Arjun Supramaniam

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Education

University of Washington Seattle, WA

Bachelor of Science in Informatics, Minor in Data Science – GPA: 3.75 *Expected Graduation: Jun 2027*

- **Relevant Coursework:** Data Structures, Algorithms, Databases, Machine Learning, Linear Algebra

Experience

Undergraduate Researcher Oct 2025 – Present

UW Medicine *Seattle, WA*

- Engineered VR eye-tracking software for the VIVE Focus 3 using Unity (C#) and Spike2 with millisecond-level head–eye synchronization
- Refined calibration and data pipelines, enhancing reliability and scalability across 30+ human trials
- Contributed to a VR-based system advancing research in vestibular rehabilitation and eye-movement learning

Software Developer Dec 2024 – Sept 2025

Sensors, Energy, and Automation Laboratory *Seattle, WA*

- Built Delta AB, a research system for 150+ users; wrote Java modules for task tracking, data sync, and feedback
- Optimized researcher data handling to avoid loss and reduced read/write latency by 40% under concurrent access
- Added task archiving and feedback tools to improve productivity, system reliability, and user engagement
- Led deployment using shell scripts and CI tools, enabling reproducible builds and consistent lab rollouts

Teaching Assistant Mar 2025 – Jun 2025

UW Department of Electrical and Computer Engineering *Seattle, WA*

- Supported 100+ students learning AI, robotics, and research methods through office hours and debugging
- Built grading and participation tools in Python to reduce TA workload by 40% and improve accuracy
- Iterated on internal tools using student feedback to streamline grading and engagement tracking

Projects

RAG Codebase Tool | *Python, Ollama, OpenAI API, ChromaDB* Jul 2025 – Aug 2025

- Built a modular CLI tool for semantic code search and Q&A using Retrieval-Augmented Generation (RAG)
- Integrated pluggable embedding and generation models (OpenAI, Ollama, HuggingFace) for flexible LLM inference
- Enabled local vector search over large codebases using ChromaDB with context-aware answer generation
- Supported interactive chat, error explanation, and source attribution directly from the terminal

PortfolioMax | *Python, React, FastAPI, AWS, Vercel* Jun 2025 – Jul 2025

- Built a full-stack AI portfolio optimizer with secure user authentication and dynamic dashboards
- Forecasted asset returns using ensemble ML models and 20+ engineered financial features
- Optimized portfolios with risk controls, diversification limits, and strategy customization
- Deployed backend to AWS Lambda for scalability and frontend to Vercel with 40+ users

UrbanResponse AI | *Python, FastAPI, CrewAI, Google Gemini, JavaScript* Jun 2025

- Engineered a full-stack agentic system for real-time urban disaster response and coordination
- Implemented multi-agent workflows for triage, dispatch, and resource allocation using CrewAI and uAgents
- Integrated Gemini Flash 2.5 to power LLM-based risk analysis and decision-making
- Built an interactive 3D map interface to visualize emergencies and live vehicle routing

Bon AiPPETIT | *Python, Flask, Google Gemini, JavaScript, HTML/CSS* Oct 2024

- Won 1st place (out of 80 teams) in Universal Wellness Track at DubHacks '24
- Built full-stack AI meal planner that analyzes fridge images using Google Gemini and suggests personalized recipes
- Designed front-end UI in JavaScript and HTML/CSS, improving user interaction scores in feedback surveys by 30%
- Integrated backend Flask endpoints with Gemini for food classification, achieving 90%+ accuracy across 50+ foods

Technical Skills

Languages: Java, Python, SQL (PostgreSQL, MySQL), JavaScript, HTML/CSS, R, C#, TypeScript, Bash
Frameworks: React, FastAPI, Flask, Node.js, CrewAI, uAgents
Developer Tools: Git, GitHub, VS Code, IntelliJ, Eclipse, Docker, ESP32, Jupyter, Postman, Figma, Notion
Libraries & Platforms: AWS, ChromaDB, OpenAI API, Ollama, Redis, SentenceTransformers, numpy, pandas