

ADITYA SRIDHAR

adityasridhar718@gmail.com | github.com/Aditya17-bot | [LinkedIn](#) | adityasridhar.vercel.app

EDUCATION

Vellore Institute of Technology — Vellore, India
B.Tech, Computer Science and Engineering

2023 – 2027

PUBLICATIONS & PATENTS

- **Solar-Aware Machine Learning Framework for Short-Term Electricity Demand Forecasting in Delhi Using Weather and Calendar Variables** — Aditya Sridhar (first author). *3rd International Conference on Signal Processing and Computer Vision (SIPCOV-2026)*, NIT Puducherry, Oct 2026. Presented.
5-minute load forecasting on 18 months of Delhi data; solar-availability proxy models the Duck Curve without PV data. Benchmarked 6 models under leakage-free time-aware validation; best reached MAPE 0.77%, R^2 0.9977, tabular learners beat LSTM.
- **Cross-Layer Selective Abstention for Reliable Offline Assistive Perception with Tool-Mediated Voice Interaction for Visually Impaired Users** — Aditya Sridhar (first author). *ICMLDE 2026, conference paper. Under revision.*
- **Indian Patent Application No. 202641110070** — Wearable Navigation Apparatus with Inertially Adaptive Detection and Staged Announcement Scheduling (published, 2026)
- **Indian Patent Application No. 202641115711** — Protected Adaptive Pairwise Sensor Fusion System for Sub-Threshold Compound Hazard Detection and Automated Mitigation (published, 2026)
- **7 further Indian patent applications filed (2026)** — exam-integrity monitoring, traffic-detector calibration, river gauging, gas-hazard detection, greenhouse irrigation sensing.

OPEN-SOURCE CONTRIBUTIONS

- **Kornia** (PyTorch CV library, 11k+ stars) — 3 merged PRs: focal_loss NaN gradients for fractional gamma; dice_loss micro mode applied class weights twice; integer images filtered in their own dtype (a uint8 Gaussian blur returned zeros). Added regression tests.
- **Hugging Face timm** (PyTorch Image Models) — merged fix: non-ASCII class-map labels were silently dropped on Windows; now read as UTF-8.
- **deepset Haystack** (LLM / RAG framework) — merged fix writing EvaluationRunResult CSV reports as UTF-8 (non-ASCII eval data crashed on Windows).

PROJECTS

BlindAssist — Offline Navigation Aid for Visually Impaired Users | [live demo](#)

2026

Python · PyTorch · YOLOv8 · OpenCV · Flask · Vosk · offline TTS

- Built a fully offline camera-to-speech pipeline (detection → spatial reasoning → decision → speech) announcing obstacle direction and proximity.
- Designed a 3×3 spatial grid with proximity buckets and a path-relevance layer: off-path obstacles stay silent while escalating threats override cooldowns.
- Paired a COCO YOLOv8s detector with a custom YOLOv8n door/dustbin specialist ($mAP50 \approx 0.95$), merged per frame by a specialist-wins IoU rule that corrects COCO mislabels.
- 100% direction and proximity accuracy on reviewed announcements at 5.8 FPS on CPU (~0.4 s latency), zero phantom announcements across 7 clips; core logic covered by 61 unit tests.

Offline Voice Assistant — Real-Time On-Device Speech-to-Speech AI

2026

Python · Silero VAD · faster-whisper · Ollama (Llama 3.2 3B) · Piper TTS

- Built a complete VAD → speech recognition → local LLM → speech synthesis loop running fully on CPU with ~4 GB RAM and no network calls.
- Cut time-to-first-word to ~1.5 s by streaming LLM output sentence-by-sentence into synthesis instead of waiting for the full response.
- Added barge-in so the user can interrupt mid-reply, plus a graceful degradation path (filler phrases, fallback replies) so a raw error never reaches the user.

TECHNICAL SKILLS

- **Languages:** Python, Java, SQL
- **ML / DL:** PyTorch, transformers, YOLOv8, scikit-learn, LightGBM, self-supervised learning (JEPA, VICReg), LLM agents, forecasting
- **Engineering:** FastAPI, Flask, Streamlit, Docker, REST APIs, SQLite, ONNX / TFLite export, AWS (EC2, S3, IAM), Git, Linux, pytest

AWARDS & CERTIFICATIONS

- **Amazon ML Challenge 2026** — Top 4% nationally (rank 696; 89,000+ participants)
- **Code for Life: Hackathon for Everyday Solutions** (VIT, Feb 2026) — Winner, Best Project Award for AI-based anomaly detection in genes
- **Google Cloud Certified — Generative AI Leader** (Jul 2026)
- **Extensive & Reimagined AI (ERA-V3) Program** (2024–25) — Certificate of Participation