Swetha Saseendran

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EDUCATION

University of Massachusetts, Amherst *Expected Dec 2026*
MS Computer Science **GPA: 3.9/4.0**
SSN College of Engineering, India *May 2022*
BE Computer Science Engineering **GPA: 8.97/10**

TECHNICAL SKILLS

Programming & Scripting: Python, Java, C, TypeScript, Shell (Linux/Unix), OOPS, Data Structures, Algorithms
ML/AI: Transformers, Vision-Language Models, RAG, LangChain,TensorFlow, PyTorch, OpenCV, MediaPipe
Backend/Frameworks: FastAPI, Flask, NodeJS, Spring Boot, gRPC, GraphQL
Cloud/DevOps: AWS, Docker, Jenkins, Git, CI/CD
Data/Databases: SQL, MongoDB, ElasticSearch, Kafka, Redis, Tableau, FAISS
Web/App: Angular, React, NextJS, Flask, Android Java, Flutter, Tailwind, Material UI, Streamlit, FIGMA

EXPERIENCE

Research Assistant, Advanced Human and Health Analytics Lab, UMass Amherst Sept 2025 – Present

- Collaborating with Harvard Medical School and Mass General Brigham on post-stroke motor/cognitive impairment research under Prof. Ivan Lee's guidance. Building scalable models on GPU to automatically annotate linear movement in egocentric video using advanced visual language models (**V-LLaMA**) and RLHF.

Software Engineering Intern, Center for Data Science, UMass Amherst Mar 2025 – Present

- Designed and developed a Android solution for Bluetooth-based sensor data acquisition from Shimmer devices, featuring a doze-resistant custom SPP protocol with chunked acknowledgment and binary recovery, and dual-mode file persistence (local and **AWS S3**). Engineered real-time monitoring with **Crashlytics** and backend analytics groundwork via **SQLLite** integration. Created cloud sync APIs using **FastAPI** deployed on **AWS Lambda**.
- Deployed an **R-based API** for avian flu analytics leveraging MDP, Dockerized on **AWS EC2** with CI/CD. Built a React dashboard for real-time visualization (Tailwind CSS), and implemented efficient image data mapping from **AWS S3**. Bootstrapped a data scraping pipeline using **AWS**, pushing Docker images to **ECR** and orchestrating scheduled runs with **ECS Fargate** and **EventBridge** for daily automation. Optimized the API to minimize RAM usage and slashed CPU I/O wait time by 70% through in-memory caching.

Technology Analyst, Citi, Chennai Aug 2022 – Dec 2024

- Achieved a **60%** reduction in API response time by creating an API connector service with **asynchronous data streams** and reduced the development cycle by an entire sprint through designing a **proxy bridge service** for whitelisted APIs. Enhanced configuration management by developing a tool with the **DFS algorithm** to compare multiple **YML** config files, integrated into the **DevOps pipeline** improving deployment time by **22%**.
- Designed and developed a customizable process improvement project that creates real-time mock APIs from **OpenAPI** spec files, significantly reducing development time by eliminating API dependencies. The tool parses and mocks different error codes and responses, allowing for flexible, scenario-based testing and rapid iteration;
- Improved user engagement by creating an API to monitor services, onboarding two critical services, and achieving a **90%** code quality rating. Developed and maintained statistical APIs for financial markets, with data analysis using **Tableau** for algorithmic trading and risk modeling.

Data Science Intern, First Insight, Chennai Jul 2021 – Dec 2021

- Developed an aspect-based sentiment analysis system using LDA and BERT Transformers, improving topic coherence by 20%. Customized for user-defined aspects and deployed as a REST API, integrating it into a machine-learning pipeline for seamless access and efficiency.

Computer Vision Research Intern, SRIC, IIT Madras May 2021 – Nov 2021

- Developed a motion analysis system for athlete biomechanics using OpenCV, Mediapipe, and YOLO, deployed via Flask API, with a custom basketball dataset achieving 82% accuracy. Engineered a computer vision pipeline to monitor KPIs like shooting hand detection, knee angle analysis, and shot count for performance insights from video feed. Led and mentored a team of 5+ research assistants through technical sessions and academic guidance.

PROJECTS & RESEARCH

AirgapAgentLite - Privacy-Preserving LLM Framework (In Progress), COMPSCI 690F, UMass Amherst
Building a two-LLM **AirGapAgent** using **Mistral-7B** on GPU; enforcing contextual privacy via a hybrid, lightweight data minimizer (rule-based + small **LLM**/transformer) optimized with **GRPO** RL; targeting **97% privacy retention** under adversarial prompt attacks while preserving utility.

Poker AI Agent, UMass Amherst More Info Github Repo
Developed AI agents for Texas Hold'em Poker: Expectiminimax, Q-learning, and hybrid MCTS-Minimax with Bayesian profiling.

Analysis of Player Tracking Data from Football Match Feed, RRIA Journal DOI:10.33436/v33i2y202307
Built a system using K-Means, YOLOv5, DeepSORT, GANs for tracking data extraction; modeled and integrated pitch control and threat metrics to quantify player's decision making.

Classification of Hate Speech Using DistilBERT, FIRE-WN 2021 CEUR Proceedings
Achieved 77.7% accuracy in binary classification, 65.1% in multiclass; ranked 24th globally.

LEADERSHIP & ACHIEVEMENTS

Committee Member, Junior Analyst Council, Citi Mar 2023 – Dec 2024
Selected as one of 20 analysts nationwide; led peer learning initiatives and coordinated tech sessions.

Alumni Relations Head, ACM SSN Jun 2021 – Apr 2022
Fostered alumni engagement and coordinated coding events.

Latest Awards:
A-Star Applause Award, Citi (2022) • Citi GOLD (2023) and SILVER (2024) gratitude awards • Winner, ICG Debate League 2.0 (Implications of Gen AI in FinTech) • Chennai branch winner, ICG Global Analyst Hackathon 2023