Rahul Saravanakumar

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Education

Texas A&M University Aug. 2023 – May 2027
Bachelor's Degree in Computer Science, Minor in Business and Statistics *College Station, TX*

- 3.76 GPA — Dean's List (4 Semesters)
- TA for Computer Science Program Design and Concepts
- Member of Aggie Coding Club and Aggie Competitive Coding Club

Experience

Backend Developer Jun. 2025 – Present
Materna *Remote*

- Developed backend APIs with Django views and serializers to reduce client-side issues by 35%.
- Configured and implemented Django ORM for SQLite3 DB to increase query efficiency by 46%.
- Wrote comprehensive unit and integration tests and integrated them into a CI/CD pipeline, reducing deployment bugs by 91%.
- Designed backend architecture, enabling scalable future development with modular feature design.

Undergraduate Research Assistant - Smart Swine Solutions Project May 2025 – Present
Texas A&M University *College Station, TX*

- Created an agent-based model with Mesa to simulate bovine behavior, allowing for analysis of resource use.
- Added stochastic variables to introduce real-world variability, increasing simulation accuracy by 40%.
- Developed a Streamlit dashboard to visualize outputs and allow real-time parameter tuning by researchers.

Undergraduate Research Assistant - AI Image-Based Weed Detection Jun. 2025 – Aug. 2025
Texas A&M University *College Station, TX*

- Researched use of image segmentation models with YOLO for agricultural object detection, improving weed classification accuracy by 28%.
- Trained and evaluated deep learning models, achieving 82% mAP and 0.67 IoU on test datasets for multi-class weed detection.
- Collected and annotated over 2,000 field images to create a high-quality training dataset for weed identification.

Projects

Music Retrieval AI Assistant | *Python, PyTorch, Pinecone, Spotify Web API* Aug. 2025 – Present

- Built a Spotify-integrated assistant capable of interpreting complex natural language queries for semantic and acoustic song search.
- Enhanced natural-language understanding by finetuning an LLM on domain-specific data, facilitating robust structured parameter extraction from unstructured queries with 93% accuracy in production.
- Designed and implemented a RAG-powered dual-vector retrieval pipeline combining metadata and CLAP embeddings for audio similarity, decreasing retrieval mismatches by 38% compared to text-only.
- Indexed 10K+ tracks in a Pinecone vector database with Spotify audio feature filters, improving mood-based search speed by 45%.

TAMU BusRoutes+ | *Python, JS, Flask, Selenium, Three.js, HTML* Jan. 2024 – Present

- Developed an interactive 3D web application using Three.js to visualize TAMU bus routes, enhancing route clarity and planning efficiency.
- Built a Flask backend and used Selenium to scrape session cookies, enabling secure and automated access to live transit data.
- Adopted by 100+ TAMU students through community outreach and word of mouth.

Technical Skills

Languages: Python, JavaScript, C/C++/C#, Java, Rust, TypeScript, SQL (PostgreSQL, SQLite3), R, Bash
Frameworks: React, NumPy, Pandas, Node.js, PyTorch, TensorFlow, Flask, FastAPI, Django, jQuery
Developer Tools: Git, AWS, Azure, Word, Excel, Tableau, Firebase, Docker, Google Cloud Platform, VS Code
Relevant Coursework: Data Structures & Algorithms, Processor Design, Operating Systems, Programming Languages, Machine Learning