Muzakkir Ahmed

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EDUCATION

Bangladesh University of Engineering and Technology (BUET) *February 2020 – March 2025*
BSc in Electrical and Electronic Engineering (EEE)
Major: Power
CGPA: 3.80/4.00

RESEARCH INTEREST

Power System Resilience | AI-Enabled Power Quality Monitoring | Smart Grid and Microgrid Technologies | Renewable Energy Forecasting | Advanced Solar Energy Systems

RELEVANT COURSEWORK

- Power System
- Power System Operation and Control
- Power System Protection
- Power Transmission and Distribution
- Smart Grid
- Engineering Electromagnetic
- Energy Conversion
- Nuclear Power Engineering
- High Voltage Engineering
- Digital Electronics
- Microprocessors and Embedded Systems
- Power Electronics
- Electrical Circuits
- Electronic Circuit

RESEARCH EXPERIENCE

Hierarchical Learning of Power Quality Disturbance Using Convolutional Neural Networks and Gated Recurrent Unit (Undergraduate Thesis)

December 2023 – March 2025

Supervisor: ***Dr. Abdul Hasib Chowdhury***

– This work presents a deep learning-based approach for classifying various power quality disturbances using three-phase voltage signals. A synthetic dataset covering 19 disturbance types was generated and used to train CNN and GRU models. The results demonstrate effective classification performance, highlighting the potential of deep learning in real-time power quality monitoring and diagnosis.

P-Q Control of Photovoltaic Generators using LSTM based Load Forecasting *December 2023 – Ongoing*

– This work proposes an LSTM-based load forecasting method to enhance P-Q control of photovoltaic generators. By accurately predicting load demand, the system optimizes active and reactive power management, improving grid stability and maximizing solar energy utilization. The results highlight the effectiveness of deep learning techniques in advancing intelligent control of renewable energy systems.

INTERNSHIP

Korea University of Technology and Education (KOREATECH) *30 June, 2024-13 July, 2024*

- Visited KOREATECH under the training program "The Implementation of Training on Advance Technologies Relevant to Power Sector in KOREATECH". The project title was "Integrated Capacity Development Project in the Power Transmission System of Bangladesh" by Power Grid Company of Bangladesh Ltd (PGCB).

AWARDS & ACHIEVEMENT

- **University Stipend Scholarship –** Academic Honor by BUET – (3 out of 8 semesters) *2020-2025*
  Awarded to top-selected student for their overall performance during a semester.
- **University Merit Scholarship,** Academic Honor by BUET- (2 out of 8 semesters so far). *2020-2025*
  For being among the top 10 GPA holders every semester.
- **Dean's List Award,** Academic Honor by BUET – (2 out of 4 levels so far). *2021-2025*
  For being in the top 10% at every level.
- **Govt. Merit Scholarship**, Award by Ministry of Education, Bangladesh. *2017*
  In SSC Examination in Dinajpur Board, Bangladesh. **32th** position.

TECHNICAL SKILLS

- **Simulation Softwares:** Simulink, Proteus, PSpice, LTspice, PSAF, AutoCAD, Quartus.
- **Programming Languages:** C/C++, MATLAB, Python, Verilog, System Verilog.
- **Hardware Skills:** Arduino, STM32, FPGA.
- **Document Preparation:** Microsoft Office, Microsoft Excel.
- **Design Skill:** Adobe Photoshop, Adobe Illustrator.

LEADERSHIP AND ORGANIZATION ACTIVITIES

- **Class Representative**
  - ***Department of EEE, BUET – Level 4 (Term I & II)***
    Represented the class in academic and administrative matters, liaising between students and faculty.
- **IEEE BUET Student Branch**
  - ***Social Media Coordinator | 2022 – 2023***
    Managed the branch's online presence and engagement through strategic content planning.
  - ***Membership Development Executive | 2023 – 2024***
    Contributed to the growth of IEEE BUET SB by leading recruitment and member engagement activities.
- **IEEE Power & Energy Society, BUET Student Branch Chapter**
  - ***Publicity Coordinator | 2023 – 2024***
    Promoted events and initiatives across digital platforms, improving visibility and outreach.
  - ***Chairperson | 2024 – 2025***
    Leading the chapter's operations, events, and collaborations; fostering professional development in the field of power and energy.

TEACHING SKILLS

- **Instructor (Physics Department)**
  Udvash Academic & Admission Care 2024 – Present

  - Conducted academic and admission preparation classes for high school and college-level students.
  - Designed and delivered structured lessons in Physics, focusing on concept-building and problem-solving skills.

NOTABLE PROJECTS

- ***IoT Based Water Quality Monitoring System*** *2024*
  Our project is designed to continuously track and report key water parameters in real-time using sensors and cloud integration, ensuring safe and efficient water management.. [GitHub]
- ***P-Q Control of Photovoltaic Generators using LSTM based Load Forecasting*** *2024*
  This work is about designing a microgrid power system where real and reactive power have been controlled of the photovoltaic generators tied with the BUET power plant generators. [GitHub]
- ***Electrical Services Design of a 5 Storied, 2 Unit Residential Building*** *2024*
  This project focused on a precise electrical plan and design of a ten-story residential building using AutoCAD. Electrical design is carried out following BNBC codes. [GitHub]
- ***Self Balancing Robot*** *2023*
  This work aims to build a two-wheel robot that can balance itself and move without falling applying the PID algorithm. A Gyroscope senses acceleration, position, and Arduino control the wheels. [GitHub]
- ***Smart Car Parking System*** *2023*
  This work demonstrates an automated car parking system of 8 parking slots using logic gates. Real-time availability of slots is shown and entry of cars is blocked when all slots are occupied. [GitHub]
- ***Solar DC to AC Inverter*** *2023*
  Solar panel charges a battery that feed an inverter to convert to AC voltage which is stepped up using a transformer to run loads. [GitHub]
- ***Load Flow Analysis of a 9 Bus System Using Newton Raphson Method*** *2023*
  This project focuses on applying Newton Raphson method to do load flow analysis using MATLAB and PSAF and compare the results. [GitHub]
- ***Digital Thermometer Using OP-AMP and Bipolar Transistor*** *2022*
  This is a simulation-based project in PSPice where we have simulated a thermometer using operational amplifier and bipolar transistor which uses output voltage proportional to the temperature. [GitHub].
- ***Plain Text Steganography.*** *2022*
  This is a MATLAB-based project that hides secret messages within plain text using steganographic techniques and later retrieves the hidden data without altering the readability of the original text. [GitHub]

REFERENCES

Dr. Abdul Hasib Chowdhury
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Dr. Quazi Deen Mohd Khosru
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Relationship: *Academic Advisor*