

Veerendra R Patil

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EDUCATION

National Institute of Technology Durgapur

B.Tech in Computer Science and Engineering; CGPA: 9.17/10

Durgapur, India

Aug. 2023 – May 2027 (Expected)

EXPERIENCE

AI Solution Architect & Technology Consultant

May 2026 – Present

Nautomation Labs

Bengaluru, India

- Architected and built a full-scale ERP system for industrial clients, delivering a lean, cost-effective alternative to legacy platforms like SAP
- Designed and built **decibyl.ai**, the company's flagship GenAI voice-agent platform, orchestrating voice campaigns, lead qualification, and follow-ups end-to-end via n8n-based workflow automation
- Single-handedly owned decibyl.ai's path to production: containerized the platform with Docker and shipped it live on AWS through a CI/CD release pipeline (GitHub Actions → ECR → EC2)

PROJECTS

Edge AI Human Activity Recognition on ESP32-S3 | *PyTorch, TFLite Micro, C++, ONNX, CUDA, Optuna*

- Built an end-to-end deep learning pipeline classifying 16 human activities from dual-IMU (accelerometer + gyroscope) multivariate time series; designed a leakage-free, segment-based windowing and splitting scheme and benchmarked CNN, CNN-LSTM, and CNN-GRU architectures with Optuna search and CUDA/AMP training (up to 85.6% accuracy)
- Took every model to a microcontroller: exported to INT8-quantized TFLite Micro via ONNX → TensorFlow, engineering custom unrolled-RNN export wrappers that eliminate unsupported WHILE ops (<1e-4 output deviation), and selected the deployment model via a composite accuracy/latency/size score (5× fewer parameters)
- Wrote ESP32-S3 C++ firmware running all six quantized models on live IMU data with a touchscreen model-picker UI, bit-exact StandardScaler preprocessing, on-device latency/memory benchmarking, PSRAM tensor arenas, a custom 16MB dual-slot OTA partition table, and wireless firmware updates

Aeris – Ground Control Station for ESP32-S3 Drone | *Python, PySide6, cflib, CRTP, PyQtGraph*

- Built a desktop Ground Control Station communicating with a drone over Wi-Fi via the CRTP protocol with zero firmware modifications
- Designed a modular architecture (comm, control, data, UI) powering live telemetry, manual flight control, and a PID tuning panel
- Implemented a flight recorder with CSV/JSON export and real-time multi-channel telemetry graphing using PyQtGraph

Real-Time Computer Vision & Distance Estimation System | *Python, PyTorch, YOLOv5, OpenCV, CUDA*

- Trained a custom YOLOv5 model from scratch on a labeled dataset to detect basketball rims in real time on GPU
- Engineered a calibrated pixel-to-real-world distance formula to estimate rim distance from a single camera feed
- Built a real-time video pipeline overlaying bounding boxes, confidence scores, and distance, with annotated video export

TECHNICAL SKILLS

Languages: Python, C++, C, SQL, Dart, JavaScript

AI & Computer Vision: PyTorch, TensorFlow/Keras, TFLite Micro, OpenCV, YOLOv5, ONNX, Optuna, Scikit-learn, CUDA

Embedded & Robotics: ESP32/ESP32-S3, ESP8266, Arduino, PlatformIO, IMU sensor processing, PID Control, CRTP, OTA updates, IoT, WebSockets

Backend & Cloud: FastAPI, REST APIs, Docker, AWS (EC2, ECR, S3), MLflow, CI/CD, GitHub Actions, MongoDB, MySQL

Developer Tools: Git, Linux, VS Code, PySide6, Flutter

LEADERSHIP

CCA RoboCell Head

Feb 2024 – Present

National Institute of Technology Durgapur

Durgapur, India

- Led software and embedded systems development for RoboCell, shipping in-house tools including the Robozido app (Flutter + ESP8266)
- Drove RoboCell's Robocon 2024 sponsorship campaign and organized multi-college skill-development workshops, together generating INR 8L+ in funding and revenue for the club

ACHIEVEMENTS

Robocon Finalist, IIT Delhi (2025) – Led embedded/software development and built the computer vision model for rim detection on a competition robot

99.23 Percentile, JEE-Mains 2023 | Rank 66, KCET 2023