

SATWIK SHRESHTH

Software Developer | ML & IoT Systems | Embedded & Intelligent Applications

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PROFESSIONAL SUMMARY

MCA graduate with a strong foundation in Artificial Intelligence, Machine Learning, Deep Learning, Computer Vision, Embedded Systems, and Data Analytics. Experienced in the research and development of intelligent systems through academic research at CSIR-CMERI and industry internships. Possess strong analytical, problem-solving, and programming skills, with a keen interest in applied research and emerging technologies.

TECHNICAL SKILLS

Languages: Python, C, C++, Java

Machine Learning / AI: PyTorch, TensorFlow, scikit-learn, YOLOv8, ONNX, Computer Vision

IoT & Embedded Systems: Raspberry Pi, Arduino, ESP32, Sensor Integration, PID Control

Backend & Databases: Flask, REST APIs, SQLite, Firebase, Oracle, SQL, PL/SQL

Developer Tools: Git, GitHub, Jupyter Notebook, Google Colab

Geospatial: Google Earth Engine (GEE), QGIS

RESEARCH EXPERIENCE

MCA Dissertation

Jan 2026 – Apr 2026

CSIR – Central Mechanical Engineering Research Institute (CMERI), Durgapur

West Bengal, India

- Conducted dissertation research on a communication-integrated mobile environmental monitoring framework, building an autonomous dual-Raspberry Pi robot for continuous air quality sensing
- Integrated YOLOv8n-seg (ONNX-optimized) for real-time path segmentation and PID control for closed-loop navigation, achieving 95.37% path-tracking accuracy across 40 trials
- Designed Flask REST API pipeline for sensor data acquisition, remote robot control, and live dashboard visualization
- Implemented ML-based air quality classification across 6 severity levels using MQ-135 and DHT11 sensors on Arduino-Raspberry Pi architecture

PROFESSIONAL EXPERIENCE

Technical Representative

Feb 2024 – Aug 2024

Bytes Softech Pvt. Ltd. (C-DAC Authorized Training Centre)

Delhi, India

- Maintained 99.9% uptime for national-level examination infrastructure serving 10,000+ candidates across AFCAT, Agniveer Vayu, and Indian Coast Guard examinations
- Deployed and managed systems across 15+ examination centers, covering installation, configuration, database management, and network operations
- Resolved 50+ real-time incidents under strict SLA requirements, enforcing security protocols and maintaining 100% compliance with examination board standards

INTERNSHIP EXPERIENCE

Remote Sensing Intern

July 2025 – Aug 2025

India Space Academy – Department of Space Education

Remote

- Applied ML-based LULC classification on Sentinel-2 satellite imagery using Random Forest and Gradient Tree Boost classifiers in Google Earth Engine, achieving 92% accuracy across five terrain classes
- Automated geospatial workflows in GEE and QGIS, reducing manual analysis time by 40% and producing georeferenced maps for environmental reporting

PROJECTS

Smart Environment Monitor | *Python, Flask, Arduino, SQLite, scikit-learn* | [GitHub](#)

- Built IoT air quality monitoring system using Arduino (MQ-135 + DHT22) with Raspberry Pi backend and real-time Flask dashboard for live pollution tracking
- Deployed 6-level alert system backed by Random Forest, K-Means, and Isolation Forest models trained on 51,000+ samples

Tripathagamini-S – Autonomous Line-Following Robot | *Python, Arduino, Raspberry Pi, scikit-learn* | [GitHub](#)

- Developed 4-version autonomous robot series progressing from camera-based navigation to hybrid ML+PID control at 100 Hz on embedded hardware
- Improved navigation accuracy by 92% through ML-based error correction integrated with PID control, validated across 20 closed-loop runs

YOLO Edge Optimization for Embedded Inference | *Python, YOLOv8, ONNX, Raspberry Pi* | [GitHub](#)

- Trained YOLOv8 instance segmentation model and exported to ONNX for CPU-only deployment on Raspberry Pi 5, achieving 15.4 FPS without GPU acceleration
- Published trained weights on HuggingFace Hub for open community access

Image-to-Sketch Generation using U-Net CNN | *Python, TensorFlow, Streamlit* | [GitHub](#)

- Trained U-Net CNN with custom MAE-SSIM hybrid loss, achieving 85%+ SSIM for photorealistic sketch generation
- Deployed Streamlit application with real-time inference processing images in under 2 seconds

EDUCATION

Master of Computer Applications (MCA)

Sikkim University, Gangtok, Sikkim

Sept 2024 – June 2026

CGPA: 8.5 (up to 3rd Semester)

Bachelor of Computer Applications (BCA)

Magadh University, Bihar

July 2019 – Apr 2022

70.06%

CERTIFICATIONS

- **Computer Aided Decision Systems – Industrial Practices using Big Analytics** | NPTEL (12 Weeks)
- **Blockchain and its Applications** | NPTEL (12 Weeks)
- **Ethical Hacking** | NPTEL (12 Weeks)
- **Internet of Things (IoT)** | NPTEL (12 Weeks)

LEADERSHIP & ACTIVITIES

- **Vice Chairperson**, Cultural Committee, Sikkim University Students Association (SUSA), Dec 2025 – June 2026 — Led cross-functional team to plan and execute 10+ large-scale university events, managing end-to-end logistics and coordination
- **Member**, Cultural Committee, SUSA, Nov 2024 – Nov 2025 — Contributed to planning and execution of large-scale university cultural events
- **State Representative, Bihar** – Represented Bihar at the 23rd National Youth Festival (NYF), Lucknow and National Integration Camp (NIC), VBU Hazaribagh, 2020
- **NSS Volunteer** – Completed 500+ hours of community development and social service initiatives