Ashique Anan Abir

Arunapalli, Jahangirnagar University, Savar, Dhaka-1342

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Education

Jahangirnagar University
Savar, Dhaka-1342, Bangladesh

Master of Science in Computer Science — **Sep. 2026**

Courses: Data Structures and Algorithms, Programming Languages, Computer Architecture and Operating Systems, Data Communication and Computer Networks, Software Engineering and Database Systems, Digital Image Processing, Computer Vision, Internet-of-Things and Sensor Networks, Artificial Intelligence and Expert Systems, Computational Intelligence, Machine Learning, Deep Learning

Cumulative Grade Point Average: 3.86 / 4.00

University of Asia Pacific
74/A Green Road, Dhaka 1215

Bachelor of Science in Electrical and Electronics Engineering — **2018**

Major Courses: Electrical Circuits I, Electrical Circuits II, Electronic Circuits I, Electrical Machines I, Electronic Circuits II, Electrical Machines II, Digital Electronics, Electrical Design and Drafting Sessional, Power System Analysis I, Signals and Linear Systems, Electromagnetic Fields and Waves, Electrical Engineering Materials, Communication Engineering Fundamentals, Digital Signal Processing I, Microprocessor and Interfacing, Control Systems I, Energy Conversion and Special Machines, Power Station Engineering, VLSI Design I, Numerical Methods, Solid State Devices, Computer Networking, Opto-electronics, Power Electronics.

Minor Courses: Differential and Integral Calculus, Physics I, Physics II, Differential Equations and Matrix, Computer Programming, Coordinate Geometry and Vector Analysis, Fundamentals of Mechanical Engineering, Transformations and Partial Differential Equation, Probability and Statistics; Complex Variable and Harmonics, Industrial and Operational Management.

Cumulative Grade Point Average: 3.60 / 4.00

Research Publications

1. **A. Anan**, T. K. Chakraborty and K. Sultan Mahmood, "*A Single-Phase Cascaded H-Bridge Multilevel Inverter with Reduced Switching Devices and Harmonics,*" 2018 IEEE International Conference on Smart Energy Grid Engineering (SEGE), Oshawa, ON, Canada, 2018, pp. 222-225, doi: 10.1109/SEGE.2018.8499512
2. T. K. Chakraborty, **A. Anan**, S. H. Rakib, M. I. Prodhan, M. M. Kamal and M. Mahabubunnabi, "*Generation of 13-Level Output Voltage from Single-Phase Multilevel Inverter Consisting of Cascaded Three H-Bridge Units,*" 2018 2nd IEEE International Conference on Power Electronics, Intelligent Control and Energy Systems (ICPEICES), Delhi, India, 2018, pp. 361-364, doi: 10.1109/ICPEICES.2018.8897441

3. T. K. Chakraborty, **A. Anan** and S. H. Rakib, "*Experimental Investigation on Single-Phase Multilevel Inverter for Generating 21-Level Output Voltage Using Four H-Bridge Units,*" 2018 IEEE 4th Southern Power Electronics Conference (SPEC), Singapore, 2018, pp. 1-4, doi: 10.1109/SPEC.2018.8635831
4. **A. A. Abir**, M. M. Kamal, M. I. Prodhan and T. K. Chakraborty, "*Experimental and Simulation Study of Harmonics in Asymmetric Multilevel Inverter Fabricated Using Four Units,*" 2022 6th International Conference on Green Energy and Applications (ICGEA), Singapore, Singapore, 2022, pp. 167-170, doi: 10.1109/ICGEA54406.2022.9792023
5. **A. A. Abir**, T. Kumar Chakraborty and K. S. Mahmood, *"An Experimental Study of Cascaded H-Bridge Multilevel Inverter for Obtaining Multiple Voltage Waveforms Containing Different Number of Levels,*" 2019 IEEE 10th International Symposium on Power Electronics for Distributed Generation Systems (PEDG), Xi'an, China, 2019, pp. 1015-1018, doi: 10.1109/PEDG.2019.8807600

Research Projects

I. Experiment on Multilevel Inverter

Design and development of microcontroller based multilevel inverter and obtaining several levels of multileveled sinusoidal wave along with improving its performance**.**

II. High-Voltage Arbitrary Waveform Generator (AWG)

Designed and implemented a high-voltage arbitrary waveform generator for producing configurable complex bipolar power signals. Led end-to-end development including system design, hardware prototyping, PCB design, embedded control implementation, integration, and experimental validation. Full details available in portfolio.

III. Cost-Efficient Computer Vision Edge Node for Vehicle Speed Monitoring

Designed and implemented a low-cost, infrastructure-free vehicle speed monitoring system combining ESP32-CAM firmware and GPU-accelerated Android inference. Developed end-to-end across embedded C firmware, real-time computer vision, multi-object tracking, perspective-corrected speed measurement, and a full Android application with live calibration UI. System operates fully standalone or offloads to the phone's GPU/NPU pipeline over a self-hosted Wi-Fi hotspot — no router, cloud, or external hardware required. Working demonstration available at EdgeCV VehicleSpeed Showcase.

Work Experience

- **Data Analyst** – Digital Marketing ——— **Nov. 2024 – Jul. 2026**

  Education Legacy Limited

  Currently responsible for analyzing large datasets to inform business strategies and identify market trends. This role requires utilizing machine learning techniques to enhance data analysis processes, collaborating with teams to support data-driven decision-making, and contributing to the continuous improvement of analytical methodologies.

- **Research Assistant** – Research & Development ——— **Sep. 2022 – Jul. 2023**

  Giga Tech Limited, BEXIMCO Group

  Worked on the development and testing of backend embedded systems for a prototype mechanical ventilator, utilizing a TM4C Texas Instruments microcontroller. Demonstrated strong problem-solving abilities by regularly tackling complex project-related issues. Conducted comprehensive testing of components and sensors to ensure optimal

performance. Enhanced team communication and efficiency by contributing to the documentation of workflow processes.

- **Operations & Maintenance Engineer** – Operation & Maintenance——————— **Sep. 2018 – Aug. 2019**

  United Mymensingh Power Limited & United Jamalpur Power Limited, 315MW Combined, (UMPL & UJPL), United Group

  Commissioned and monitored multiple boilers and turbines using the SCADA system, while conducting regular inspections of all boiler and turbine areas. Operated a range of systems and equipment, managed shift manpower, work systems, and safety protocols. Responded to emergency situations and performed tasks assigned by supervisors. Handled the operation and synchronization of turbines, maintained daily reports and documentation for assigned shifts, and operated safety devices during incidents.

Award and Accomplishments

I received the **Dean's Award** for outstanding performance three times during my Bachelor's studies.

Skills

Programming Languages	: C/C++, Assembly, Python (Scikit-learn, NumPy, Matplotlib, Pandas)
Software	: MATLAB, Simulink, Multisim, Proteus (schematic capture and PCB design)
AI & LLM	: Agentic AI workflow design, local & cloud-based LLM deployment