

NAHID AHMED SHIHAB

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EXPERIENCES

Ulkasemi Pvt. Limited

Assistant Engineer (IC Physical Design), Full-time

Dhaka, Bangladesh

Jan 2026 – Present

- Worked with 180nm, 90nm, 5nm architecture.
- RTL to GDSII

Samsung R&D Institute Bangladesh (SRBD), SAMSUNG Electronics

Innovation Engineer (R&D Operations)-Intern, Samsung Research. (Full-time)

Dhaka, Bangladesh

April 2025 – December 2025

- Prepared and managed detailed technical briefs, managed PLM (project life-cycle management), market research report and latest tech evaluations to guide R&D teams on innovation opportunities and hardware.
- Conducted patent and prior art analysis on software and hardware architectures to support innovation-driven research and IP strategy.
- Evaluated the novelty, feasibility, and design scalability of emerging technologies in AI solutions aligned with Samsung's product roadmap.
- Contributed to the development of invention disclosures and design documentation for next-generation AI/ML hardware and imaging SoCs.
- Supported and facilitated technical workshops, project management and cross-functional sessions on trends, hardware design methodologies, AI, ML, Camera and IP development best practices.

Vendy Limited

Electronics Engineer(R&D), Initially Part time later Full-time (Hybrid)

Dhaka, Bangladesh

March 2024 – March 2025

- Managed Cross team (R&D, Hardware, Software) and facilitated collaboration between technical team – logistics.
- Designed and implemented embedded control and low power circuits for automation systems, integrating ESP-based microcontrollers, sensors, and actuators for real-time deterministic control.
- Developed and debugged firmware for custom hardware modules, designing DC-DC power module, AC-DC conversion module, optimizing timing synchronization, signal integrity, and bus communication reliability (UART, SPI, I2C).
- Created multi-layer PCB layouts in Altium Designer and KiCad, applying best practices in grounding, decoupling, and power plane routing to minimize EMI and ensure analog/digital domain isolation.
- Performed circuit-level verification and transient analysis using PowerEsim, LTspice, and Proteus, validating converter efficiency, load response, and voltage stability prior to fabrication.
- Automated hardware testing and validation workflows using n8n, Shell scripting, and custom logging utilities for regression testing, data acquisition, and fault traceability, reducing QA cycle time.
- Integrated RFID/NFC-based identification subsystems with an embedded SQLite3 database, enabling secure offline data handling, rapid transaction response, and system fault resilience.
- Collaborated with firmware and mechanical teams to optimize power sequencing, thermal layout, and component reliability for long-term field operation.

Student Tutor, Department of EEE

BARC University

Dhaka, Bangladesh

May 2024 – Sept 2024

- Instructed students on Printed Circuit Board (PCB) design using Altium Designer, emphasizing schematic capture, layout optimization, power-thermal management, project management and design-for-manufacturability (DFM).
- Taught numerical methods, power circuit design, and system simulation using MATLAB/Simulink, along with Python-based automation and machine learning fundamentals for data-driven hardware modeling.

ZEROOZEN Energy Limited (Full-stack energy company)

Dhaka, Bangladesh

Electrical Integration Engineer(R&D), Intern

Oct 2023 – Jan 2024

- Designed and developed analog, digital, and power circuit boards using Altium Designer, KiCad, and EasyEDA, optimizing PCB stack-up for low EMI, signal integrity, DC-DC power module and thermal stability.
- Implemented and debugged firmware for energy and EV charging controllers, integrating telemetry, power sensing, and protection circuits with real-time monitoring and feedback control.
- Utilized PowerEsim, LTspice, and Proteus for pre-layout simulation, efficiency validation, and transient analysis of converter topologies and power delivery networks.
- Conducted system-level validation and calibration of power electronics modules, performing performance characterization, correlation of simulation vs hardware data, and documenting all test procedures and findings.
- Collaborated with mechanical and embedded teams to refine power distribution, grounding strategy, and component thermal management for production reliability.

EDUCATION

BRAC University

M.Sc. in Electrical and Electronic Engineering

Dhaka, Bangladesh

September 2026

BRAC University

B.Sc. in Electrical and Electronic Engineering

Dhaka, Bangladesh

October 2024

Relevant Coursework: Research, Innovation, Power systems, Power electronics, robotics, machine learning, AI algorithms, VLSI, Energy conversion, Embedded Systems, Power Electronics, Signal Processing, Machine Learning

Aspire Institute Inc. & Harvard Business School

Aspire Leaders Program (ALP'24), Cohort-01

Massachusetts, US

Jan 2024 - Apr 2024

Fully funded professional and leadership development program(remote)

CORE TECHNICAL SKILLS

- **Circuit Design & Validation:** Transistor-level simulation (SPICE, LTspice, PowerEsim), Timing closure, Interconnect design, Power & thermal validation, Root cause analysis, Failure documentation, Design-for-Test (DFT), Platform validation, Signal integrity optimization.
- **Hardware:** PCB design (Altium, KiCad, EasyEDA), schematic capture, multi-layer layout, hardware troubleshooting
- **Embedded & Firmware:** ESP32/Raspberry pi/Atmega/PIC, Embedded C, firmware debugging, UART/SPI/I2C communication, Hardware-in-the-loop (HIL) testing.
- **Software & Tools:** Cadence Virtuoso, Innovus, MATLAB/Simulink, ROS, Gazebo, Proteus, SQLite3, n8n, TensorFlow, OpenCV, Fusion 360, AutoCAD.
- **Programming:** C, C++, Python, HTML/CSS, Verilog(basic), Shell/Bash.
- **Engineering & Validation:** Root cause analysis, sustaining engineering, platform validation, test plan design, oscilloscope debugging, Project Lifecycle Management, failure documentation, power & thermal testing.

RESEARCH/INNOVATION PROJECTS

1. Nano-Satellite Training Kit – DIPTO [Project Lead]

Sep 2023 - Present

- Led the end-to-end design and development of the nano-satellite training kit, covering power distribution, control, and telemetry circuit design from concept to prototype validation.
- Designed and implemented embedded hardware and firmware for onboard sensing, data acquisition, and digipeater communication, ensuring system reliability under constrained power and thermal conditions.
- Developed custom PCBs for satellite subsystems (power regulation, RF communication, and sensor integration) using Altium Designer and verified functionality through Proteus and LTspice simulations.

- Performed hardware validation, calibration, and EMI analysis, ensuring accurate signal transmission and system-level stability in simulated orbital conditions.
 - **Grant Winner of Sheikh Jamal Innovation Grant 2024, Organized by ICT Division and iDEA.**
 - **Seed Fund Winner of University Innovation Hub, Cohort -1, Organized by ICT Ministry, World Bank, Bangladesh Hi-Tech Park Authority.**
2. **BRACU Duburi – Underwater Autonomous Vehicle (UAV)** Sep 2020 - Dec 2023
 - Contributed as a Senior Member of the Electronics and Mechanical sub-team for BRACU Duburi, Bangladesh's first underwater autonomous vehicle.
 - Designed and validated waterproof power distribution and control circuits, integrating motor drivers, sensor arrays, and embedded controllers for submersible operation.
 - Developed and debugged communication and signal conditioning modules to maintain stability under high-pressure, high-noise environments.
 - Collaborated on real-time machine vision integration using object detection, streaming camera feeds into Unreal Engine 5 for navigation visualization and mission planning.
 - **Achieved Runner-up position at RoboSub 2023, California, USA, recognized for innovation in embedded control and marine robotics.**
 3. **UAV & UGV, A project under LaSSET (Laboratory of Space System Engineering & Technology), BRAC University [Sub-Lead of electronics and sensory/circuit integration]** Jan 2023 - Present
 - Oversaw the electronics and sensor architecture of long-range autonomous aerial and ground vehicles, balancing hardware precision with real-time control requirements.
 - Designed custom interface and regulation boards for power, sensor fusion, and communication subsystems, improving endurance and fault tolerance.
 - Integrated multiple sensors (IMU, GPS, LiDAR, and encoders) with microcontrollers to achieve stable navigation and adaptive feedback control.
 - Diagnosed signal distortion, power fluctuation, and noise coupling issues using oscilloscopes and simulation tools, enhancing overall system robustness.
 - Partnered with software and mechanical teams to refine flight control performance, hardware layout, and on-field test validation.
 4. **3D Level Design, Unreal engine 5 & Unity**
 - Designed and developed 3D environments and cinematic levels using Unreal Engine 5 and Unity, focusing on realistic lighting, physics, and asset optimization for GPU performance.
 - Created interactive AR/VR-ready scenes integrating sensor inputs and real-time rendering to simulate immersive environments.
 - Experimented with shader programming, material nodes, and performance profiling to understand GPU-based rendering pipelines and system bottlenecks.
 5. **ROBOTIC ARM (3DoF)** Jan 2021 – Sep 2021
 - Independently designed and developed a 3-DoF robotic arm featuring gesture-controlled actuation for real-time motion automation.
 - Designed and fabricated the motor driver and control circuits, integrating sensors and actuators with microcontroller-based feedback loops.
 - Implemented forward kinematics algorithms and embedded control firmware to achieve smooth, precise movement across all joints.
 - Performed signal calibration, power optimization, and response validation, ensuring consistent accuracy and low-latency operation across multiple test conditions.

RESEARCH PUBLICATIONS

1. **A Low-Cost Satellite Kit to Bridge the Educational and Technological Gap in Developing Countries** [IAC-25 Congress, International Astronautical Federation (IAF), 2025]
2. **Efficiency Analysis of LLC Resonant Converter with 7kW & 10kW Loads for 3-Phase Distribution Using Transient, Power, and Monte Carlo Methods: Simulation-Based Approach**, 13th ICECE, 18th Dec 2024.
3. **Catalyzing Space Technology Development in Bangladesh: A Space System Engineering Training Initiative**, IAF, IAC-24, 31st IAA Symposium on Small Satellite Missions.
4. **Transformation and Future Trends of Smart Grid Using Machine Learning and Deep Learning**, International Journal of Applied Power Engineering (IJAPE), Indexed in Scopus and Elsevier, Vol. 13, No. 3. September 2024
5. **Sizing an Off-Grid Photovoltaic System for a Regular East African Residence**, 6th EICT'23, IEEE Explore, November 2023.

THESIS/FYDP (Final year Design Project)

1. **Meat Quality Grading and Contamination Identification to Avoid Foodborne Infection and Food Quality Control. [Undergraduate Thesis. Awarded position 2nd amongst 25 FYDP projects]**
 - Developed a smart meat quality grading and contamination detection system using IoT sensors and machine learning algorithms.
 - Embedded C programmed microcontroller for data processing and communication between sensors and the web interface.
 - Applied machine learning (DensNet121, TensorFlow, CNN) to classify meat quality and contamination levels, enhancing food safety and quality control.
 - Designed and automated a vacuum chamber, ensuring precise environmental control for accurate testing results.

AWARDS & EXTRA CURRICULAR

- **Awards:** Pre-Seed Fund Winner (University Innovation Hub, ICT Division & World Bank, 2024); 5th Position: Sheikh Jamal Innovation Grant 2024 (Team DIPTO); VC's Recognition Award for extraordinary volunteering work.
- **Leadership:** Project Lead - DIPTO Nano-Satellite Training Kit; Sub-lead (Electronics & Power) - LaSSET; Senior member-BRACU Duburi AUV Team.
- **Clubs & Activities:** Team Lead-LaSSET; Secretary, Robotics Club of BRAC University (ROBU); Director & Assistant Director, BRACU EEE Club; Taekwondo athlete - Bangladesh Taekwondo Federation (Black Belt 2nd DAN).

ADDITIONAL

- **Workshops / Training:** Arduino and Embedded Systems Programming, Python for Data Analysis & IoT Applications, Machine Vision & OpenCV Fundamentals, Isaac Sim, PCB Design & Signal Integrity Essentials, AWS Cloud Practitioner Essentials, MATLAB & Simulink for Control Systems, Robotics & Autonomous Systems, Git & Version Control Best Practices, Project Management Fundamentals
- **Language: IELTS (7.0)**