

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

AI RESEARCH

Diffusion Model Research

Spring 2026

Designed a transformer-based diffusion backbone (U-ViT), replacing U-Net in InfEdit's inversion-free editing pipeline; improved CLIP-based semantic alignment 5.2–7.9 points over baseline on PIE-Bench.

Reinforcement Learning — Franka Kitchen Manipulation

Spring 2026

Implemented PPO, SAC, and model-based (CEM) RL agents using Stable-Baselines3; designed a dense reward function and reduced state representation that improved convergence speed and sample efficiency over the sparse-reward baseline.

Learning-Augmented MPC & Neural Lyapunov Certification

Spring 2026

Built a high-fidelity MuJoCo quadrotor simulator with aerodynamic disturbances and domain randomization; collected rollout data to train a residual dynamics model for a learning-augmented MPC and neural-Lyapunov certification pipeline.

CMU 11-785 Deep Learning: Top 10% Competitive Benchmark (Kaggle)

Spring 2026

Developed and deployed 4+ deep learning architectures (MLPs, CNNs, RNNs, Transformer encoder-decoders) for speech recognition, phoneme state classification, and face verification tasks.

WORK EXPERIENCE

Autonomy Intern

May 2026 – August 2026

Aurora Flight Sciences

- Architected a modular C++ controller framework (strategy pattern) and a closed-form collision-avoidance safety algorithm.
- Built and deployed a real-time computer-vision inference pipeline optimized with TensorRT for embedded GPU hardware, improving pose-estimate accuracy by 20% and increasing usable feature matches 3x over the prior system.
- Led a live technical demonstration of the tuned control system for Boeing and DARPA stakeholders.

AirLabs Graduate Research Assistantship

August 2025 – Present

Carnegie Mellon University

- Extended a distributed multi-agent simulation framework (NVIDIA Isaac Sim) to support concurrent agent coordination.
- Built a computer-vision and 3D-mapping pipeline for an enterprise client (Shimizu), accurate to ± 5 cm.

Founder and Technical Lead

May 2022 – August 2026

Codex Labs LLC

- Spearheaded development of a cloud-based simulation platform (SWARMS), acquired by MIT Lincoln Laboratory.

Machine Learning Software Engineering Intern

May 2023 – August 2025

SAAB Defense

- Engineered a distributed, federated-learning pipeline integrating multi-source sensor data for real-time analytics.
- Trained a computer-vision object-detection model on 10,000 synthetic images, achieving 89% precision on real-world data.
- Developed a real-time C++ inference pipeline (Unreal Engine, NNE, OpenCV) and an automated ML annotation pipeline.

Lead Drone SWARMS Researcher

August 2021 – May 2025

Purdue University

- Led research on real-time SLAM and semantic obstacle avoidance for autonomous navigation using LiDAR and cameras.

PROJECTS

CMU's Largest University-Built Drone: GoAERO Stage 1 and University Innovation Awardee

August 2025 – Present

SKILLS

AI & Machine Learning: Diffusion Models, Transformers, Reinforcement Learning (PPO, SAC), Computer Vision, Federated Learning

ML Systems: Real-Time Inference, Distributed Pipelines, TensorRT, Docker, MuJoCo, Model Training and Deployment

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

Tools: Linux, Git, GitHub, Scrum, JIRA, Confluence, NVIDIA Isaac Sim, Unreal Engine, OpenCV