Aman Anwar

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EDUCATION

Virginia Tech   **May 2028**
B.S. in Computer Science   *Blacksburg, VA*

TECHNICAL SKILLS

Java, JavaScript, TypeScript, **Python, SQL,** Docker, Flask, Node.js, **PyTorch, Scikit-Learn, Pandas**, React.js, REST APIs, Express, MongoDB, PostgreSQL, Windows Command Line, Linux Command Line, Bash Scripting

EXPERIENCE

IDPRO @ Virginia Tech   **Jul. 2025 – Present**
Research Project Lead   *Blacksburg, VA*
- Leading a team of 5 on spatial audio research, collaborating with an industry expert sound engineer to explore automation of immersive sound.
- Developing a comprehensive pipeline involving OpenAI Whisper, Facebook DEMUCS and LLM Finetuning using Apple MLX.

Lumiq   **May. 2025 – Aug. 2025**
Software Engineer Intern   *Remote*
- Developed a scalable Spring Boot REST API server with Spring Data JPA, Hibernate, and PostgreSQL.
- Processed 100+ requests/second, exceeding performance goals outlined by senior engineers saving hosting costs by 47% .
- Developed a comprehensive churn analysis pipeline, employing machine learning models for predictive analytics, predicting when customer churns.
- Explored and cleaned the dataset, performed comprehensive data analysis, and applied SMOTE to address class imbalance, resulting in a model with a 95% F1 score.

IDEEAS LAB @ Virginia Tech   **Feb. 2025 – Aug. 2025**
Undergraduate Researcher   *Blacksburg, VA*
- Engineering a novel spatial audio synthesis system using Gemini 2.5 AI models, enabling more immersive and individualized 3D audio experiences.
- Developed a Python spatialization library, spatialAudiopy, utilizing object oriented design principles, including comprehensive functions for intuitive Spatial audio development.
- Increased research productivity by 2x using custom developed libraries over traditional methods.

PROJECTS

Fit Finder | **Winner @ HooHacks25** | **JavaScript, Perplexity, MongoDB, Python**   **Mar. 2025**
- Built a visual outfit similarity search engine using vector embeddings from OpenCLIP (ChromaDB) and Vector search from scalable MongoDB Atlas, enabling personalized apparel discovery in user uploaded closet pictures.
- Integrated Google Gemini to generate outfit metadata and segments, boosting vector search accuracy by 2x.
- Increased visual product search accuracy by 50% by integrating Perplexity Sonar with Gemini generated image descriptions.

Questionable | **Perplexity Hackathon** | **React, TypeScript, Flask**   **May. 2025**
- Developed a full-stack interactive news platform that redefines user engagement through dynamic widgets.
- **Engineered a cost-effective Flask backend with scalable, cached API endpoints**, strategically integrating **Perplexity's Sonar models** for dynamic content generation.
- Implemented a **smart caching mechanism on MongoDB Atlas** to significantly reduce API call frequency and optimize resource utilization.
- Designed and built the frontend using React + TypeScript, incorporating Framer Motion and Tailwind CSS for engaging animations and a seamless user experience.

Mumbl | **HackViolet25 Finalist** | **JavaScript, Gemini API, Express.Js**   **Feb. 2025**
- Developed an AI-driven speech analysis tool providing real-time feedback on tone, energy, and content.
- Engineered advanced prompt structures for the Gemini API, enabling nuanced and actionable speech analysis.
- Built a secure, decoupled Express.js backend to manage audio processing and API interactions, enhancing performance and modularity.

AWARDS

Best Use of MongoDB Atlas @ MLH| HooHacks25   **Mar. 2025**
University of Virginia, Charlottesville, VA