

# Ashu Sangar

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## EDUCATION

### University of Pittsburgh

B.S. in Computer Science, Minor in Statistics

Pittsburgh, PA

May 2025

**Relevant Coursework:** Software Engineering, Operating Systems, Human Language Technologies, Data Science, Web Applications, Computer Graphics, Algorithms & Data Structures

**Honors:** Magna Cum Laude, Dean's List

GPA: 3.6/4.0

## EXPERIENCE

### Neuraville

Pittsburgh, PA

Software Engineer

Jan. 2025 – May 2025

- Developed real-time AI-human interface using **Python**, integrating **FEAGI AI** with **Blender** to translate human body movements into 3D simulations via computer vision APIs.
- Engineered dynamic character binding system with automated scripts, reducing manual setup by **80%** and enabling universal rigging for any 3D character model.
- Optimized system performance by **99%**, reducing iteration delays from 2s to **1.25ms** through asynchronous threading, enabling scalable AI control with **30–40%** increased responsiveness.
- Built precision synchronization system, achieving accurate **real-time** matching between human input and 3D output using timestamp correlation.
- Developed cloud platform with **RESTful APIs** and **WebSockets** for secure remote AI controller access and data streaming.
- Implemented automated deployment pipelines using **Docker** for rapid environment setup and consistent workflows.

### Outlier AI

Remote

AI Quality Assurance Engineer

April 2024 – Dec. 2024

- Curated **Gold Standard datasets** for **RLHF** (Reinforcement Learning from Human Feedback), optimizing 50+ prompts to **fine-tune model logic** and code generation capabilities.
- Identified critical failure modes through **adversarial testing**, implementing safeguards that resolved **logic vulnerabilities** and improved system reliability by **30%**.
- Conducted **root cause analysis** on **model hallucinations**, isolating failure patterns in logic-based tasks and implementing targeted prompt constraints to reduce error rates.
- Specialized in **multi-modal prompt engineering**, evaluating and refining model performance across **mathematical reasoning**, **Python code generation**, and conversational context.

## PROJECTS

### Altus | Next.js, Python, Firebase

Oct. 2025 – Present

- Designed and built a full-stack productivity platform that quantifies focus habits, utilizing a **Next.js 14** frontend and **Python FastAPI** backend.
- Implemented a robust authentication architecture using **Firebase Auth** to manage secure session persistence, employing middleware to enforce guarded client routes and granular API access controls.
- Engineered a scalable **Firestore** schema for users and focus sessions; integrated **Pydantic** models for rigid backend validation and typed interfaces.
- Developed a clean, responsive UI using **React**, **TypeScript**, **TailwindCSS**, and **Framer Motion**, emphasizing accessibility and UX clarity.
- Designed the analytical data model for tracking user focus sessions, streaks, and productivity metrics, enabling future **behavioral insights**.

### Legal Precedent Retrieval System | Python, NLP, BERT

Feb. 2025 – April 2025

- Built an advanced NLP system using **transformer models (ColBERT/BERT)** to retrieve and rank legal precedents from **59,000+ cases**, significantly outperforming traditional keyword-based methods.
- Architected a robust **data preprocessing pipeline** using **Pandas** and **RegEx** to clean, tokenize, and normalize raw legal text, reducing dataset noise for improved model convergence.
- Implemented a **hybrid retrieval strategy** by fusing dense vector scores with sparse **BM25** rankings, ensuring high recall for specific legal terminology often missed by pure semantic models.
- Engineered **citation network analysis** to validate retrieval accuracy and assess system performance across complex legal document relationships.

## TECHNICAL SKILLS

**Languages:** Python (FastAPI, NumPy, Pandas, Matplotlib), TypeScript, JavaScript, SQL, Java, C, HTML/CSS

**AI, ML & NLP:** Scikit-learn, OpenCV, Transformers (BERT), Hugging Face, RAG, Sentiment Analysis, Image & Text Classification, Model Evaluation

**Backend & Cloud:** Next.js 14, React, Node.js, REST API Design, Firebase, Docker, Containerization, WebSockets

**Tools & Methods:** Git/GitHub, Jupyter Notebook, CI/CD, Agile, Technical Documentation, Data Analytics