

ANANDHA PRASAD S

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SUMMARY

AI Engineer specializing in Generative AI, Agentic AI, and Retrieval-Augmented Generation (RAG), with hands-on experience building end-to-end LLM-powered systems, FastAPI backends, and AI workflow orchestration pipelines. Complements this with a strong foundation in Deep Learning and Computer Vision, including remote sensing object detection research and applied ML systems for healthcare and automation. Proven expertise architecting scalable, production-oriented pipelines — from agentic RAG architectures to YOLO-based SAR ship detection and high-precision fetal ultrasound interpretation.

TECHNICAL SKILLS

Programming Languages: Python, Java, SQL, C

Generative AI & LLMs: Large Language Models (LLMs), Generative AI, Agentic AI, Retrieval-Augmented Generation (RAG), Prompt Engineering

AI / ML & Computer Vision: TensorFlow, Keras, OpenCV, YOLOv5/v8/v11, CNNs, Deep Learning, Object Detection, Remote Sensing

Frameworks & Backend: LangChain, LangGraph, FastAPI, REST APIs

Retrieval & Vector Search: FAISS, Vector Databases, Embeddings, Semantic Search, Hybrid Search, Document Chunking

Tools & Platforms: Git, Figma, MIT App Inventor, Render, Groq API, Github, Render, Roboflow

EXPERIENCE

National Institute of Technology, Puducherry (NIT-PY) — Research Intern, AI & Deep Learning *Jun 2026 (15 Days)*

- Conducted research on SAR ship detection, training and evaluating YOLOv5, YOLOv8n, and YOLOv11 models on the SSDD and SAR-Ship Detection datasets.
- Benchmarked model performance against existing base papers, achieving ~97% detection accuracy with YOLOv5 on the SSDD dataset, outperforming reported baselines.
- Findings are currently in the process of being published as a research paper through NIT Puducherry.

Sairam Techno Incubator Center — App Development Trainer & Mentor *Jan & Jul 2025(30 Days)*

- Completed structured training in mobile app development using Figma and MIT App Inventor.
- Mentored school students as an Atal Tinkering Lab instructor in app design, prototyping, and simulation tools.

PROJECTS

AI Research Copilot | Agentic RAG System *2026*

- Architected and developed an end-to-end Agentic RAG system** using LangChain, LangGraph, FastAPI, FAISS, and HuggingFace embeddings for user-aware PDF question answering, semantic document retrieval, and multi-step AI reasoning.
- Integrated Groq LLM, hybrid retrieval, and DuckDuckGo Search** to deliver context-aware, grounded responses through intelligent prompt orchestration, REST APIs, and real-time information augmentation.

SAR Preprocessing for Enhanced Ship Detection Using Lightweight YOLO Architectures (Research project) *Jun 2026*

- Developed a physics-informed SAR preprocessing pipeline (Lee Filter, Log Normalization, CA-CFAR) for lightweight YOLO-based ship detection.
- Benchmarked **YOLOv5n, YOLOv8n, and YOLO11n** on SSDD and SAR-Ship datasets, achieving **96.95%+ mAP50** (SSDD) and **87.80%+ mAP50** (SAR-Ship).

Automated AI Ultrasound Robot *May 2025 – Present*

- Developed a AI-assisted ultrasound scanning system integrating computer vision, and deep learning for autonomous feature detection, identification and image acquisition.
- Implemented intelligent trimester-specific feature detection targeting deployment in rural and low-resource healthcare environments.

EDUCATION

B.E. CSE (AI & ML) — Sri Sairam Engineering College, Chennai *2023 – 2027*
CGPA: 8.30(Till 6th sem)

HSC — St. Thomas Matriculation Higher Secondary School, Chennai *2016 – 2023*
HSC: 87.16% (PCM with CS)

HONORS & ACHIEVEMENTS

- Patent Published: Robotic Ultrasound Probe Stabilizer for Rural Health (Indian Patent Office).
- First Prize — Solveathon 4.0 (SDG Hackathon): Scalable AI solution developed in 24 hours.
- International Build2Gether AI Hackathon 2026: Ranked in Tier 9 among 499 international teams; co-developed an AI-SDG solution hosted at home campus.
- Silver Medalist — NPTEL Human Computer Interaction.
- Certified in Deep Learning — DeepLearning.AI, via Coursera.