Jaswant Charith Uppalapati

Computer Science Engineer | AI/ML & Robotics

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PROFESSIONAL SUMMARY

Computer Science student specializing in Artificial Intelligence & Machine Learning, with a strong foundation in core Computer Science concepts including DBMS and Computer Networking. Experienced in building backend systems using Django and REST APIs, with a focus on designing practical and reliable software systems. Developed hands-on experience in Artificial Intelligence, Machine Learning, Computer Vision, IoT, and Robotics through academic, industry, and research-oriented projects, including work with ISRO's LEOS and AI-driven startup environments. Currently CEO of MANAVEX, an engineering studio building full-stack software, agentic AI, and connected IoT systems, setting product vision and leading system and product design for client work. Interested in building intelligent and autonomous systems by combining strong software engineering fundamentals with AI/ML, computer vision, and robotics.

EDUCATION

REVA University 2023 – 2027

Computer Science & Information Technology (AI & ML) | 4th Year Bengaluru, Karnataka, India

CGPA 8.03/10 (up to 3rd year) | Class XII / PUC: 79.9% | Class X: 9.8 CGPA

TECHNICAL SKILLS

Programming: Python, C++
Core Computer Science: DBMS, Computer Networking, Data Structures & Algorithms
Backend & APIs: Django, Django REST Framework, FastAPI, REST APIs
AI/ML: PyTorch, TensorFlow, Scikit-learn, NumPy, Pandas, NLTK
Computer Vision: OpenCV, YOLO
Databases: PostgreSQL, SQLite
Cloud & Infrastructure: AWS, Azure, Ubuntu, Docker
Embedded & Robotics: ESP32, Raspberry Pi, Teensy, PlatformIO, LoRa, NVIDIA Isaac Sim, ROS

EXPERIENCE

MANAVEX India

An engineering studio building full-stack software, agentic AI, and connected IoT systems. | manavex.vercel.app

CEO Oct 2026 – Present

- Sets product vision and turns client needs into solution plans, then leads the system and product design that delivers them.
- Lead, Product and Engineering; co-lead, Technology.
- Backend services, APIs and database structures; frontend, backend and external-service integrations.
- Code review, engineering standards and technical prioritisation.
- Business operations, client engagement and new opportunities.
- Systems shipped with production partners: **CropNow** (CropDesk, TheDotProject, NEST) and **ATEON Labs**.

Indian Space Research Organisation (ISRO) Bengaluru, India

Laboratory for Electro-Optics Systems (LEOS)

Project Trainee, SRQG Division Jun 2026 – Present

- Contributing to the **3/6-Axis Robotic Arm with Computer Vision for Faulty PCB Detection and PCB Inspection** project, focusing on robotic-arm software, simulation, control, and computer-vision components.
- Developed **Python**-based robotic-arm control and simulation software and gained hands-on experience with **NVIDIA Isaac Sim** for robotic simulation and experimentation.
- Worked with **YOLO**-based computer-vision models for PCB inspection and faulty-component detection within the robotic inspection workflow.
- Designed and developed internal software applications for LEOS, including **VISHVASYA**, **KARYADESH**, and **SFMS**, supporting internal engineering and organizational workflows.
- Built applications using **Django**, **REST APIs**, and **SQLite/PostgreSQL**, deployed on **Ubuntu**-based intranet infrastructure for internal use.
- Contributed to technical research and research-paper development under the guidance of scientists at ISRO LEOS.

CropNow Bengaluru, India

Agritech Startup

Founder's Fellow Jun 2026 – Present

Founder's Office Lead (Project & Strategic Relations) Dec 2025 – Jun 2026

AI/ML Intern Oct 2025 – Jan 2026

- Progressed from an AI/ML internship into the Founder's Office and later a Founder's Fellowship, taking increasing responsibility across software engineering, product development, technical strategy, research, and organizational operations.
- Led the software engineering team for **NEST**, a **Taiwan Presidential Hackathon**-winning project, contributing across web applications, backend architecture, cloud infrastructure, and IoT firmware.
- Built backend systems using **Django**, supported cloud infrastructure on **AWS**, worked with **PostgreSQL**, and developed embedded firmware in **C++** using **PlatformIO**.
- Designed and developed **CropDesk**, a centralized software platform for CropNow's connected IoT ecosystem, supporting device management, data, analytics, and platform integration.
- Took product ownership of **AkashBhumi**, leading research, product ideation, planning, design, team coordination, and execution in collaboration with organizational leadership.
- Led cross-functional initiatives involving research, field operations, audits, strategic planning, and new-project development.
- Serve as **Head of the Data Security & Centralisation Committee**, contributing to organizational data centralization and security initiatives.

Yantra Bengaluru, India

The IoT Club at REVA University

Secretary Mar 2025 – Present

Event Coordinator Nov 2024 – Mar 2025

- Progressed from Event Coordinator to Secretary, taking increasing responsibility for technical activities and events within the university IoT club.
- Conducted IoT workshops and technical sessions for junior students covering sensors, microcontrollers, embedded systems, and practical project development.
- Worked on hands-on embedded and computer-vision projects involving **ESP32**, **LoRa**, **Raspberry Pi**, and **OpenCV**.
- Participated in a line-following robot competition, contributing to robot development and tuning.

PROJECTS

AQUA NEST | AI-Powered Aquaculture Intelligence Platform

- Developing an intelligent aquaculture monitoring platform combining IoT sensing, AI/ML, computer vision, cloud infrastructure, and web technologies.
- Designing an **ESP32**-based IoT system for collecting pond-water parameters through connected sensors and **RS485** communication.
- Building the software ecosystem across embedded firmware, **Django**, **REST APIs**, **MQTT**, **AWS**, and data pipelines.
- Developing toward intelligent capabilities for water-quality monitoring, fish-health prediction, and aquaculture decision support.

Stack: IoT, AI/ML, Embedded Systems, Cloud, Django

PARAMETER | Animal Detection & Avoidance System

- Developed a real-time animal detection and avoidance system using **CNN**-based computer vision on **Raspberry Pi**.
- Integrated camera-based detection with hardware controls to trigger automated responses through relay-based mechanisms.
- Designed activity logging for post-event analysis and optimized the system for practical field operation.

Stack: Computer Vision, Embedded Systems, IoT

SANKETHA | Secure LoRa Communication Device

- Built an offline, long-range, low-power communication system using **ESP32** and **LoRa**.
- Designed device-to-device communication capable of operating without conventional internet infrastructure.
- Integrated embedded hardware and communication modules for wireless data transmission and field testing.

Stack: Embedded Systems, IoT, Wireless Communication

SANGRAHA | Self-Hosted Organizational Data Security & Centralization

- Building a self-hosted platform that lets a startup, company, lab or office keep its files, documents and organizational information on its **own server**, used over the office LAN with no external cloud.
- Built the Admin Panel: organization profile, accounts, a drag-and-drop **hierarchy builder**, repository policy, document standards, an **activity log** and system status.
- Every account gets its own repository with a desktop-style web **file explorer** (drag-in uploads, move, rename, Trash and restore, previews) stored as plain folders on the server.
- Added a **document editor** with PDF and Word export; runs on SQLite by default or **PostgreSQL** with **Docker** for larger installations. Early development (v0.1).

Stack: Django, Docker, SQLite/PostgreSQL, Data Security

Neural IK | Neural Inverse Kinematics for 6-DOF & 7-DOF Manipulators

- Built a tested pipeline that solves **inverse kinematics** for a 6-DOF (xArm6) and a 7-DOF (KUKA iiwa) arm in **PyBullet** using a neural network.
- Generated datasets from forward kinematics and labelled each pose for **self-collision**; trained a collision classifier and used it as an auxiliary loss so the IK network learns to avoid self-colliding solutions.
- Compared neural IK, classical damped-least-squares IK and a **hybrid** (neural warm start + short classical refinement): the hybrid reached **45 mm / 0.73°** error at **0.12 ms**, about half the classical solver's runtime, with fewer self-collisions (6.5% vs 9.0%).

Stack: PyTorch, PyBullet, Robotics, Python, Docker

CropDesk NEST | Multi-Tenant Precision-Agriculture IoT Dashboard crop.cropdesk.in

- Built the dashboard for **NEST** farm devices: a **Django** + **DRF** backend ingesting combined telemetry and ML-prediction payloads through a token-authenticated ingest API.
- Multi-tenant and login-gated: each customer sees only their own devices, with access scoping verified against query-parameter tampering.
- Pages for headline KPIs, pest / irrigation / pollution risk gauges, 48-hour trends, alerts and ML insights, plus a Reports page comparing any parameter against all others with Pearson **r**.

Stack: Django, Django REST Framework, IoT, Chart.js, PostgreSQL/SQLite

CropDesk SEED | Operations Dashboard for the SEED Autonomous Rover seed.cropdesk.in

- Built the operations dashboard for **SEED**, CropNow's autonomous agricultural rover, on the same stack and design system as CropDesk NEST.
- Modelled the real domain: an **Operation Cycle** of 100 checkpoints, four images each, and three models per image (disease CNN, pest and weed **YOLO**), with the cloud's exact data shape.
- Designed it so a real cycle record from **S3** drops in without reshaping the UI; the UI is complete while the rover, firmware and ML pipeline are still being built.

Stack: Django, AWS S3, Computer Vision, Robotics

Other projects

- **SFMS** | Software File Management System & NAS Platform (Django, PostgreSQL/SQLite, Server Infrastructure)
- **DIVINE Answer** | RAG-Based NLP Application (RAG, NLP, LLMs, Semantic Search, Full Stack)
- **LaXi** | Modular AI & Robotics Platform (AI/ML, Robotics, LLMs, Python, Django)
- **Smart Attendance System** | Facial-Recognition Attendance (Python, OpenCV, Computer Vision)

PUBLICATIONS & RESEARCH

- "Development of a Web-Based Process Life-Cycle Management Framework for Quality Assurance of Satellite Sensors" | NCRS 2026 | Abstract Accepted
- "An Attention-Guided Multi-Plane Approach for Estimating Gestational Age from Fetal Brain MRI" | ML4H 2026 | Manuscript Submitted (Submission No. 80)

ACHIEVEMENTS

- **Winning Team**, Taiwan Presidential Hackathon
- **Founder's Choice Award**, CropNow (2025)

WEBSITES BUILT (11)

CropNow: CropNow (cropnow-omega.vercel.app/about), CropDesk (cropdesk.in), Nest (crop.cropdesk.in), Seed (seed.cropdesk.in), Kairoman (kairoman-cropnow.vercel.app), ab.cropdesk.in
MANAVEX: MANAVEX (manavex.vercel.app), The Dot Project by Kabeer (thedotprojectbykabeer.com), p1al.vercel.app, QuadricIT (quadricit-website.vercel.app), Krishna Kummari (krishna-kummari.vercel.app)