Moksh Dandotiya

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Education

Madhav Institute of Technology and Science — Gwalior, MP
B.Tech in Information Technology (AI and Robotics) | CGPA: 7.55/10 — *2022 – 2026*

Experience

Systems Specialist ***(Part-Time)*** — 2022 – 2024
Mobile Cafe — *Jayendraganj, Gwalior, MP*

- Performed advanced Android system modifications using Linux-based tools and ADB for bootloader unlocking, root privilege escalation, and custom ROM deployment.
- Provided comprehensive technical support including hardware diagnostics and system recovery, analyzing OS-level logs to troubleshoot boot failures.
- Managed secure data backup and migration protocols during firmware upgrades, ensuring data integrity while assisting clients with digital documentation.

Projects

Vision Edge | *Autonomous FOD Detection and Removal System* | github.com/danMoksh/VisionEdge — 2025

- Designed an autonomous multi-agent system (Drone & Rover) for Gwalior Air Force Station, integrating real-time telemetry to map FOD coordinates from oblique aerial views.
- Engineered a Weighted Box Fusion ensemble (YOLOv8, v11, RT-DETR) with multi-model consensus logic to rigorously filter false positives in low-confidence scenarios.
- Optimized debris retrieval paths using the Traveling Salesman Problem (TSP) algorithm, minimizing rover travel time and battery usage via dynamic point ordering.
- Built a MAVLink-controlled UGV with a "Blind Sweep" mechanism, utilizing 2-meter guide rods to physically compensate for GPS inaccuracies during retrieval.

Smart Donation Box | *Embedded Vision* | *Client:* Ethara AI | github.com/danMoksh/SmartDonationBox — 2024

- Architected a server-side currency recognition pipeline using a Cascade R-CNN (ResNet-50) to handle crumpled and occluded notes, outperforming standard single-stage detectors in precision.
- Engineered a Synthetic Data Generation script using Albumentations to programmatically create 10,000+ training samples via elastic deformation, solving the data scarcity problem for Indian currency.
- Implemented Online Hard Example Mining (OHEM) to iteratively reduce false positives on non-currency debris, achieving 98% sorting accuracy when integrated with the vibration hardware.
- Developed the embedded control firmware in C++ on an Arduino Mega to orchestrate 4 Servos and a high-speed drone motor, implementing an aerodynamic separation algorithm to physically untangle and singulate notes.

Pulmo Vision | *CNN-based Chest X-ray Disease Detection* | github.com/danMoksh/PulmoVision — 2024

- Implemented a DenseNet121-CNN architecture using TorchXRayVision and Transfer Learning for multi-label pulmonary disease classification.
- Optimized model convergence using BCEWithLogitsLoss and integrated Global Average Pooling to prevent overfitting.
- Engineered a robust preprocessing pipeline with 224x224 resizing and custom normalization algorithms to standardize X-ray inputs for reliable model inference.

Technical Skills

Languages: C/C++, Embedded C, Python, Java, TypeScript
Frameworks & Libraries: ROS, OpenCV, PyTorch, FastAPI, Flask, React.js, Node.js, MongoDB
DevOps & Tools: Linux/Unix, Docker, Git, GDB, QEMU/KVM, Vercel, Vim (Neovim), Tmux/SSH
Hardware & Robotics: Jetson Nano/Orin, Raspberry Pi, STM32, PID Control, Robot Kinematics, Sensor Fusion

Achievements

Winner, Hacksagon 2025, IIITM Gwalior – Vision Edge (Disaster Management Track)
Top 22 Finalist, Code4Bharat (C4B) Hackathon, Gurgaon
Project Exhibit Showcase, Technoxian World Robotics - Vision Edge
Elite + Silver Certification, NPTEL: Blockchain and Applications
Elite + Silver Certification, NPTEL: Big Data Computing