Rishabh Tole

Boston, MA • rtole@seas.upenn.edu • (508) 665–9111 • Website • GitHub • LinkedIn

Education

University of Pennsylvania — Philadelphia, PA
B.S.E. in Artificial Intelligence — Minor: Mathematics — *2025 – 2029*

Experience & Research

Researcher • Autonomous Aerial Robotics — Summer 2025 – Present
Worcester Polytechnic Institute — *Worcester, MA*

- Trained, tested, and iterated on an end-to-end perception-to-control pipeline for quadrotor obstacle avoidance
- Collected a **$\tilde{1}$5k-image** dataset using a multi-pinhole lensless imaging setup and designed model architectures and training pipelines for **UNet CNNs, ViTs, and Diffusion models**.
- Optimized inference using **TensorRT**, improving performance from **8 FPS to $\tilde{3}$0 FPS** and enabling real-time deployment on **Jetson Nano**.
- Intended for submission to *IEEE Robotics and Automation Letters (RA-L).*

Autonomy Software Engineer • Penn Aerial Robotics Club — Aug 2025 – Present
Penn Arial Robotics Software Team — *Philadelphia, PA*

- Developed autonomy software using **ROS** and **PX4**, integrating perception with control for aerial robots.
- Built a **Gazebo** simulation environment for rapid iteration and validation of quadrotor behaviors.
- Implemented and validated a system to detect and dodge aerial hoops in simulation and real-world flight tests.

Software Engineering Intern — Summer 2024
Breeze Travel — *Remote*

- Redesigned and modernized UI to support transition from B2C to **B2B SaaS**.
- Developed features tailored for business clients, improving usability and workflow efficiency.

Projects

Founder & Engineer • Pingin — Nov 2025 – Present
AI College Admissions Platform

- Building an agentic AI platform for college admissions consulting, spanning backend systems and automated advising workflows.
- Secured **$50K in first-round funding** and led early-stage product development and iteration.

Quantum Computing Simulator — Feb 2025 – May 2025
MIT • Introduction to Quantum Computing

- Built a quantum circuit simulator modeling multi-qubit systems and common quantum gates.
- Explored implementation of **Shor's Algorithm** for integer factorization.
- Selected as **1 of 164** students from home high school cohort to participate.

SedLev • Storm Drain Sediment Monitoring System — Jun 2023 – Jun 2025
Embedded Sensing, Systems Engineering

- Designed a low-cost sensor system to monitor sediment accumulation in storm drains to help prevent flooding and water pollution.
- Demonstrated a working prototype; engaged with local municipal stakeholders on pilot deployment discussions.

Technical Skills

Languages: Python, Java, OCaml, Bash, LaTeX
ML / Vision: PyTorch, UNet, Vision Transformers, Diffusion Models, OpenCV, NumPy
Robotics: ROS, PX4, Gazebo
Embedded / Systems: Jetson Nano, TensorRT, Raspberry Pi
Tools: Git, Docker, OnShape, Excel