Simul Ahmed

Embedded Hardware Engineer

+880 1864072136 | simulahmed003@gmail.com | Khulna, Bangladesh
Portfolio: simul-ahmed.vercel.app | LinkedIn: simulahmed003 | GitHub: simulahmed003 | Credly: simul-ahmed

SUMMARY

Embedded hardware engineer focused on PCB design in Altium Designer, from schematic to fabrication release. Hardware in the field: an Automatic Transfer Switch with 2,000+ units deployed. Client work: a four-board industrial edge system with isolated interfaces. Final-year B.Sc. student at KUET, graduating December 2027.

CORE SKILLS

PCB design	Altium Designer (certified), KiCad, EasyEDA; schematic capture, double-sided layout, multi-board assemblies, isolated and mixed-signal layout
Design for manufacture	Gerber, BOM and pick-and-place release; LCSC / JLCPCB sourcing; local fabrication and assembly constraints
Embedded	STM32, ESP32, ATmega (AVR); C / C++; MQTT, Bluetooth; firmware-aware layout
Prototyping	CNC PCB milling to 0.15 mm, chemical etching, 3D printing; FlatCAM, custom G-code
Analysis and tools	Proteus, MATLAB / Simulink, system identification, PID design; SolidWorks; Python

PROFESSIONAL EXPERIENCE

Caretron — Embedded System Engineer | Dhaka (Hybrid) *Aug 2025 – Present*

- Product: Kairon, a digital medication reminder released in Digital and Smart IoT variants.
- Member of the development team, contributing to R&D, design and inspection in Altium Designer and SolidWorks.
  Details and images: simul-ahmed.vercel.app/projects/kairon

FabLab KUET — Student Operator | Khulna *Jul 2026 – Present*

- Run day-to-day lab operations, maintain equipment and support student projects.
- Lead hands-on workshops and training sessions on PCB design and fabrication.

Transform AI — PCB Designer (Contract) | Khulna *May 2026 – Aug 2026*

- Product: EDGE NODE, a four-board stacked edge-computing assembly (main controller, power, relay interface, SBC carrier).
- Designed all four boards with outlines, connectors and mounting verified together in 3D.
- Designed isolated Modbus, isolated RS232 and user-access boards; released the RS232 board with Gerber, BOM and pick-and-place outputs.
- Wrote a power study comparing regulator ICs and direct battery powering for an IP camera system.
  Details and images: simul-ahmed.vercel.app/projects/transform-ai-edge-node

AuraXIoT — Junior Embedded System Engineer | Dhaka *Apr 2025 – Jan 2026*

- Product: Automatic Transfer Switch for mains-to-IPS switching up to ~200 W; 2,000+ units deployed.
- Designed the full schematic and double-sided production PCB; contributed to enclosure and BOM.
- Solved instability during grid restoration and protected the IPS charging system during load transfer.
- Designed for local fabrication, assembly tolerances and injection-molded enclosures; supported production testing and pre-delivery validation.
  Details and images: simul-ahmed.vercel.app/projects/ats-power-control

SELECTED HARDWARE PROJECTS

Line-Following Robot: System Identification and PID | STM32F411, MATLAB, Altium *Sep 2024 – Apr 2026*

- Design: custom STM32F411 controller board milled in-house; 16-sensor IR array board with analog and digital sections separated.
- Result: identified a second-order discrete-time plant model from Bluetooth telemetry (56.1% fit); model-based PID held overshoot under 5% on hardware.
  simul-ahmed.vercel.app/projects/line-following-robot

Cirqoid CNC Mill: Restoration and Controller Redesign | GRBL, stepper drivers *Oct 2024 – Present*

- Restored an unsupported PCB mill with a custom G-code workflow; reached consistent 0.15 mm trace and clearance.
- Designing a replacement GRBL controller (four stepper drivers, limit switches, isolation); reverse-engineered the BLDC spindle driver; first prototype built.
  simul-ahmed.vercel.app/projects/cirqoid-cnc

IoT Water Temperature Controller | ESP32, Altium *Jan 2025 – Feb 2025*

- ESP32 heater controller with relay output and on-board 12 V to 5 V regulation, taken from a module-based prototype to an integrated double-sided board.
  simul-ahmed.vercel.app/projects/iot-water-temperature-controller

BCD Digital Clock | 74HC logic, Altium, Proteus *Jun 2025 – Jul 2025*

- HH:MM:SS clock built only from 74HC BCD counters and logic gates, with no microcontroller; verified in Proteus and laid out in Altium.
  simul-ahmed.vercel.app/projects/bcd-digital-clock

EARLIER ROLES

FabLab KUET, Equipment Restoration Contributor (Cirqoid CNC PCB mill) *Oct 2024 – Feb 2025*
Firefly High Tech, Project Trainee; supported 30+ student embedded projects *Aug 2023 – Oct 2025*
Dept. of Energy Science and Engineering, KUET, Volunteer Research Contributor (geothermal test setup) *Jan 2024 – Oct 2024*

EDUCATION

Khulna University of Engineering & Technology (KUET), B.Sc. Engineering, Energy Science and Engineering *2023 – Dec 2027 (expected)*
Thesis (ongoing): experimental comparison of P&O and Incremental Conductance MPPT on a custom PV battery charger.
Police Lines School and College, Kushtia, HSC, Science *2019 – 2022*

CERTIFICATIONS AND TRAINING

Altium badges: Skilled Engineer, Emerging Engineer *Jul – Oct 2026*
Altium certificates: Designer Essentials; Basic Embedded Systems Design; Workspace User Management *Jul – Oct 2026*
SARBS Communication Ltd.: industrial attachments in product-level PCB design and in PCB fabrication *Oct 2024, Feb – Mar 2025*
Orion Power Rupsha Ltd.: industrial attachment, power plant operations *Nov – Dec 2025*

AWARDS

2nd Place (international), Mars Autonomous Rover Rally Design Competition, Team Durbar, KUET *Dec 2025*
Top 10 Finalist, VLSITHON 3.0, national chip-design competition by Ulkasemi *Sep 2026*
Bangladesh Physics Olympiad, regional 7th (2019) and 9th (2018), national round participant *2018, 2019*

REFERENCES

Dr. Md. Hasan Ali, Professor, Dept. of Energy Science and Engineering, KUET
Contact details available on request.

Omar Faruk Badhon, Embedded Systems Engineer, SARBS