Overview: This project will (1) establish a novel learning-based framework to equip drones with new capabilities of learning from different ones, (2) reduce design efforts in planning and control for each individual drone, (3) unlock current limitations toward mass production of heterogeneous robots, and (4) prepare future workforce for unmanned aerial system industry via educational pathways.

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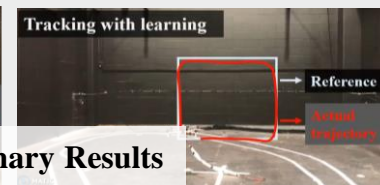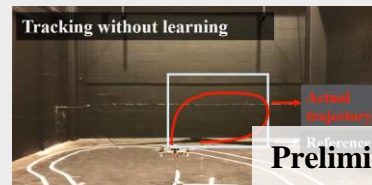
Intellectual Merit

- Learn from different drones;
- Learn for trajectory generation and disturbance compensation;
- Learn from learning experiences (dynamic learning);
- A learning framework that can be elegantly integrated into holistic planning and control solutions.

Challenge: Extensive efforts before flying a new drone

Solution: Learning from different drones

Skill 1: Trajectory generation
Skill 2: Disturbance compensation
Skill 3: Dynamic learning

Training drone
Target drone
Tracking without learning
Reference
Actual trajectory
Tracking with learning
Reference
Actual trajectory
Preliminary Results

Long-term Goal: Build fundamental understanding of learning among heterogeneous drones

Broader Impact

Promote mass application of heterogeneous drones

Internship, lab sessions, & drone race

Prepare future workforce for drone industry