

# YUVANSHU AGARWAL

yuvanshu.agarwal@gmail.com | 862-485-9128 | www.linkedin.com/in/yuvanshu-agarwal

## EDUCATION

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### Carnegie Mellon University

B.S. Information Systems, Minor in Artificial Intelligence (GPA: 3.8)

Pittsburgh, PA

December 2024

**Relevant Coursework:** Intro to ML (PhD), Intermediate Deep Learning (Graduate), Computer Vision (Graduate)

## TECHNICAL SKILLS

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**Languages:** Python, TypeScript/JavaScript, SQL

**Backend / Systems:** FastAPI, REST/gRPC APIs, distributed systems, Temporal

**AI / Multimodal:** PyTorch, Hugging Face, RAG, Pydantic AI, Milvus

**Infra / Cloud:** Docker, Kubernetes, AWS, GCP

## EXPERIENCE

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### FlowState AI, Founding Engineer (Employee #1)

January 2025 - Present

*Startup building video agentic search and enterprise video intelligence systems*

- Build the backend and core platform infrastructure from the ground up for scalable video ingestion, retrieval, and search, enabling early enterprise customer deployments across 10,000+ hours of video content
- Lead engineering across system architecture, product execution, and early team building as Employee #1
- Translate frontier research in video agentic search and long-form video understanding into production-grade systems for real-time video processing, anomaly detection, and enterprise analytics
- Develop end-to-end data pipelines for video ingestion, storage, and retrieval while fine-tuning advanced VLMs for long-form video understanding

### Openstream.ai, Machine Learning Intern

May 2024 – July 2024

*A multimodal, plan-based Conversational AI platform enabling natural interactions with various channels and languages.*

- Designed a multimodal fusion mechanism for temporally aligned audio/video inputs
- Trained 100+ models to implement a proprietary personality detection ML algorithm that takes in a user's real-time video feed and outputs a score for openness, conscientiousness, agreeableness, extroversion, and neuroticism traits

### MIT Lincoln Laboratory, Machine Learning Intern

June 2023 – July 2023

*Lab develops ML technologies using advanced sensors and high-performance computing to protect the U.S. homeland.*

- Implemented Neural Radiance Field (NeRF) ML algorithms like Instant-NGP, Nerfacto, and Nerfacto-Big to render 3D photorealistic models from sparse, low-quality 2D imagery
- Optimized rendering quality to 30+ Peak Signal-To-Noise Ratio and reduced training time in half

### Carnegie Mellon University, Mobility Privacy Security Lab Research Assistant

January 2023 - May 2023

- Built a Python/GCP web crawling pipeline to extract and process metadata from 3M+ Google Play apps for large-scale trend analysis.

## LEADERSHIP

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### Carnegie Autonomous Racing, Path Planning SLAM Team Lead

September 2021 – September 2023

*Team of CMU students who design, build, and race the first-ever North American autonomous Formula Student race car.*

- Led a team of 5 students in the development of the car's GraphSLAM system; it uses pose graph optimization to derive the racetrack map and car location
- Debugged path-planning system to enable race car to complete first autonomous lap in North American history at New Hampshire Motor Speedway in May 2023

## RESEARCH PUBLICATIONS

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### Computer Vision Pattern Recognition (CVPR)

June 2024

- *Shifted Reality: Navigating Altered Visual Inputs with Multimodal LLMs*

## HONORS

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- Nationally ranked chess player, #48 in the U.S. for age 18