AADITYA VORUGANTI

+1 563-223-7343 | helloaadityav@gmail.com | https://github.com/Aadityavoru | www.linkedin.com/in/aaditya-voruganti

AI & Software Engineer with focus in **robotics** and **AI/ML infrastructure**. Built, shipped vision models to **50,000+ vehicles at Samsara**, lead a AI platform ("GitHub for Engineers"), scaled it to **10,000+ users**, and engineered a real-time **perception system** deployed on **6 humanoid robots**.

EDUCATION

University of Illinois at Urbana-Champaign, James Scholar Honors (Senior), BS/MS Program — Aug 2022 – May 2026
Major: Computer Science. Minor: Econometrics (Quantitative Economics) — GPA: 3.75/4.0

AI/Robotics coursework: Mobile Robotics, Deep Learning for Computer Vision, Applied Machine Learning, Reinforcement learning
Systems coursework: Distributed Systems, Systems Programming, Computer Architecture, Database Systems
Theory coursework: Algorithms, Data Structures, Functional Programming (Haskell), Numerical Methods, Statistics

TECHNICAL SKILLS

Languages: C++, Python, Go, C, JavaScript, Haskell
AI / Machine Learning: PyTorch, TensorFlow, CUDA, Vertex AI, OpenAI (LangChain), JAX, Hugging Face, LLMs, Multi-Agent Systems
Robotics & Perception: ROS 2, visual SLAM, Gazebo, OpenCV, IMUs, 3D Mapping, Localization
Infrastructure & Cloud: Docker, Kubernetes, Kafka, AWS (S3, RDS, EC2), Google Cloud, CI/CD (GitHub Actions), gRPC, Redis, Distributed Systems
Full Stack & Databases: React, Node.js, FastAPI, PostgreSQL, MySQL, Vector DBs, REST APIs, CDN, HLS/DASH
Embedded & IoT: FreeRTOS, Embedded Systems, Edge AI, LoRa, AR/VR, Sensor Networks, Embedded Linux, NVIDIA Jetson Platforms

WORK EXPERIENCE

Intelligent Motion Lab UIUC, Computer Vision *Research Intern (Provisional Patent Pending)* — Aug 2025 – Present

- **Architected two novel memory-compression algorithms** (Calibrated Top-k & Encoded Fusion) for dense **3D semantic mapping**, reducing GPU memory overhead by **80%+ (Pytorch, and Open3D)** while preserving calibration accuracy.
- Solved memory bottlenecks via custom sparse voxel hashing, achieving real-time reconstruction for **150+ classes** on building-scale datasets.
- Validated compression pipelines on **ScanNet++**, resulting in consideration for a **provisional patent** filing by the university of Illinois

Samsara Inc, Embedded Software Research Intern, AI Infrastructure — May 2025 – Aug 2025

- Built scalable AI infrastructure in **Go**, deploying **TinyCLIP** models on **Ambarella NPU** for real-time multimodal inference across **50K+ vehicles**
- Developed an **on-device vector DB** for natural-language visual search via **gRPC**, enabling instant retrieval of embeddings and timestamps.
- Deployed **FastAPI** microservices (**Docker, Redis**) serving multimodal embeddings through REST endpoints.
- Launched **Samsara Vista**, a fleet video search app on **AWS S3**, cutting ML data retrieval from **24 hrs** to **15 mins** (~99% reduction)

Intelligent Motion Lab UIUC, Robotics *Research Intern (https://github.com/uiuc-iml/Robotic-Perception-Box)* — Aug 2024 – May 2025

- Developed a **perception system** for a humanoid robotic nurse to enable real-time scene understanding, and **spatial awareness in hospitals**
- Engineered an **NVIDIA Jetson Orin** perception system (C++, ROS 2) to deploy and accelerate **PyTorch/TensorFlow models**, fusing synchronized data from **LiDARs, IMUs,** and **cameras** using a custom **CUDA-based abstraction layer**
- Integrated visual **SLAM** algorithms, Native and **ROS 2** Versions, tested in **Gazebo** and deployed on **6 humanoid robotic platforms**

Trvise, *Lead ML Infrastructure and Fullstack Software Engineer (https://blueprint-trvise.web.app)* — Jan 2025 – June 2025

- Built **Blueprint-Trvise**, a distributed platform (*React, HTML5, CSS3, JavaScript*) with a companion mobile app for non-CS creators to share projects scaled to **10,000+ users**.
- Designed a **22-table AWS RDS** backend (*PostgreSQL/MySQL)* for authentication, and media storage with **HLS streaming**, CDN optimization.
- Integrated **Google Vertex AI** and **OpenAI LangChain** to develop multi-agent **large language model (LLM)** systems that transform videos into interactive learning guides for Blue collar workers and hobbyists
- Automated **Docker enabled CI/CD** with **GitHub Actions (99.9% uptime)**, enabling scalable, event-driven AI agents in the cloud.

AWARDS

- **IBM Call for Code 2021 (Regional Winner, Top 10 Global** from **400K+ people**, **179 countries)** for *WaterMon*, with **Linux Foundation**.
- **2nd Place Winner** at AGI house, sponsored by OpenAI, Google DeepMind, and Windsurf
- **Best Engineering Project 2024 and 2025**, UIUC Engineering Open House (40K+ attendees) — **Top 3 overall two years consecutively**

CLUBS AND PERSONAL PROJECT HIGHLIGHTS

Illinois Space Society, *Senior Software Developer / Launch Operations, (* https://github.com/ISSUIUC) — August 2023 – May 2024

- Engineered and programmed a new **Telemetry** setup for **Ground Station software** with **LoRa and Radiohead** running on**,** our fully in-house developed avionics controller MIDAS running **FreeRTOS**. It is capable of streaming live video and telemetry over 60 miles altitude
- Engineered a **Physics Engine** for **SILSIM (Software in the loop simulation)**, enabling real-time prediction of rocket dynamics, GPS tracking