SAPTARSHI BANERJEE

Email: saptarshi.bnj@gmail.com

LinkedIn: www.linkedin.com/in/saptarshi-banerjee-012b13285

GitHub: https://github.com/RealHAPPY4

Mobile: +91 6291693915

EDUCATION

Institute of Engineering and Management West Bengal, India
Electronics and Communication Engineering; GPA: 8.26 **September 2022 – July 2026**

SKILLS SUMMARY

- **Robotics, Industrial Automation & Embedded/IoT Systems:** PLC Programming, Sensor–Actuator Systems, PID Control, SCADA (Basics), Industrial Tool Handling, Automation & Motion Control, **IoT Systems, Microcontroller Programming (Arduino/MCU), Embedded Systems**, Drone Analytics.
- **EDA & Simulation Tools:** MATLAB, Simulink (Basics), CST Studio Suite, Proteus, LTSpice, Circuit Simulation, PCB Design (Proteus).
- **FPGA & Prototyping:** Vivado, Quartus, RTL Basics, FPGA Prototyping, Debugging, Collaborative Chip Design Workflows.
- **3D Design & Modeling:** Fusion 360, Blender, Electromechanical Design Concepts, 3D EM/MPM Simulation Understanding.
- **Programming & Core Strengths:** Python, Core Java (Basics), MySQL (Basics), Multidisciplinary Collaboration, Decision-Making, Rapid prototyping.

WORK EXPERIENCE

Intern — Kolkata Metro Railway, Telecom & Signaling Department *June 2025 – July 2025*

- Worked on metro signaling and telecommunication systems, studying relays, gears, and key components while understanding their coordination in large-scale railway control.
- Gained practical exposure to real-time fault detection, system reliability, and operational behavior across interconnected subsystems.

Intern — Jadavpur University, VLSI/EDA Design Lab *May 2024 – June 2024*

- Created reusable FPGA/VLSI libraries and strengthened skills in circuit design, EDA workflows, and collaborative chip-design practices.
- Improved productivity in design, simulation, and debugging by working with FPGA tools, reusable modules, and structured verification flows.

PROJECTS

Solenoid-Powered V8 Engine: Electromechanical Simulation & 3D Visualization *Published at IEEE Xplore, 2025*

- Developed an electromechanical V8 engine model in Fusion 360 using solenoid actuation and multivibrator logic to simulate realistic piston–crankshaft dynamics. The work was presented and published in IEEE Xplore.

Ultra-Fast Settling & Low-Area Bit Synchronizer *2025 – Ongoing*

- Designed a high-speed Verilog-based bit synchronizer optimized for asynchronous clock domains, achieving reduced settling time and improved timing reliability on FPGA platforms**.**

AI-Driven ICU Emergency Protocols using MQTT *Published at IEEE Xplore, 2025*

- Built an edge-AI framework for generating patient-specific emergency response protocols, integrating MQTT for low-latency communication and real-time visualization. The methodology was published in IEEE Xplore.

3D EM/MPM Simulation for Medical Image Segmentation *Published at IEEE Xplore, 2025*

- Developed an FPGA-accelerated EM/MPM-based multi physics simulation framework integrated with MATLAB to enable accurate medical image segmentation, specifically targeting cancer cell detection through enhanced electromagnetic and material property modeling. The work was presented and published in IEEE Xplore.

Large Language Models in the Market: Financial Forecasting & Stock Interpretation *Published at IEEE Xplore, 2025*

- Conducted a comparative study on LLMs (ChatGPT, Claude, Grok, Outlook) for stock prediction and financial interpretation, evaluating accuracy, hallucination rate, and consistency across major Indian equities. The work was presented and published in IEEE Xplore.

CERTIFICATES

- **Robotics Engineering & Applications — L&T EduTech** | *September 2025*
  Credential ID: **BSJHL2POC93D**
  Robotic systems, sensors–actuators, motion control, and industrial automation fundamentals.
- **Sensors and Sensor Circuit Design — University of Colorado Boulder** | *September 2025*
  Credential ID: **L41LVWR81Y17**
  Sensor technologies, signal conditioning, and embedded sensor-interface circuit design.
- **VLSI Chip Design and Simulation with Electric VLSI EDA Tool — L&T EduTech** | *September 2025*
  Credential ID: **QUUD707VOUZ8**
  Digital VLSI design flow, schematic capture, simulation, and EDA-based chip design.
- **Cadence Design Systems: Essential Guide — Coursera** | *September 2025*
  Credential ID: **1WZOVT0M4PRS**
  Hands-on exposure to Cadence EDA tools and professional IC design workflows.
- **Interfacing with the Raspberry Pi — University of California, Irvine** | *October 2025*
  Credential ID: **CBQYWCVZC7AY**
  GPIO interfacing, hardware control, and embedded/IoT system integration.
- **Microsoft AI Product Manager — Microsoft** | *October 2025*
  Credential ID: **8S9XOVOLKWEJ**
  AI product lifecycle, requirement analysis, roadmap planning, and AI-driven decision systems.