TelloAI - Qualification stage

31/10/22

Intro:

Each team will need to show some Computer Vision skills before receiving their kit (drone, batteries etc).
For this stage there is no need in a drone, you will receive two videos from us which you will be tested on.
One team can't pass to the semifinals without completing the next challenge.

Description:

Challenge A:

Given a video containing Aruco codes, find the angle, distance and the value of the code relative to the camera at any given moment. Make sure the system also works for multiple Aruco codes in a given frame. (assume the QR was printed on an A4 paper of 19*19 cm).

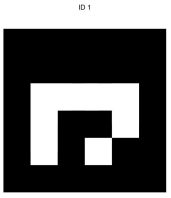
Challenge B:

Given a video that contains an Aruco code that performs a certain route and a log file of the drone including <time, frame, yaw, height, pitch, roll> calculate the route that the drone (aka camera) performed and locate the Aruco codes on according to this route (you can assume that the location of all the Aruco targets are fixed and unique) display it in a convenient way and log the data to a csv file in the following format: frame#, drone location <x,y,z>, Aruco#1 code, location <x1,y1,z1>. Make sure the system also works for multiple Aruco codes in a given frame: (in case there are yet other Aruco codes location <x2,y2,z2>... location <xn,yn,zn>)

Note:

- You are expected to write an optimal program (minimum delay & processing time).
- Assume that the drone is in the <0,0,0> position in the first frame and the direction of the camera is pointing to Z+, X+ is right and Y+ is up.

The ID of the Aruco codes are of 4x4 100 type.



Example for an Aruco code with ID 1:
Help and guidance:
alonbarak3110@gmail.com

Best of luck,
The K&CG Lab!