DRONE ODYSSEY CHALLENGE 2024

AI Powered Visual Sensing

Main Organiser:

Co-Organiser:

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1. Challenge Booklet Change Log

Version	Release Date	Description
1.0	3 April 2024	- Official Challenge Booklet release
1.1	26 April 2024	- Drones Mission Run Time

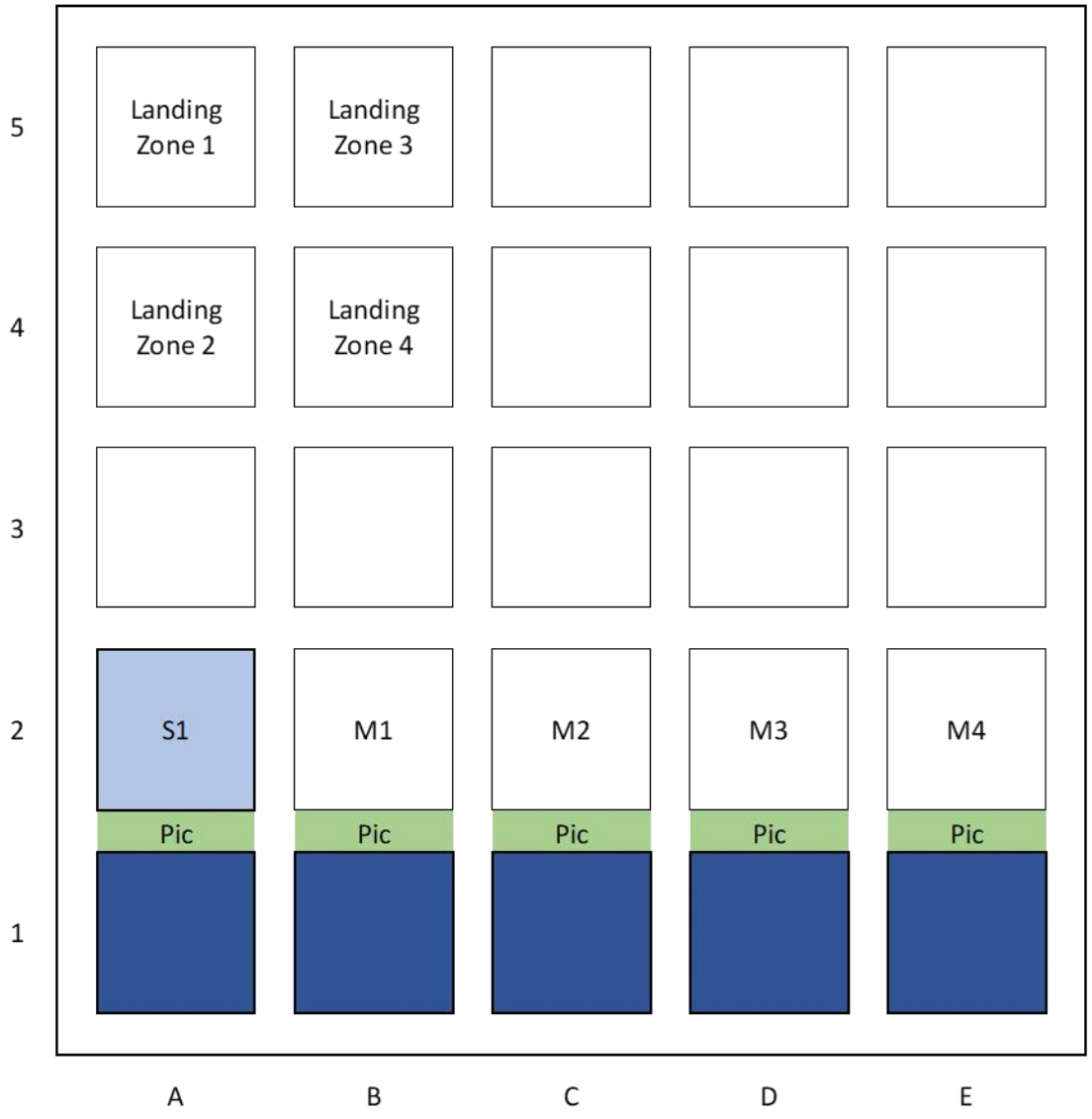
2. DOC 2024 AI Powered Visual Sensing Challenge

Registered teams will work with a drone to apply visual sensing to recognise objects of interest.

This year's theme is **Drone for Good**. Missions are focused on applications of artificial intelligence in drones. AI algorithms can be used to detect and recognize objects of interest in drone imagery, such as vehicles, people, buildings, and natural features. This capability is valuable for tasks like surveillance, security, wildlife monitoring, and agricultural analysis.

3. Category D1 Scoring

3.1 Sample Competition Playing Field



3.2 Scoring Rubric

AI Powered	
Security	
Drone reached specific area and take a picture (5 Locations) ● A2 , B2, C2, D2, E2	10 / location
Recognise the object (5 Images)	10 / object
Perform action based on object (5 actions) ● If detect “Cat”, land ● If detect “Human”, fly back ● If detect “Car”, fly to C3 and land Note: Data set will be provided	10 / action
Perform Secret Algorithm in one program ● Scan all image ● If Cat is at M1, End point is A5 ● If Cat is at M2, End point is B5 ● If Cat is at M3, End point is A4 ● If Cat is at M4, End point is B4	30
Identifying and display “number” at the end of the program ● Cat = 1 ● Human = 0 ● Car = End of number pattern Example 1: M1 -> Cat M2 -> Human M3 -> Car M4 -> Cat Final Display number = “10” Example 2: M1 -> Human M2 -> Cat M3 -> Cat M4 -> Car	30

Final Display number = “011”	

4. Mission Attempt

4.1 Start of Mission Attempt

- Each Team will be given 1 Mission Attempt.
- Time begins when the referee gives the signal to start.
- Each Mission attempt is 10 minutes.

4.2 Ending of Mission Attempt

A Mission attempt will end if…

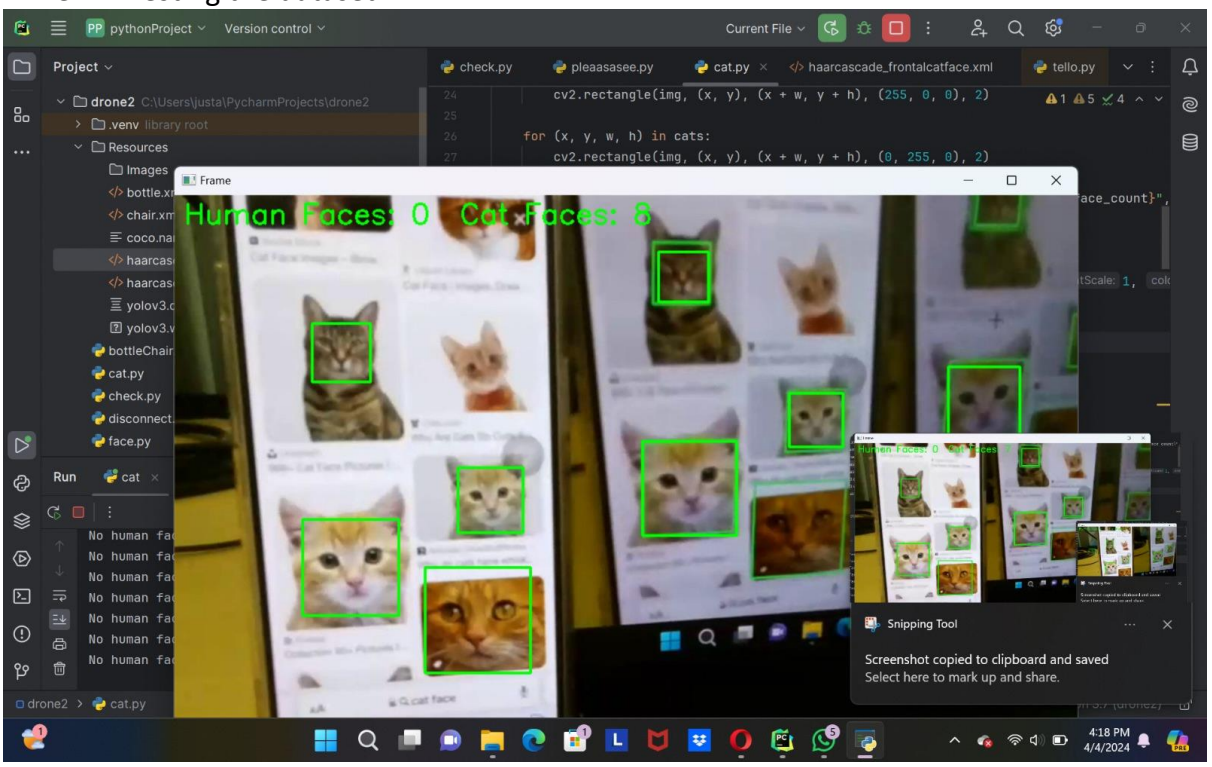
- The 10 minutes mark is up.
- The drone or team has violated the rules or regulations.
- A team member shouts “STOP”, and the drone does not move anymore.

5. Scoring Submissions

Once the Mission attempt has ended, time is stopped, and the judge scores the attempt. The scores are noted on a scoring sheet (on paper or digital), the team needs to sign off the scores (on paper or digital signature/checkbox). Once the score is signed off no further complaint is possible.

If a team does not want to sign off after a certain period, the judge can decide to disqualify the team for this round. It is not allowed for a team coach to join the discussion with judges on the scoring of the run. Video or photo proofs will not be accepted.

Annex A: Testing the dataset



Annex B: RESOURCES

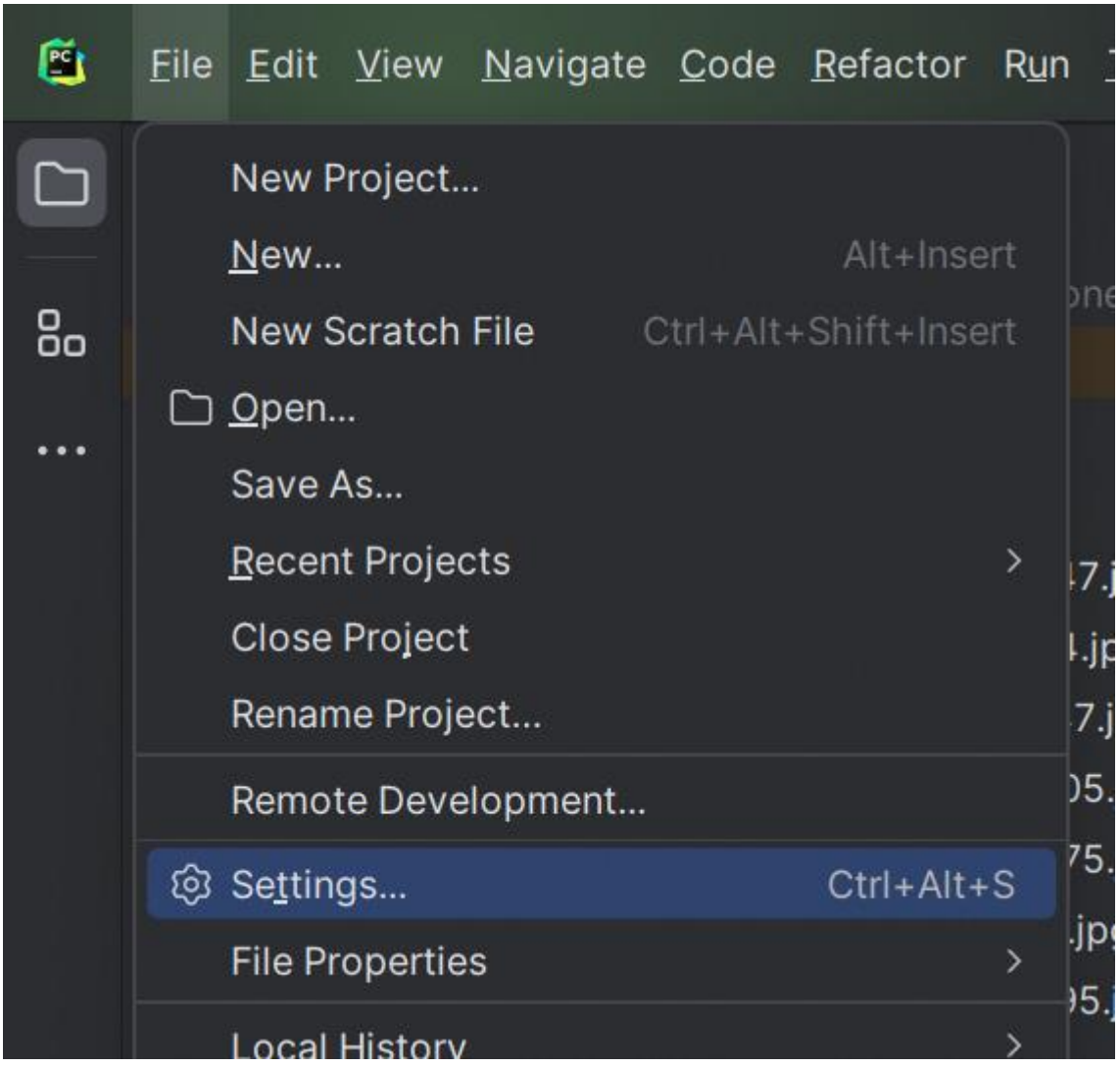
1) Install Python 3.7.6

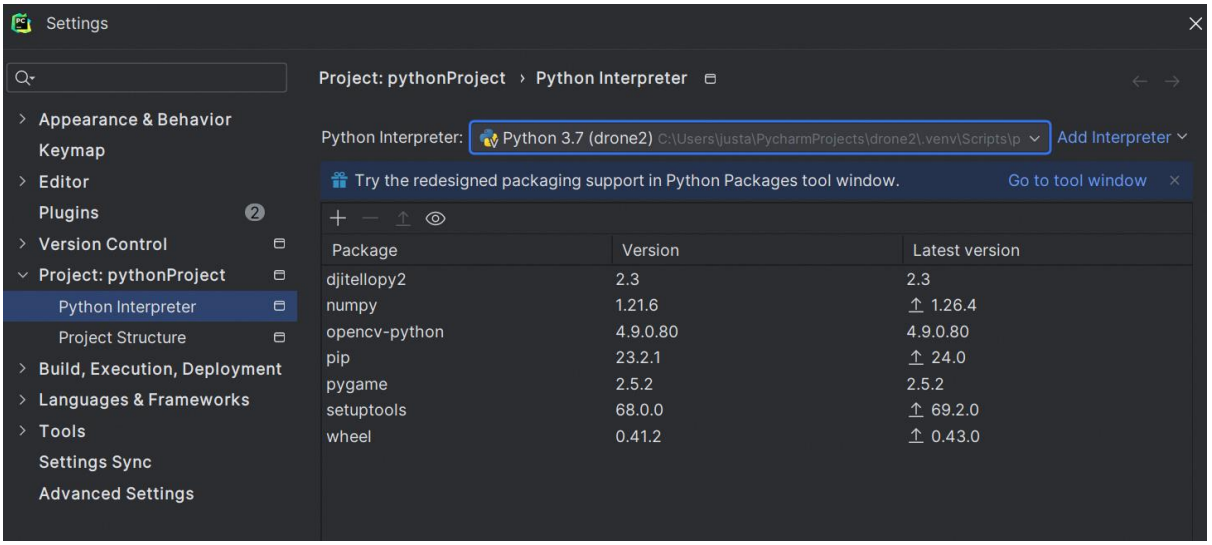
https://www.python.org/downloads/release/python-376/

2) Install PyCharm

Other Versions - PyCharm (jetbrains.com)

3) Install packages in PyCharm; djitellopy, opencv-python





4) Download the pre-trained models from OpenCV

[opencv/data/haarcascades at 4.x · opencv/opencv · GitHub]