Vedant Joshi

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Schmidstr. 2, 93413 Cham

17th April 2002, India

Languages

German — A2 (B1 in progress)

English — C1 (Fluent)

Gujarati — Native

Hindi — Native

Technical Skills

Programming — Python, C, MATLAB, Embedded C

Embedded Systems — Arduino, Raspberry PI, NVIDIA Jetson Nano, ESP 32, STM32

ML/AI Frameworks — TensorFlow, PyTorch, OpenCV, Scikit-learn, YOLOv8

Control Systems — PID Control, Motion Control, Feedback Systems, Motor Control

Tools and Platforms — Linux, Jupyter, VS Code

Protocols — I2C, SPI, UART, MQTT

Certificates

Machine Learning Specialization | Stanford University (Coursera), 2022 — Supervised Learning: Regression and Classification | Advanced Learning Algorithms | Unsupervised Learning, recommenders and Reinforcement Learning

Aerial Robotics | University of Pennsylvania (Coursera), 2024

Profile

Master's student in Robotics, specializing in embedded systems, control engineering, and edge AI deployment on NVIDIA Jetson Nano. Published researcher (IEEE, Springer) with hands-on experience in multi-robot coordination, real-time object detection, and industrial automation. Seeking Working Student position (20 hrs/week) in robotics, embedded systems, or ML/AI deployment. Available immediately. Open to relocation across Germany.

Education

M.Eng. Robotics
Deggendorf Institute of Technology
Mar 2026 – Sep 2027 (expected) | Cham, Germany

- Focus Areas: Control Engineering, Embedded Systems, Robot Dynamics, Motion Planning, Computer Vision

B.Tech. Instrumentation and Control Engineering
Nirma University
Jun 2020 – May 2024 | Ahmedabad, India

- Focus Areas: Robot Dynamics, Control Engineering, Mechatronics, Machine Learning, Process Instrumentation
- Research: 2 peer-reviewed publications (IEEE Xplore, Springer)

Work Experience

Student Researcher - Multi-Robot Systems
Team Con-Sol-E
May 2022 – May 2024 | Nirma University

- Developed path-planning algorithm enabling 4+ ESP-32 based robots to autonomously form user defined geometric shapes.
- Implemented computer vision system using OpenCV for real-time position tracking and formation control.
- Designed MQTT based communication protocol for coordinated multi-agent movement, with less than 50ms latency.

Control Engineering Intern
Imagine Powertree Pvt. Ltd.
Jun 2023 – Jul 2023 | Gandhinagar, India

- Designed and prototyped single-axis sun-tracking solar panel system using Arduino and geared DC motor with LDR sensor array
- Implemented closed-loop PID control algorithm for precise solar alignment
- Achieved 25% increase in power output compared to fixed orientation systems through real-time sun tracking

Technical Team member
International Society of Automation
Oct 2021 – Dec 2022 | Nirma University

- Co-organized technical workshops on industrial automation and control systems for 100+ students.
- Led hands on sessions on PLC programming, sensor integration, and SCADA systems.

Projects

Smart Navigation Aid for the Visually Impaired
Bachelor's Thesis | Jan 2024 - Apr 2024

- Developed portable object detection device using NVIDIA Jetson Nano and YOLOv8 for real time obstacle detection.
- Implemented audio feedback system providing directional guidance for indoor and outdoor navigation.

Interests

Automation and Control, Soft Sensors, Robotics, AI and ML, Orchestral Percussion, Hiking, Reading

- Optimized YOLOv8 inference pipeline to 150 FPS on NIVIDA Jetson Nano using Tensorflow Lite quantization, with end to end camera-to-audio latency under 100ms.
- Technologies: Jetson Nano, YOLOv8, Python, TensorFlow Lite, Linux, Audio Processing.

Single Axis Sun-Tracking Solar Panel
Research Project (IEEE Publication) | Oct 2023 - Jan 2024

- Built automated solar tracking apparatus using Arduino, LDR sensors, and DC motor achieving 30% power increase.
- Designed embedded control algorithm for precise sun following with real time light intensity comparison
- Published research findings in IEEE Xplore

Non-Contact Water TDS Measurement Using Spectroscopy
Bachelor's Minor Project | Jul 2023 - Nov 2023

- Developed spectroscopy based TDS measurement device using AS7265x 14 channel sensor and Raspberry Pi for non-invasive water quality analysis.
- Trained TinyML regression model on 500+ spectral signatures achieving 85% prediction accuracy for TDS concentration (0-1000 ppm).
- Built portable real time monitoring system with <5s measurement cycle for field deployment.
- Technologies: Raspberry Pi, Python, Scikit-learn, AS7265x sensor (I2C), spectroscopy, edge ML.

Coordination of Multi-Robot System
Research Project | May 2022 - May 2023

- Architected distributed path-planning algorithm enabling 4+ ESP-32 based robots to autonomously form geometric shapes.
- Implemented OpenCV based overhead tracking system for real time position feedback and formation error correction.
- Wrotte ESP32 firmware implementing MQTT-based inter-robot messaging; achieved <50ms round-rip latency across 4 robots.
- Technologies: ESP32, OpenCV, Python, MQTT, PID Control, Computer Vision

Publications

Intelligent Autoscaling in Cloud Infrastructure using Machine Learning and Reinforcement Learning
Springer Book Chapter | Published: Oct 2025

- DOI: https://doi.org/10.1007/978-981-96-4536-7_17
- Comprehensive analysis of RL-based autoscaling algorithms for cost efficient cloud resource management.

Energy Harvesting using Conventional Methods
IEEE Xplore | Published: May 2024

- DOI: 10.1109/INOCON60754.2024.10511501
- Demonstrated 30% solar energy yield improvement through embedded control based sun tracking prototype.

Vedant Joshi
Cham, April 2026