AKSHIT SAXENA

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OBJECTIVE

M.Sc. Electronic Information Engineering student with extensive hands-on experience in Embedded systems and hardware integration. Proven expertise in C programming, Microcontroller programming (ESP32, NodeMCU etc.), Raspberry Pi and debugging embedded systems. Seeking a Senior Firmware Development Engineer position at Shimmer to leverage my technical skills in developing cutting-edge wearable wireless sensor solutions.

EDUCATION

Master of Science in Electronic Information Engineering (M.Sc. EIE) Sept 2025 – Sept 2026
Trinity College Dublin, Dublin, Ireland

- Relevant coursework: Integrated System Design (Pynq-Z2 FPGA), VLSI Design, Spatial Audio, Speech Technology, Deep Learning, Cyber-Physical Systems and Control, Computational Methods and Algorithms.

Bachelor of Technology in Electronics and Communications Engineering (B.Tech ECE) Aug 2021 – Aug 2025
Vellore Institute of Technology, Vellore, India CGPA: 9.05/10

ACADEMIC PROJECTS / WORKS

Integrated System Design on Pynq-Z2 FPGA – Trinity College Dublin Sept 2025 – Dec 2025
Course Work Lab: Integrated System Design

- Implemented a digital design flow on the Pynq-Z2 (Zynq) FPGA board, including RTL design of DUT modules in Verilog, synthesis and implementation using Xilinx Vivado.
- Developed and verified DUTs through structured lab assessments, writing testbenches, applying timing constraints and analysing post-implementation reports (utilisation, timing, power) to understand PPA trade-offs.

Drone-Assisted Tomato Ripeness and Farm Condition Monitoring with IoT Integration – VIT Vellore Dec 2024 – Apr 2025
Role: Electronics / ML — Team size: 2

- Combined YOLOv8-based inference with drone-based sensing and ground IoT data to implement a multi-sensor pipeline, similar to heterogeneous SoC blocks coordinated by common timing and control.
- Tuned compute and communication paths for real-time operation, balancing performance with power consumption and hardware resource limits.

Deep Learning Solution for Early-Stage Cancer Detection – VIT Vellore Aug 2024 – Dec 2024
Role: Machine Learning — Team size: 3

- Implemented CNN-based feature extraction (ResNet50, VGG16, DenseNet121) and ML classifiers (SVM, Random Forest, KNN) in Python to build a high-throughput image-processing pipeline aligned with NPU-style workloads.
- Applied data preprocessing, augmentation and class balancing to improve robustness, achieving an ensemble accuracy uplift to 80%, with focus on compute efficiency and model scalability for hardware acceleration.

An IoT and Deep Learning Solution for Optimizing Greenhouse Tomato Production – VIT Vellore Aug 2023 – Aug 2024
Role: Electronics / Cloud Integration — Team size: 5

- Designed an end-to-end sensing and processing pipeline using embedded controllers, sensors and cloud, exposing real-time constraints, clocking and power considerations similar to low-power SoC subsystems.
- Integrated ML-based predictive analytics with sensor data and dashboards, emphasising reliable data paths, noise resilience and system-level optimisation of latency and resource usage.

Communication Range Extension for Defence Applications – DRDO RCI, Hyderabad Aug 2023 – Nov 2023
Role: Electronics and Communication — Team size: 1

- Configured XBee modules and Zigbee mesh networks for long-range multi-hop communication, gaining experience with timing margins, noise and signal integrity at the system level.
- Integrated sensor for real-time monitoring and emergency communication.

Cardecue – Clowak Innovations LLP – Vellore Apr 2023 – Jul 2023
Role: Electronics and Coding — Team size: 3

- Built an IoT-based wallet access/management system using ESP32, RFID, keypad and LCD, practising structured design, interface timing and constraint-driven embedded development.

SKILLS

Programming: Python, C, Embedded C, Verilog, JAVA, R, Assembly (ASM), HTML
EDA / Software: Cadence Virtuoso, ModelSim, MATLAB, Vivado, LTspice, MultiSim, Arduino IDE, PyCharm, Eclipse, Keil uVision, TinkerCAD, XCTU, Excel, Word, Adobe Creatives
VLSI & Physical Design Exposure: Digital design using Verilog, basic RTL-to-netlist flow, timing constraints, low-power concepts, clocking and synchronisation, static analysis of paths and margins; familiar with standard physical design steps such as synthesis, floorplanning, placement, CTS, routing and STA from coursework and self-study
Embedded/Hardware: ESP32, NodeMCU, Arduino, Raspberry Pi, sensors, RFID, Zigbee, LoRaWAN, drone building and integration
Languages: Hindi (native), English (proficient)
Soft Skills: Leadership, time management, teamwork, problem-solving, debugging, communication and stakeholder management

INTERNSHIPS

ISL Summer Internship Technical Training Program – India Space Lab (Online) Jun 2025 – Jul 2025
- Completed technical training modules in advanced drone technology, small satellite systems, remote sensing and space systems, gaining understanding of high-reliability system requirements and fault tolerance.

Industrial Project Intern, DRDO-RCI – Hyderabad, India Aug 2023 – Nov 2023
- Developed communication solutions using Zigbee mesh configuration, focusing on link robustness, timing and reliability under constrained resources, analogous to signoff requirements in PD flows.
- Designed IoT system programs for data processing and display with secure, protocol-based communication; executed hardware testing and verification cycles similar to layout/functional signoff loops.

Electronics Intern, Clowak Innovations LLP – Vellore, India Apr 2023 – Jul 2023
- Developed IoT systems using ESP32, RFID and Firebase; implemented embedded C and verified system behaviour through iterative hardware testing.
- Worked in a small team to deliver reliable electronics under schedule and resource constraints, strengthening collaboration and communication skills relevant to physical design teams.

CERTIFICATIONS

High-Performance Coding (DSA using Java); Internet of Things Using LoRa; IoT Using Google Firebase (VIT-TBI); IoT Using ESP32 Rainmaker (VIT); Introduction to IoT and Embedded Systems (Coursera); Internet of Things (VAC1754).

CO-CURRICULAR / EXTRACURRICULAR

Class Representative (M.Sc. EIE, TCD) Sept 2025 – Present
- Elected class representative and member of the TCD Student Council, coordinating between students and faculty and representing academic and technical interests.

Team Rotor FPV – Core Member Apr 2023 – Apr 2025
- Built and flew high-performance drones; participated in national competitions (Techkriti IIT Kanpur, AeroTHON SAE), practising system integration, debugging and performance tuning under constraints.

ISA – VIT – Core Member Feb 2023 – Feb 2024
- Contributed to IoT initiatives and organised technical events such as "Energizing IoT".

VinnovateIT – Design Domain Member Dec 2021 – Dec 2023
- Organised the "VinHack" hackathon with 250+ participants and produced design/media content for the club.

ACHIEVEMENTS

- Published journal paper in *Nature Scientific Reports*: "Deep Learning-Driven IoT Solution for Smart Tomato Farming" (2025).
- Winner, International Space Drone Competition (ISDC) 2025, BITS Pilani, as part of Team RotorFPV.
- Runner-up, AeroRush 2025 drone competition at NIT Trichy.
- Semi-Finalist, AICTE ARM Inventors Challenge 2023 (Top 80 teams in India).
- Certificate of Merit, Hartmann College: 100% in Computer Science (10th), 99% in Computer Science (12th).