Biswas Rudra Jyoti Arka

biswas.rja@gmail.com Dhaka, Bangladesh Biswas Rudra Jyoti Arka

PROFILE

Electrical Engineer with a keen interest in modern power systems and machine learning. Enthusiastic and driven about research. Eager to contribute my skills and knowledge to the dynamic field of energy systems.

INTERESTS

Smart Grid • Microgrids • Machine Learning • Deep Learning • AI Integration into Grid Systems
Power Systems Operation and Control • Power Systems Analysis • Renewable Energy • Distributed Energy Resources

EDUCATION

Bangladesh University of Engineering and Technology (BUET), 2019 Apr – 2024 Jul | Dhaka, Bangladesh
Bachelor of Science in Electrical and Electronic Engineering
- **CGPA: 3.46/4.00**

MAJOR COURSES

Smart Grid • Power Systems Operation and Control • Power Systems Transmission and Distribution
Power Systems Protection • Nuclear Power Engineering • High Voltage Engineering
Energy Conversion (2 courses)

RESEARCH EXPERIENCE

Research Associate | Supervisor: Dr. Hafiz Imtiaz 2024 Jul – Present
- Implementation of **Deep Learning based Recommendation Systems.**
- Integration of **privacy for user data** while using well-known recommendation methods.

Undergraduate Thesis | Supervisor: Dr. Hamidur Rahman, Dr. Hafiz Imtiaz 2023 Jun – 2024 Jun
- Generation of a dataset consisting of 29 types of power quality disturbances considering the variation in fundamental frequency for islanding of microgrids.
- Classification of PQDs using machine learning models.

PUBLICATIONS

Forecasting Global Horizontal Irradiance to Evaluate Battery Capacity under PV Uncertainty in a Rural Area of Bangladesh (2024), *IEEE* 2024 May
Conference paper presented at 2024 6th International Conference on Electrical Engineering and Information & Communication Technology (ICEEICT).

Machine Learning Based Power Quality Disturbance Classification Under Varying Fundamental Frequency Conditions for Islanding of a Microgrid. 2024 Jul
(Submitted to a journal and is currently under review)

PROFESSIONAL EXPERIENCE

Industrial Attachment Trainee, 2023 Nov – 2023 Dec
Bangladesh Rural Electrification Board Training Directorate
- Industrial Attachment Course on REB/PBS Distribution System (14 days).
- Hands-on familiarization with field operational and protection methods of power systems.

ACADEMIC PROJECTS

Forecasting Global Horizontal Irradiance to Evaluate Battery Capacity under PV Uncertainty in a Rural Area of Bangladesh.
- Forecasting GHI using a public dataset containing weather data of a rural area of Bangladesh using neural network models.
- Designing a small-scale battery management system to incorporate with the forecasting data.

IoT-Based Smart Egg Hatching System | ESP-32 Microcontroller, IoT Design, Sensors
- Design and implementation of a smart egg-hatching system using a microcontroller.

- Implementing an IoT to maintain the system.

Firefighter Robot using Arduino | Arduino
- Implementation of Arduino-based robot consisting of flame detectors.
- Capable of moving to the fire upon detection with the sensors and extinguishing by ejecting water.

Machine Learning based Emotion Recognition from Bengali Speech | MATLAB
- Generation of a custom dataset consisting of 4 types of Bengali speech data for 4 different emotions.
- Real-time classification of a voice sample.

Battery Charging Level Indicator with Auto-cutoff System | Power Electronics Devices
- Consisting of an indicator using light blubs to show the battery level.
- Automatic cutoff when a certain battery level is exceeded.

Simulation of Four-way Traffic Lights System | Digital Electronics Devices
Analog implementation of the 4-way traffic system using a 555-Timer and a CD4017 Decade Counter.

Simple Mobile Phone Structure using GSM Module and Arduino | Communication Systems
- Implementation of a simple mobile communication system using GSM module and Arduino.
- The mobile system can call, receive, send and receive messages.

Electrical Service Design of a Multi-storied Building using AutoCAD
- Floor design of a 9-storied and 4-unit residential building.
- Calculation and integration of electrical services for the building.

TECHNICAL SKILLS

Programming Languages: Python | MATLAB | C

Simulation Softwares: Simulink | Proteus | SPICE Circuit Simulators

Power System Analysis Software: CYME-PSAF

Hardware Skills: Arduino | ESP-32 Microcontroller

Essential Software Skills: AutoCAD | Microsoft Office | Adobe Photoshop | Adobe Illustrator

Documentation Skill: LaTeX

LANGUAGES

Bengali | **English** — TOEFL : 108 (R-29, L-28, S-23, W-28) | **French** — CEFR Level: A2

LEADERSHIP AND VOLUNTEERING EXPERIENCE

President, *Murchhona*: *BUET* 2023 Jun – 2024 Jul
(Central Cultural Club of Bangladesh University of Engineering & Technology)
https://www.facebook.com/murchhona.buet
- Arranged *Priyo Mohanogori*: *The Murchhona Annual Music Festival 2023* .

Assistant General Secretary, *Murchhona*: *BUET* 2022 Jun – 2023 Jun
- Volunteered in organizing *The Great Gig in the Sky*: *7th Inter-university Music Festival 2022* .

Cultural Lead, *EEE Day 2024* 2024 Feb
- Organized and supervised the cultural segment of the annual departmental fest .

AWARDS

Champion, *Regional Language Competition* 2017

1st Runner-Up, *Regional Physics Olympiad* 2017

1st Runner-Up, *Regional Chemistry Olympiad* 2017

1st Runner-Up, *Regional Mathematical Olympiad* 2015

Recepient, *Scholarship of Merit*: *Primary, Junior, Secondary and Higher Secondary Education Board* (*2011-2024*) 2011

REFERENCES

Dr. Hamidur Rahman, *Associate Professor,* Department of EEE, BUET
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Dr. Hafiz Imtiaz, *Associate Professor,* Department of EEE, BUET
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