Abstract of AeroTHON 2024 Rule book

(Missions portion only)

Inviting All College and University Students!

Are you enthusiastic about drones and eager to push the boundaries of innovation? Don't miss your chance to participate in the AeroTHON 2024 edition of UNCREWED AIRCRAFT SYSTEM (UAS) DESIGN, BUILD AND FLY CONTEST! This exciting event is open to college students from all disciplines who are ready to take on the challenge of designing and building their own UAS.

Competition Overview

The theme for this edition of AeroTHON is **Surveillance and Disaster Management**. In this competition, the students will have the opportunity to showcase their skills in Survey, Obstacle Avoidance, Payload drop, Tracking, Navigation, Object Identification and Counting of the objects using their Drones. The Competition consists of Preliminary Design Review (Phase-I) and Final Flight Testing (Phase-II). Phase-II will consist of the four rounds of flight tests as described here.

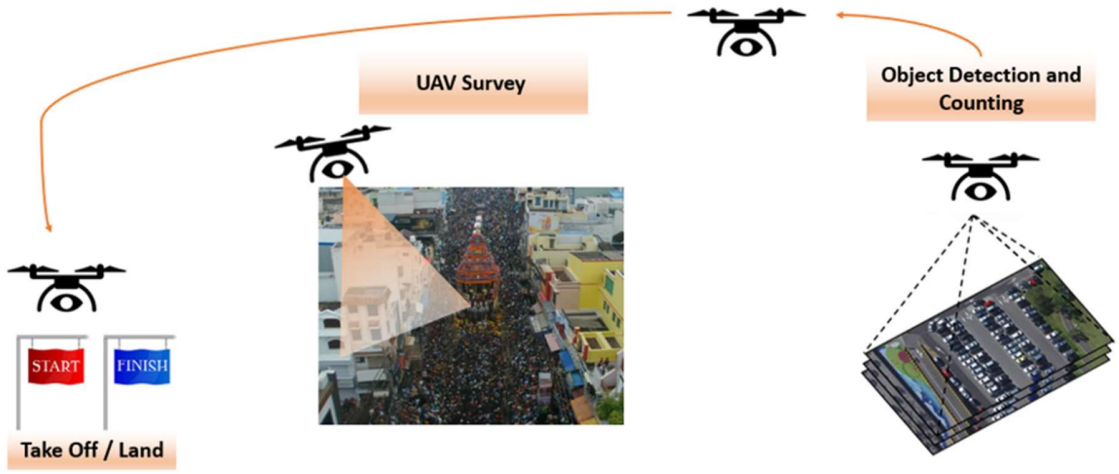

Figure 1: Mission Scope for AeroTHON 2024

Rounds 1 and 2: UAS Survey, Object Detection and Counting

- Design a UAS equipped with advanced technology capable of efficiently surveying a pre-defined area.
- Implement object detection algorithms to identify specific objectives within the surveyed area.

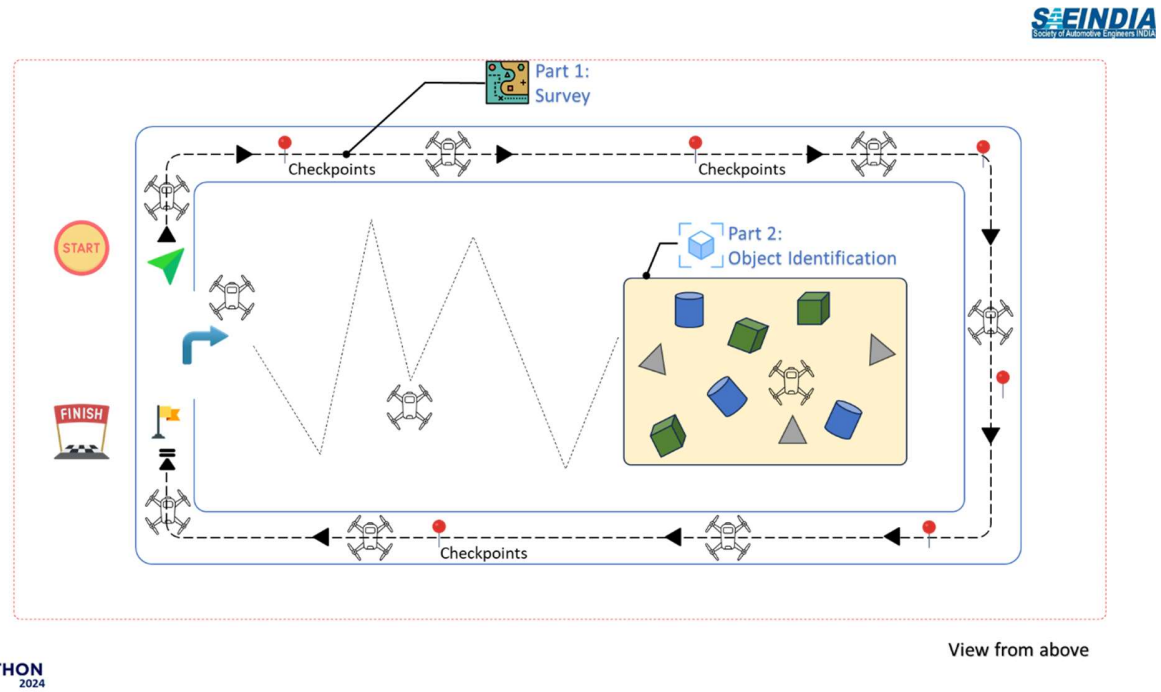

Figure 2: Mission Profile (Round 1 and 2)

Mission Profile: In the first part of the flight, the UAS is expected to follow the path defined, above the checkpoint at a prescribed altitude and capture the video (survey). After the final checkpoint, the UAS will proceed to the surveillance area for object identification. Within this area, the system will identify and count different objects and record the data. Round 1 will be in manual mode and Round 2 will be autonomous mode. More details regarding the altitude, object specimen, surveillance area, field area, etc., will be defined in the rulebook.

Rounds 3 and 4: Navigating Obstacles and Payload Drop

- Design your UAS to navigate an obstacle course and drop a 200g payload from 5m altitude with precision and accuracy.

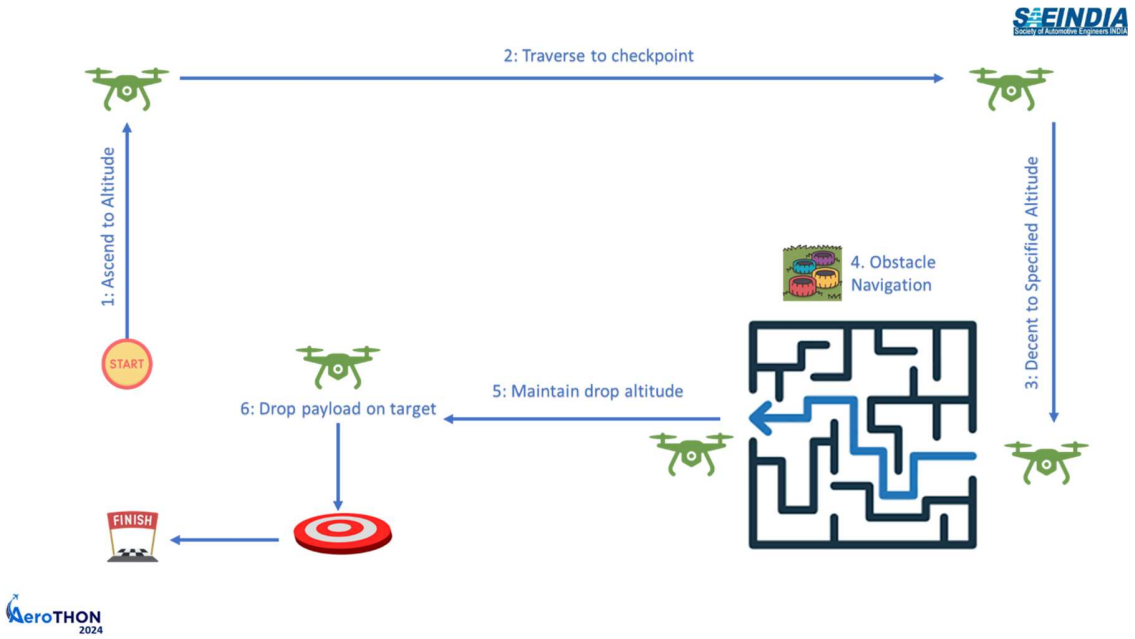

Figure 3: Mission Profile Round 3 (Manual)

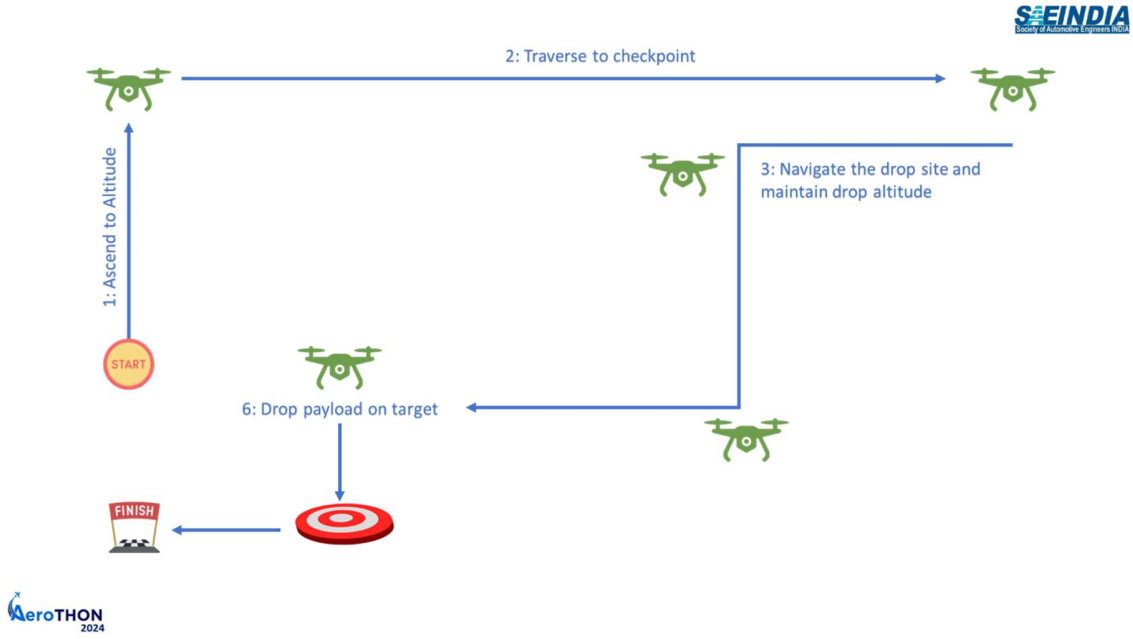

Figure 4: Mission Profile Round 4 (Autonomous)

Mission Profile: The UAS is expected to reach the cruise altitude and travel to the checkpoint to the beginning of the obstacle track. Then the system must descend to the specified altitude, maneuver the track, and avoid obstacles. The system should proceed to the target area and maintain the 5m altitude. The payload must be dropped and the UAS must return to the launchpad. Round 3 will be in manual mode and Round 4 will be in autonomous mode (obstacle navigation not applicable for autonomous mode). More details regarding the altitude, object specimen, surveillance area, field area, etc., will be defined in the rulebook.

Why Participate?

Prizes: Win exciting prizes, including cash rewards, and certificates of achievement.

Networking: Connect with like-minded students/peers, industry professionals, and UAS enthusiasts.

Gain Experience: Gain valuable hands-on experience in drone technology, design, and competition.

Registration Information

Don't miss out on this opportunity to showcase your creativity, innovation, and technical skills. To register for the competition or learn more about the rules and guidelines, visit https://saeindia.org/aerothon2024

Registration Deadline: 15th March 2024

Join us for an unforgettable experience filled with excitement, learning, exposure to industry needs, and friendly competition.

For inquiries or sponsorship opportunities, please contact:

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