VAIBHAV JAGTAP

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PROFESSIONAL SUMMARY

B.E. Electronics & Telecommunication graduate (CGPA 8.58, 1st Rank in III Year) with hands-on experience in embedded systems, IoT, and microcontroller-based product development. Proficient in Python, Embedded C, and C/C++, with practical expertise across Raspberry Pi 4, Arduino, UART/I2C/SPI protocols, and cloud-connected IoT pipelines. Demonstrated ability to own full-stack hardware-software integration—from ML-based edge inference to real-time cloud data logging—through independent project leadership. Seeking an IoT or Embedded Systems Engineer role to contribute to product-grade hardware-software systems.

TECHNICAL SKILLS

Programming Languages: Python, Embedded C, C/C++, SQL
Communication Protocols: UART, I2C, SPI, GPIO, PWM, ADC, MQTT (basic)
Platforms & Hardware: Raspberry Pi 4, Arduino Nano/Uno, ESP32 , ARM Cortex-M microcontrollers (basic)
ML / Computer Vision: TensorFlow (ResNet50 transfer learning), OpenCV, NumPy, scikit-learn (basic)
Tools & IDEs: Git, MATLAB, JIRA, VS Code, Proteus, Multisim, Arduino IDE
Concepts: IoT system design, edge computing, sensor integration, real-time data logging, energy harvesting, interrupt-driven programming, circuit debugging, embedded firmware development

EXPERIENCE

Robotics Associate — Electronics & Coding *Jun 2025 – Present*
On My Own Technology Pvt Ltd, Pune, India

- Developed embedded system applications using Arduino and C/C++, implementing GPIO control, PWM motor driving, servo actuation, and real-time sensor interfacing (ultrasonic, IR, DHT11); trained 200+ students across multiple cohorts.
- Built hands-on lab projects with motor driver circuits (L298N) and servo control, giving students direct exposure to embedded systems workflows.
- Diagnosed and resolved hardware/firmware issues in microcontroller-based systems using systematic debugging, logic-probe verification, and signal-level analysis.
- Assisted in curriculum development and coordinated robotics workshops and technical events for 50+ participants.

Embedded Systems Intern *Aug 2023 – Oct 2023*
Emertxe Edutech Pvt Ltd, Pune, India

- Executed functional testing and debugging of microcontroller-based systems, identifying firmware-hardware mismatches via UART log analysis and logic probe verification.
- Reproduced and documented 10+ hardware/firmware defects with step-by-step troubleshooting procedures, standardizing fault isolation steps for the team.
- Supported embedded board bring-up: peripheral initialization, register-level configuration, and GPIO validation on ARM-based targets.

PROJECTS

Cloud-Enhanced IoT Smart Speed Breaker Control System *Oct 2024 – Apr 2025*
Python, Embedded C, OpenCV, TensorFlow (ResNet50), Raspberry Pi 4, Arduino Nano, UART, PWM, MQTT

- Architected a two-tier IoT pipeline: Raspberry Pi 4 running ResNet50-based vehicle classification via OpenCV, communicating with Arduino Nano over UART to trigger PWM servo actuation for dynamic speed breaker height adjustment.
- Achieved 97%+ vehicle classification accuracy (F1-score: 0.97) on a 500-sample validation set; end-to-end system latency under 1 second.
- Transmitted sensor telemetry to cloud over MQTT for real-time remote monitoring and data logging.
- Integrated piezoelectric sensors for passive energy harvesting, feeding harvested power into the battery management subsystem.
- Led a 4-member team across ML training, hardware integration, and cloud sync testing. **Winner, Avishkar Project Competition.**

Vibro-Volt: Piezoelectric Energy Harvesting System *Jan 2024*
Arduino Nano, PVDF Piezoelectric Sensors, BMS, Embedded C, Proteus Simulation

- Designed a vibrational energy harvesting system using PVDF elements with a full-wave rectifier bridge, converting mechanical vibration into usable DC energy.
- Implemented ADC-based battery charge monitoring with interrupt-driven state transitions for real-time charge/discharge control on Arduino Nano.
- Optimized energy capture by analyzing vibration frequency response in Proteus and tuning circuit parameters before hardware deployment, reducing rework iterations.
- Led a 3-member team; authored full technical report covering system architecture, performance data, and efficiency analysis.

EDUCATION

B.E., Electronics & Telecommunication *Jun 2025*
Savitribai Phule Pune University, Pune CGPA: 8.58
Relevant Coursework: Embedded Systems, Microprocessors & Microcontrollers, Internet of Things, Digital Signal Processing, Computer Networks, Control Systems, VLSI Design

Senior Secondary (XII) — Maharashtra State Board 81.50% — Feb 2021

Secondary (X) — Maharashtra State Board 80.40% — Mar 2019

POSITIONS OF RESPONSIBILITY

Technical President *Feb 2023*
NEON Student Organization, TCOER

- Organized and led technical competitions, quizzes, and workshops; coordinated 5+ events with 100+ aggregate participants.
- Managed event logistics, technical resources, and team coordination; analyzed participation data to improve event design.

Student Coordinator, TCOER Chapter *Feb 2024*
Institution of Electronics and Telecommunication Engineers (IETE)

- Represented IETE at institute level; organized seminars, workshops, and competitions for professional development in electronics and telecommunication.
- Acted as liaison between students and institution for IETE events, opportunities, and collaborative initiatives.

CERTIFICATIONS

- C++ Programming — Language Certification Mar 2023
- SAP Fundamentals — Edu-Net Foundation Jun 2023
- Enhancing Soft Skills & Personality — NPTEL Dec 2023

ACHIEVEMENTS

- **Winner, Avishkar Project Competition** — Cloud-Enhanced IoT Smart Speed Breaker project selected from institute-level technical submissions.
- **1st Rank, III Year E&TC** — Achieved CGPA 9.24 in the third year at Trinity College of Engineering & Research, Pune.
- **Winner, Technical Quiz Event** — Demonstrated domain knowledge in electronics and embedded systems at intercollegiate technical fest.