

IRFAN MOHAMMED CHOWDHURY

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EDUCATION

Stony Brook University - B.E. Electrical Engineering, Circuits and VLSI Specialization Expected May 2027

Honors: Dean's List | **Current:** Advanced VLSI Systems Design, Senior Design I, Electromagnetic Waves & Transmission Lines, Communication Systems, Fundamentals of Engineering Chemistry

Completed: Analog Integrated Circuits, Integrated Electronics, Semiconductor Devices, Microelectronic Circuits, Advanced Electronics Lab, Modern PCB Design & Prototyping, Embedded Systems Design I, Digital Logic Design, Electrical Circuit Analysis, Control System Design, Deterministic & Random Signals & Systems, Advanced Programming & Data Structures

TECHNICAL SKILLS

IC Design / EDA: Cadence Virtuoso, Spectre, PSpice/OrCAD Capture, LTspice; gm/Id sizing, transistor-level CMOS design, AC/transient analysis, GBW, phase margin, CMRR, slew rate

PCB / Hardware: Altium Designer, KiCad, schematic capture, 2-layer PCB layout, **PCB bring-up**, oscilloscope/DMM testing, 0805/SOIC soldering, Fusion 360

Embedded / Programming: C++, C, AVR assembly, MATLAB, Git; OOP, custom data structures, dynamic memory, USART, ADC, timers, register-level programming

Systems Engineering: Low-voltage architecture, ECU/sensor integration, wiring harnesses, power distribution/protection, grounding/noise mitigation, BOM analysis, bench testing

SELECTED TECHNICAL PROJECTS

Analog Integrated Circuit Design Projects

Spring 2026

Relevant skills: PSpice/OrCAD Capture, gm/Id methodology, frequency compensation, AC/transient analysis

- Designed and simulated in PSpice/OrCAD Capture: transistor-level MOSFET models, PMOS differential stages, current-mirror-loaded gain stages, a two-stage compensated op amp, and a unity-gain-stable folded-cascode op amp.
- Applied gm/Id sizing, bias allocation, and Miller compensation; measured DC operating points, GBW, phase margin, CMRR, slew rate, and buffer overshoot. Earned near-perfect evaluation across four simulations and the final project.

CMOS Integrated Electronics Design Projects

Spring 2026

Relevant skills: Cadence Virtuoso, Spectre, CMOS logic, logical effort, transistor sizing, timing analysis

- Designed CMOS inverter chains, an 8-bit row decoder driving 256 wordlines, transmission-gate latches, edge-triggered registers, and XOR datapaths.
- Applied logical effort and transistor sizing to optimize delay; verified propagation delay, clock-to-Q, setup time, and minimum clock period. Earned 100% on all three deliverables.

StockSim: Historical Market Analyzer and Trading Strategy Simulator

Spring 2026

Relevant skills: C++, OOP, custom data structures, algorithms, CSV parsing

- Co-developed a modular C++ simulator using 2000-2020 SPX, AMZN, and NVDA data; implemented portfolio operations and backtests for Fixed SIP, Dynamic SIP, Golden Cross, and Momentum strategies.
- Engineered linked lists with iterators, circular queues, order queues/stacks, binary search trees, templates, polymorphic strategy classes, CSV parsing, and dynamic-memory management without STL container shortcuts.

Portable High-Fidelity Microphone Amplifier PCB

Fall 2025

Relevant skills: Altium Designer, PCB layout and bring-up, soldering, oscilloscope testing, Fusion 360

- Designed and built one of the few fully functioning in-class two-layer OPA1652 microphone-amplifier prototypes with 3.5 mm output, potentiometer control, 9 V power, and a portable form factor.
- Created the schematic and layout, assembled and hand-soldered 0805/SOIC components, validated audio through oscilloscope and listening tests, and designed a production-minded Fusion 360 enclosure.

ENGINEERING EXPERIENCE

Handshake - Contract AI Trainer

Feb. 2026 - Present

- Support AI model-evaluation and data-quality work by applying careful technical reasoning and clear written feedback to assigned training tasks.
- Review tasks for correctness, completeness, and instruction adherence; document actionable feedback for model improvement.

SBU Red Racing - Founding Electrical Systems Member (Formula SAE)

Aug. 2025 - Present

- Help build Stony Brook's inaugural Formula SAE electrical program, shaping low-voltage architecture, safety, sourcing, and vehicle-integration decisions with faculty and a cross-functional team.
- Researched, selected, procured, and bench-tested low-voltage and engine-management components while balancing technical requirements, redundancy, lead time, availability, and budget.
- Develop system concepts for ECU/sensor integration, wiring harnesses, power distribution, grounding/noise control, and brake/fault-triggered shutdown behavior; contributed component-market data and cost estimates to the vehicle BOM.

Abul Khair Steel (Abul Khair Group) - Industrial Engineering Intern

Jul. 2022 - Sep. 2023

Chattogram, Bangladesh | On-site

- Shadowed logistics and management teams across steel operations, observing foreign raw-material sourcing against quality, quantity, budget, and production requirements.
- Studied end-to-end rebar and corrugated-steel operations, including burner and furnace systems, energy management, waste handling, machinery setup, production flow, sales, and distribution.
- Engaged with plant personnel and international technical staff to understand equipment setup, operating constraints, and process, environmental, and economic tradeoffs in large-scale manufacturing.