Swayam Kamble

Nagpur, Maharashtra
+91-9665713385 swayamkambleofficial@gmail.com swayam-kamble Portfolio

TECHNICAL SKILLS

Programming: Python, C, C++, Arduino, Embedded C
Technologies: IoT, Microcontrollers (ESP32, Arduino), Sensors & Actuators, MQTT, Wi-Fi, Bluetooth
AI/ML: Machine Learning, Deep Learning, LLMs, LangChain
Web Development:HTML, CSS, JavaScript

EXPERIENCE

5G Lab, VNIT Nagpur **2025 – Present**
Research Intern *Nagpur, India*

- Working on projects involving 5G and IoT under the guidance of Dr. Prabhat Sharma, focusing on **advanced wireless communication and intelligent connected systems**.

Signal Processing and Communication Research Center (SPCRC), IIIT Hyderabad **July 2024**
Summer research Intern *Hyderabad, India*

- Worked under Dr. Sachin Chaudhari on **IoT technologies and signal processing applications**.
- Developed an ultrasonic-based water level monitoring system with **temperature-compensated sensing** for accurate liquid level detection.

E-Yantra Lab, St. Vincent Pallotti College **2022 – Present**
Workshop Conductor & Mentor *Nagpur, India*

- Conducted workshops on IoT and emerging technologies for junior students, **sharing hands-on knowledge and real-world applications**.
- Mentored peers in core concepts of IoT, embedded systems, and AI integration, **fostering collaboration and technical growth**.

PROJECTS

Victoria - AI-Based Lab Assistant System | Python, LangChain, AI Agents, Computer Vision, IoT **2025**

- Developed an intelligent voice-activated AI agent assistant leveraging **LLMs and agentic architecture** for lab automation and research support.
- Integrated multimodal capabilities including **computer vision, natural language processing, and IoT device control** for comprehensive lab management.
- Implemented advanced features for inventory tracking, research assistance, experimental documentation, and real-time sensor data analysis.

Interactive Portfolio Website with AI Chatbot | HTML, CSS, JavaScript, AI Integration **2025**

- Designed and deployed a responsive portfolio website featuring an **AI-powered conversational chatbot** for interactive visitor engagement.
- Implemented intelligent information retrieval system to answer queries about projects, skills, experience, and achievements dynamically.
- Enhanced user experience with seamless navigation, project showcases, and automated visitor interaction using modern web technologies.

Omni Rod - AI-Powered Dump Slope Failure Prediction System | AI, 5G, Python **2025**

- Engineered a multi-sensor instrumented rod integrating **LVDT, IMU, soil moisture sensors, and load cells** to monitor critical factors affecting dump slope stability in open-cast mining operations.
- Designed and constructed a controlled test bed mimicking real-life dump slope failure scenarios, collecting comprehensive environmental and structural deformation data from embedded sensors.
- Developed and trained an **AI-based predictive model** using collected sensor data to forecast dump slope failures with high accuracy, enabling proactive risk management.
- Implemented real-time data visualization dashboard with **5G connectivity and automated alert systems** that trigger notifications based on AI model predictions of slope failure probability.
- Selected as **National Finalist in 5G Innovation Hackathon 2025**, receiving INR 1,00,000 funding from Department of Telecommunications (DoT).

e-Yantra Lab Automation System | ESP32, Python, Computer Vision, IoT Cloud **2024**

- Developed an AI and IoT-based lab automation system using **computer vision for occupancy detection and smart device control**.
- Implemented facial recognition for attendance logging and secured access with real-time monitoring.
- **Secured 1st place** among 520+ colleges in the eLSI Hackathon at IIT Bombay.

Smart Street Light Monitoring System | ESP32, ESP-NOW, Web Dashboard **2024**

- Designed a multi-node architecture with **ESP32 controllers and ESP-NOW protocol** for low-latency communication.
- Created an intuitive web interface for real-time monitoring of streetlight operational status.
- **College Startup Expo** with INR 10,000 prize for Smart Infrastructure Innovation.

EDUCATION

St. Vincent Pallotti College of Engineering and Technology **2022 – Present**
Bachelor of Technology (B.Tech) - Industrial Internet of Things (IIoT) — ***CGPA: 7.71/10*** *Nagpur, India*

St. Paul Junior College **2020 – 2022**
Higher Secondary Education (12th Grade) — ***Percentage: 75%*** *Nagpur, India*

ACHIEVEMENTS

eLSI Hackathon, IIT Bombay **2024**
1st Place Winner *National Level*

- Led a team of 4 to develop an innovative AI and IoT-based lab automation system.
- Competed against 520+ colleges nationwide and secured first position.

5G Innovation Hackathon 2025, Department of Telecommunications (DoT) **2025**
National Finalist *National Level*

- Selected among top 25-50 finalists from 150-200 shortlisted proposals across India for the Omni Rod mining monitoring project.
- Received **INR 1,00,000 seed funding** for prototype development and access to 5G Use Case Labs for testing and refinement.
- Presented 5G-enabled IoT solution to the Technical Expert Evaluation Committee comprising government, academia, and industry experts.

College Startup Expo, Engineers Day **2024**
Smart Infrastructure Innovation Award *College Level*

- Received INR 10,000 cash prize for the Smart Street Light Monitoring System project.

CERTIFICATIONS

- Python Certification - CodeChef
- Web Development - Great Learning
- Hands-on IoT - NPTEL
- NPTEL courses in Manufacturing Process Technology
- Microprocessors and Microcontrollers
- C++ Programming - DiSHA Computer Institute
- Machine Learning - Prutor IIT Kanpur
- Industrial Approach in Electronics
- Sensors and Actuators - NPTEL