

Amikosh Dube

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EDUCATION

Carnegie Mellon University

Master of Science in Computer and Civil Engineering

Pittsburgh, PA

December 2026

- Fully funded Graduate Research Assistant with the Robotics Institute (Courtesy Student status)
- GPA: 3.8/4.0

Purdue University

Bachelor of Science in Computer Engineering

West Lafayette, IN

May 2025

WORK EXPERIENCE

Autonomy Intern

May 2026 – August 2026

Aurora Flight Sciences

- Designed and implemented a swappable rate-controller architecture (PID, RSLQR, OBLTR, AAOBLTR) in custom PX4 firmware, achieving 0.06–0.07 rad/s tracking error on roll/pitch under disturbance.
- Built a real-time, TensorRT-accelerated HLoc localization pipeline with a YOLOv11-n detector, eliminating AprilTag markers and yielding a 3x increase in inliers and a 20% improvement in pose-estimate accuracy.
- Formulated a closed-form analytical CBF safety filter for real-time obstacle avoidance in quadcopter guidance.
- Led a live quadcopter flight demonstration of the tuned AAOBLTR controller for Boeing and DARPA LINC stakeholders.

AirLabs Graduate Research Assistantship

August 2025 – Present

Carnegie Mellon University

- Implemented multi-agent capability in AirStack, an open-source drone simulation platform built in Isaac Sim.
- Developing an informative semantic path planning algorithm to navigate large construction sites.
- Implemented high-level object recognition and semantic mapping to contextualize 3D excavation surfaces for a Japanese construction firm, Shimizu, enabling volumetric differencing accurate to ± 5 cm.

Founder and Technical Lead

May 2022 – August 2026

Codex Labs LLC

- Spearheaded development of SWARMS, a cloud drone simulation platform acquired by MIT Lincoln Laboratory.
- Led customer outreach, product demonstrations, and strategic development to expand platform adoption.

Machine Learning Software Engineering Intern

May 2023 – August 2025

SAAB Defense

- Engineered a federated-learning AI pipeline integrating multi-sensor data to produce situational intelligence.
- Trained a YOLO Drone Detector on 10,000 synthetic images, achieving 89% precision on real-world data.
- Developed a real-time, asynchronous object detection pipeline in Unreal Engine using C++, NNE, and OpenCV.
- Architected an automated image-annotation pipeline that accelerated YOLO training-data preparation.

Lead Drone SWARMS Researcher

August 2021 – May 2025

Purdue University

- Led research and development of SLAM algorithms for autonomous drone navigation in outdoor scenarios.
- Implemented semantic-based real-time obstacle avoidance using LiDAR and cameras.
- Presented SLAM and swarm-control research 4 times at Purdue's Undergraduate Research Expo.

PROJECTS

CMU's Largest University-Built Drone

August 2025 – Present

GoAERO Stage 1 and University Innovation Awardee

Graduate Projects

August 2025 – Present

Top 10% in CMU Deep Learning Kaggle Competitions, PPO and SAC on a Franka robotic arm and MPC for Drones

VEX World Quarter Finalist and Mentor

August 2017 – May 2025

Four-time VEX Worlds Qualifier and Top 25 Ranked Team in the world

SKILLS

AI & Robotics: Physical AI, Transformers, YOLO, SLAM, Path Planning, Sensor Fusion, PID/RSLQR/OBLTR/CBFs, Computer Vision

Frameworks & Simulation: ROS2, PX4, NVIDIA Isaac Sim, Gazebo, AirSim, Unreal Engine, Docker, TensorRT, AirStack

Programming Languages: C/C++, Python, SQL, Bash

Systems & Software: Linux, Real-Time Systems, Git, GitHub, Scrum, JIRA, Confluence, UML Diagrams, Embedded Firmware