

ANIRUDH SARVE

Mumbai, Maharashtra, India | +91 93225 81894 | anisarve2006@gmail.com | anirudhsarve.netlify.app
github.com/anisarve2006 | linkedin.com/in/anirudhsarve

EDUCATION

Vidyalankar Institute of Technology (VIT), Mumbai — B.E. in Computer Engineering

Expected May 2028

Cumulative GPA: 8.90 / 10.0 | Affiliated with University of Mumbai | Class XII (HSC): 92.60% (Distinction)

Coursework: Data Structures & Algorithms, Machine Learning, Computer Vision, Sensor Fusion, Operating Systems, Database Systems.

TECHNICAL SKILLS

Languages: Python, C++, TypeScript, JavaScript (Node.js), SQL, Go (Basics), HTML5/CSS3.

AI & Machine Learning: PyTorch, TensorFlow, ONNX, OpenCV, Faster-Whisper, Scikit-learn, 15-State ESKF, Sensor Fusion, ResU-Net.

Web & Systems: Next.js 16, React 19, FastAPI, Express.js, WebAssembly (WASM), WebGL, WebSockets, Docker, Linux, Git.

Databases & Cloud: PostgreSQL, MongoDB, Upstash Redis (Distributed Locks), Qdrant Vector DB, SQLite (FTS5), AWS, GCP.

PROFESSIONAL EXPERIENCE

NxtChaptr — Software Developer (Edge AI & Full-Stack Infrastructure)

Nov 2024 – Aug 2025

- Architected and deployed client-side edge computer vision using a U²-Net model via **WebAssembly/WebGL**, processing product image photo-matting in **<3.5 seconds** and eliminating server GPU costs (~\$0.02/upload).
- Engineered automated catalog metadata extraction microservices using **Google Gemini Vision**, cutting listing creation latency from 8 min to **<30s**.
- Integrated Upstash Redis atomic distributed locks (SET NX EX) and Ably WebSockets to eliminate race-condition overselling on 1-of-1 catalog drops.

Exposure: WebAssembly (WASM), WebGL, Next.js, Node.js, Redis, MongoDB, Gemini Vision.

Wroomie — Software Developer (Backend & Applied ML)

Nov 2023 – Jan 2024

- Developed multi-attribute compatibility scoring algorithms clustering user lifestyle preferences across 4 behavioral vectors, achieving **94% match satisfaction**.
- Optimized MongoDB geospatial room discovery queries with 2dsphere indexing, decreasing query latency by **35%** across university zones.

Exposure: Python, Node.js, Express, MongoDB Geospatial, RESTful API Architecture.

FEATURED TECHNICAL PROJECTS

Neural-Inertial Dead-Reckoning Engine with 15-State Error-State Kalman Filter (ISRO SIH)

Technologies: PyTorch, 15-State ESKF, 5-Head Temporal Attention GRU, ONNX, C++, ARM Cortex-A

- Engineered hybrid dead-reckoning engine for ISRO (PS 26168) holding vehicle position drift to ≤ 1.85 m across 120s GPS blackouts (a **98.4% drift reduction** versus standard EKF baselines).
- Fused 10 Hz raw IMU mechanization with a 15-state ESKF, enforcing physical Non-Holonomic Constraints (NHC) and ZUPT zero-velocity updates.
- Compiled model to a compact **24.6 KB ONNX graph** running at sub-3 ms CPU latency on ARM Cortex-A ECUs with zero cloud dependencies.

Multimodal Optical-SAR Fusion ResU-Net with Cross-Modal Attention (ISRO LISS-IV)

Technologies: PyTorch, ResU-Net, Cross-Modal Attention, Sentinel-1 SAR (C-Band), GeoTIFF, GDAL

- Constructed generative AI framework for cloud removal in ISRO Resourcesat-2/2A LISS-IV imagery (5.0 m resolution), fusing optical and SAR radar.
- Formulated differentiable Spectral Angle Mapper (SAM) loss, achieving **32.09 dB PSNR**, **0.7167 SSIM**, and tight **6.17° SAM angle** on real validation scenes.

Neuro-Symbolic Hybrid Retrieval Engine & Automated Standards Compliance Platform (SIH 26108)

Technologies: React 18, TypeScript, FastAPI, SQLite FTS5 BM25, ONNX Embeddings, PaddleOCR v2.9+

- Built 3-way hybrid retrieval engine (SQLite FTS5 BM25 + regex + 384-dim dense embeddings) via Reciprocal Rank Fusion across 19,423 BIS standards.
- Paired zero-hallucination verification kernel with PaddleOCR pipeline achieving **99.28% OCR confidence** on complex tender BoQ tables.

Sub-150ms Vector Graphics Stream PDF Compiler & Model Context Protocol (MCP) Server Monorepo

Technologies: TypeScript, Turborepo, Rust Canvas Bindings, Zod, MCP Protocol

- Engineered vector PDF streaming engine compiling live schemas in **<150 ms (<40 MB RAM)**; built native Model Context Protocol (MCP) server with self-healing Zod validation for autonomous AI agent tool execution.

HONORS & LEADERSHIP

- Lead Architect, ISRO Smart India Hackathon (SIH 2026)**: Authored winning AI-ESKF sensor-fusion architecture for PS 26168.
- Autonomous Navigation Team, Indian Rover Challenge (IRC)**: Developed onboard kinematic telemetry and guidance estimators.
- Scholastic Distinction**: 8.90 / 10.0 CGPA at VIT Mumbai; 92.60% in Maharashtra State Board HSC Examination.