FPV RACING CHAMPIONSHIP

INTRODUCTION

This event challenges participants to design and operate high-performance FPV drones capable of navigating a predefined racing track consisting of gates, obstacles, and sharp turns in the minimum possible time. The objective is to demonstrate precision control, agility, and speed while maintaining stability and consistency throughout multiple laps. Teams are expected to optimize their drone configuration and piloting skills to efficiently complete the course under competitive conditions

PROBLEM STATEMENT

This event challenges participants to design and operate high-performance FPV drones capable of navigating a predefined racing track consisting of gates, obstacles, and sharp turns in the minimum possible time. The competition focuses on testing the pilot's ability to maintain precision control, agility, and high-speed maneuverability while ensuring stability and consistency throughout multiple laps.

Mohammed Ali
Outreach Head
ali@dronotics.in

Vaibhav Katariya
Head Events
vaibhav@dronotics.in

Yasharth Singh
Management Head
yasharth@dronotics.in

Rakshit Suneja
Creative Head
rakshit@dronotics.in

Participants must demonstrate efficient handling of their drone under dynamic conditions, including navigating obstacles placed at varying heights and executing tight turns with accuracy. Emphasis is placed not only on speed but also on control discipline, smooth transitions, and the ability to recover from minor disturbances during flight.

The overall objective is to achieve the fastest possible lap time while successfully completing the course without errors, thereby showcasing a balance of technical skill, control efficiency, and racing strategy.

DRONE SPECIFICATION

Participants are required to design and operate FPV drones adhering to the following specifications:

- Frame size: 3.5-inch to 5-inch class (maximum propeller size $\leqslant$ 5 inches)
- Battery: Limited to a maximum of 6S LiPo / Li-ion ($\leqslant$ 25.2 V)
- Propellers: Must not exceed a diameter of 5 inches
- Control mode: Operation must be strictly manual via FPV; autonomous or assisted modes are not permitted
- Video Transmission: Both Analog or Digital FPV systems
- Failsafe: A functional failsafe mechanism must be configured
- Safety: Drones must be structurally secure with properly mounted components

Any violation of the above specifications may result in penalties or disqualification after inspection.

Mohammed Ali
Outreach Head
ali@dronotics.in

Vaibhav Katariya
Head Events
vaibhav@dronotics.in

Yasharth Singh
Management Head
yasharth@dronotics.in

Rakshit Suneja
Creative Head
rakshit@dronotics.in

ABSTRACT SUBMISSION ROUND

The participating teams must submit an abstract of their drone's concept, in proper documented form. This should include its configuration, design, features, estimated cost, and an approach to tackle the problem statement. The teams must compile all this information in a PDF file. If any extra files are to be included, the submission must be in the form of a ZIP file. Please note that the files submitted should NOT be password-protected or corrupted. In either of the cases, the submissions would be directly rejected.

GUIDELINES FOR ABSTRACT SUBMISSION

Rough sketches of your idea including the Design Report of your model. The abstract must specify the use of software and the mechanism used in the design analysis of the drone.

- USPs (Unique Selling Propositions) of your design and innovations made by you should be mentioned in the report and mention how they are going to tackle the specific challenges.
- An abstract of the idea needs to be uploaded on the Dronotics website before the deadline.
- The abstract should not exceed 500 words and should include the following details of all team members along with the Team.

Mohammed Ali
Outreach Head
ali@dronotics.in

Vaibhav Katariya
Head Events
vaibhav@dronotics.in

Yasharth Singh
Management Head
yasharth@dronotics.in

Rakshit Suneja
Creative Head
rakshit@dronotics.in

Cover Page Details:

The cover page of the submission must include the following information:

- Team Name
- Team Leader Details:
  - Name of Team Leader
  - College / Institute Name
  - Year of Study
  - Email ID
  - Phone Number
- Team Members:
  - Names of all team members

File Naming Convention:

The file must be submitted in the following format:
FPV_<TeamName>_<LeaderName>_abstract.pdf
Example: FPV_ABC_AmanGandotra_abstract.pdf

Submission Email

The abstract/design report must be mailed to:
dronoticsjiit128@gmail.com

The Subject of email should be in this format:
FPV Racing Championship - <TeamName> - <LeaderName> Abstract
Example: FPV Racing championship - ABC - Aman Gandotra Abstract

Important Note

- Only PDF format submissions will be accepted.
- Files must not be corrupted or password-protected.
- Any submission not following the naming convention may be rejected.

Mohammed Ali
Outreach Head
ali@dronotics.in

Vaibhav Katariya
Head Events
vaibhav@dronotics.in

Yasharth Singh
Management Head
yasharth@dronotics.in

Rakshit Suneja
Creative Head
rakshit@dronotics.in

COMPETITION ROUND STRUCTURE

Participants will be required to navigate a predefined racing track consisting of gates and obstacles using manual FPV control. The objective is to complete the course in the shortest possible time while maintaining control and accuracy.

Each team has to complete two laps . The timing will begin when the drone successfully passes through the first obstacle and will conclude upon completing two laps, with the drone passing through the first obstacle again at the end.

The total time achieved by the participant in completing both the laps will be considered for ranking.

The pilot is allowed to move freely in a specified area, but is not allowed to enter the track.

Thr usage of FPV headsets is required (First person View).

Participants must ensure smooth and controlled flight while navigating through all obstacles. Skipping any obstacless or deviating from the track may result in penalties or lap invalidation.

In case of a tie between teams, an additional round will be conducted to determine the final ranking.

The detailed layout of the arena and obstacle configuration will be revealed on the day of the event to ensure fairness and prevent prior practice advantages.

Mohammed Ali
Outreach Head
ali@dronotics.in

Vaibhav Katariya
Head Events
vaibhav@dronotics.in

Yasharth Singh
Management Head
yasharth@dronotics.in

Rakshit Suneja
Creative Head
rakshit@dronotics.in

PENALTIES

To ensure fairness and consistency in evaluation, the following penalties will be imposed during the event (including but not limited to):

- Missing an Obstacle: A penalty of +8 seconds will be added for each missed obstacle or gate
- Deviating from Track: A penalty of +2 will be imposed for every deviation.
- Crash with Self-Recovery: If the drone crashes but is able to resume flight without external assistance, a penalty of +4 seconds will be imposed
- Crash Requiring Assistance: If the drone requires manual intervention from a marshal to resume flight, a penalty of +10 seconds will be imposed
- Failure to Complete Lap: If the drone is unable to continue the race due to a crash or technical failure, the lap will be considered invalid

ADDITIONAL GUIDELINES

- Penalties are cumulative and will be added to the total lap time.
- Intentional skipping of obstacles will be treated as a missed obstacle.
- Any unsafe flying behavior may lead to disqualification at the discretion of the judges

Note: The organizers reserve all rights to change any or all of the above rules.

Mohammed Ali
Outreach Head
ali@dronotics.in

Vaibhav Katariya
Head Events
vaibhav@dronotics.in

Yasharth Singh
Management Head
yasharth@dronotics.in

Rakshit Suneja
Creative Head
rakshit@dronotics.in