South University and International Automation Technologies

Python for Everybody
Coursera, University of Michigan

EXTRACURRICULAR ACTIVITIES

North South University IEEE 2017 – 2018
Member Dhaka, Bangladesh
Attended workshops and worked on various EEE projects.

Ramrampur Community Clinic 2011 – 2015
Youth Advisor Mymensingh, Bangladesh
Organized and attended meetings to raise awareness regarding teenage issues for the community.

LANGUAGES

- Bengali
- English
- Hindi

REFERENCES

Dr. Mohammad Monirujjaman Khan, *Associate Professor*, North South University
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