

# Nafis Faisal

✉ [nafisfaisal029@gmail.com](mailto:nafisfaisal029@gmail.com) —  [Nafis Faisal](#) —  [Nafis Faisal](#)

## EDUCATION

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### Bangladesh University of Engineering and Technology

*Dhaka, Bangladesh*

Bachelor of Science

*February 2020 - March 2025*

Department of Electrical and Electronics Engineering

*(3.90 in the last semester) CGPA: 3.66/4.00*

Majoring in Communications and Signal Processing (CSP)

### Notre Dame College

*Dhaka, Bangladesh*

Higher Secondary Certificate

*June 2017 - 2019*

Science Group, English Version

*GPA: 5.00/5.00*

## INTERESTS

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- AI, Machine Learning and Deep Learning
- Quantum Error Correction
- Signal Processing
- Robotics & Automation
- Quantum Computing
- Control Systems

## TECHNICAL SKILLS

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### Programming Languages

C/C++, Python, MATLAB, Arduino IDE

### Markup Languages

LaTeX, HTML

### Machine Learning Libraries

Pandas, Scikit-learn, TensorFlow, Pytorch, Keras

### Software & Coding Environment

Microsoft Office (Word, Excel, Powerpoint), AutoCAD,

Mission Planner, PSpice, Proteus, Codeblocks

### Hardware

Arduino microcontroller, Arducopter, IoT devices, sensors

## RESEARCH EXPERIENCE

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### Sparse Electric Load Dataset Reconstruction and Forecasting

*February 2024 - Present*

*Supervised by Dr. Hafiz Imtiaz*

*Bangladesh University of Engineering and Technology*

- Using Machine Learning and other techniques to reconstruct the sparse load dataset of the BUET electric power plant and predicting future loads by learning from the dataset

### Undergraduate Thesis titled "Performance analysis of extension of 3- and 5-bit Quantum Repetition Code"

*November 2023 - March 2025*

*Supervised by Dr. Saifur Rahman*

*Bangladesh University of Engineering and Technology*

- Investigated into an extension of the traditional decoder circuit or 3- and 5-bit Quantum Repetition Codes on tri- and pentapartite GHZ states

## PROJECTS

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### Undergraduate Lab Projects

### Sampling and Reconstruction of a signal using electronic Integrated Circuits (IC's)

*Level 3,*

*Term 1*

*Supervised by Dr. Saifur Rahman*

*Bangladesh University of Engineering and Technology*

- Applying knowledge of electronic circuits and components to implement sampling or time-axis discretization of an analog signal and reconstructing it to original signal using filters

### **Load Forecasting using parallel CNN and LSTM Architecture**

Level 3, Term 1

*Supervised by Dr. Nasim Ahmed Dewan*

*Bangladesh University of Engineering and Technology*

- Reconstruction and load forecasting on BUET Load Dataset using CNN-LSTM and LSTM models
- This project was later pursued for further research, as mentioned in the research section

### **Password based Security Lock System with Anti-Fraud Alarm**

Level 3, Term 2

*Supervised by Dr. Hamidur Rahman*

*Bangladesh University of Engineering and Technology*

- Using various digital electronic ICs to implement a security lock with alarm

### **Solar based UPS with Voltage Level Control, Battery Level Indicator and Auto Cut-off** Level 3, Term 2

*Supervised by Ramit Dutta*

*Bangladesh University of Engineering and Technology*

- Building a solar charged inverter system with battery pack, voltage controller and indicator with battery management system for avoiding overcharge or unbalanced charging

### **Automatic Trash Collector**

Level 3, Term 2

*Supervised by Dr. Mohammad Ariful Haque*

*Bangladesh University of Engineering and Technology*

- Building a trash collector robot (failed to fully complete)

### **Facial Expression Classification using Deep Learning**

Level 4, Term 1

*Supervised by Dr. Shaikh Anowarul Fattah*

*Bangladesh University of Engineering and Technology*

- Reimplemented the machine learning model from a journal paper title "Facial Expression Recognition Using Multi-Branch Attention Convolutional Neural Network" by Yinggang He, slightly changed some parameters to gain a slightly higher accuracy
- [Github link](#)

### **Bangla Calendar Clock 3.0**

Level 4, Term 1

*Supervised by Dr. Sajid Muhaimin Choudhury*

*Bangladesh University of Engineering and Technology*

- Implemented a Bangla Calendar Clock showing Bangla calendar date and time along with English calendar date and time in Bangla alphabets and numerals. The system also had automatic time synchronization in case of power failure without internet connection
- [Github link](#)

### **Real-time human detection, tracking with geographical localization in flood-affected regions using drone**

Level 4, Term 2

*Supervised by Dr. Celia Shahnaz*

*Bangladesh University of Engineering and Technology*

- Built a quadcopter drone to detect and locate humans from above in flooded regions using a fine-tuned YOLO

## **Extracurricular Projects**

### **Assistive Robot**

July 2023 - September 2023

*Supervised by Dr. Mohammad Ariful Haque*

*Bangladesh University of Engineering and Technology*

- Generated possible prompts and their replies from ChatGPT for robot
- Designed a preliminary version of the robot "eyes" using dot matrix

## WORK EXPERIENCE

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### **Tutoring and related experience**

Tutored high school students in mathematics, physics and chemistry *November 2019 - Present*

Worked in content creation and translation for a reputed academic coaching center

### **Non-academia publication experience**

Published book as co-author titled "Onnyo Chokhe Calculus" *Published in 2024 Ekushe Boi Mela*

### **Internship experience**

Industrial attachment at Fiber@Home *June 2024 - July 2024*

## ACADEMIC AND EXTRACURRICULAR ACHIEVEMENTS AND SCHOLARSHIPS

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### **Academic**

Government Board Scholarships in JSC and HSC

Perfect attendance certificate at Notre Dame College

### **Self Learning**

Attended paid course to learn Quantum mechanics

Attended paid course to learn Machine Learning and Deep Learning

Completed several courses on Programming, Machine Learning and Mathematics in Coursera and Kaggle (certificates available)

### **Competitions**

Acquired 1st position in Intra University Undergraduate Integration Olympiad held in 2020

Acquired 8th position in Intra BUET Undergraduate Math Olympiad held in 2022

Acquired 6th position in Intra BUET Nuclear Engineering based Poster Presentation held in 2023

Acquired 1st position in Matlab Mania Contest, KUET EEE DAY 2023

Acquired 1st position in Intra BUET Undergraduate Math Olympiad held in 2023

### **Seminar and Conference**

Attended and presented project at IEEE WIE Robotics for Climate Change and Assistive Technology competition by IEEE RAICON 2024

### **Non-academic**

Vice President (initially Assistant General Secretary) at "Kantho-BUET" (recitation club of BUET)

## REFERENCES

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### **Dr. Saifur Rahman, Thesis Supervisor**

Professor, Department of EEE,

Bangladesh University of Engineering and Technology

Email: saifur@eee.buet.ac.bd