Event Name: U.A.V Drone

Event description:

Its 2050 the apocalypse is near, rescue missions on roll. How many can we save? The need of drones to pick up man or material from collapsing buildings and has risen. It's now or never.

Build a base for the upcoming future by fabricating drone that could hold the humans will to survive.

A mini drone which could carry the weight of a payload and deliver it safely while avoiding certain obstacles.

TEAM SPECIFICATION: -

A team may contain maximum of 6 members, no minimum limit (A team may consist of members from different colleges too).

Details of Individual Rounds:

TECHNICAL INSPECTION (T.I.) :-

In this round, the drone made by the participants will be subjected to a thorough technical inspection.
This isn't a judging parameter; hence no points are awarded for this round. Drones not meeting the displayed specifications will be disqualified immediately and the participating team wouldn't proceed to next round(s).

Dimensions & Fabrication of DRONE:-

- The maximum possible distance between any two motor shafts of your bot should have a value between 25cm and 50cm. For example, in the case of the quad copter, the diagonal length will be measured.
- Metal Propellers are not allowed.
- Apart from metal propellers any material can be used for construction.

- Arduino and other boards can be directly used. You may or may not use pre-programmed boards.
- Each team must have its own model. Team exchanging models will be disqualified.
- A single model should be used throughout the event.
- RTF models will not be allowed.

GAMEPLAY:-

Round 1:

This is a Qualifying Round (based on the completion time only).

1. Model has to be landed over 9 circles of different diameters in a particular orientation which will be arranged in a given order.
2. Circles will be placed at a distance of 2 metres in both the direction (front/back and left/right).
3. Circles are numbered according to their decreasing size. You have to start from the 1st circle and follow 1, 2, 3...9 in succession without skipping any of them. The end point will again be the 1st circle.
4. 1st circle has the diameter of 130 cm, 2nd is of 120 cm, 3rd is 110 cm and so on till 9th being the smallest in diameter (50cm).
5. When the model lands, its centre should lie inside the circle to be able to proceed to the next in succession.
6. In case the centre of the model is outside when it lands, the model has to be lifted again and should be landed properly. This will go on until the centre lies inside the circle.
7. A specific number of teams with best completion times will go on to the 2nd round.

Round 2:

1. The model has to successfully cross a range of obstacles and perform a payload delivery task.
2. The model will pick up a payload kept on a platform as shown in the figure. **(It is not necessary to design a mechanism to lift the payload automatically at the starting position, The participants can attach the payload manually at the start)**
3. The model with the payload will pass through a tunnel having 3 outlets each outlet carrying different points. You can choose any one of them**.(The dimensions of the payload will be 10x10 cms, with a permissible error of 10 mm and it will weigh anywhere between 50 to 100 grams)**
4. The model with the payload will fly upwards through an inverted tunnel (as shown in the figure) and drop the payload on the platform as shown in the figure. (building)
5. The model will have to pass through some rectangular frame in a zigzag fashion. Successful passing through each frame will fetch points.
6. Next the model has to pass through the obstacle as shown in the figure. It will enter the structure and move to the upper portion and exit the structure through the other end.
7. Next the model has to pass through a rectangular frame.
8. Then the model has to pass through a rotating rectangular frame (rpm will be provided).
9. There will be a total of 2 laps after which the model has to land in a designated area to end.

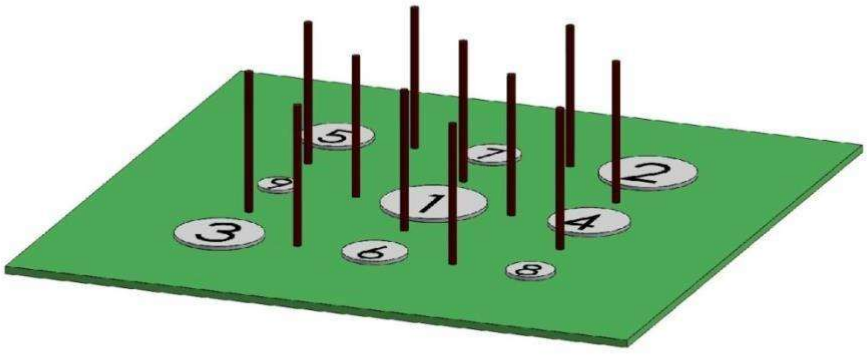
General Rules:-

- There will be no trial in the first round.
- You can have a short trial of 2 min before attempting the second round.
- Each team must have its own model. Exchanging of models is not allowed.
- You should not lift the bot to improve your position.
- Any failed attempt at landing (touch to the ground), which do not get you a point will lead to the end of the round.

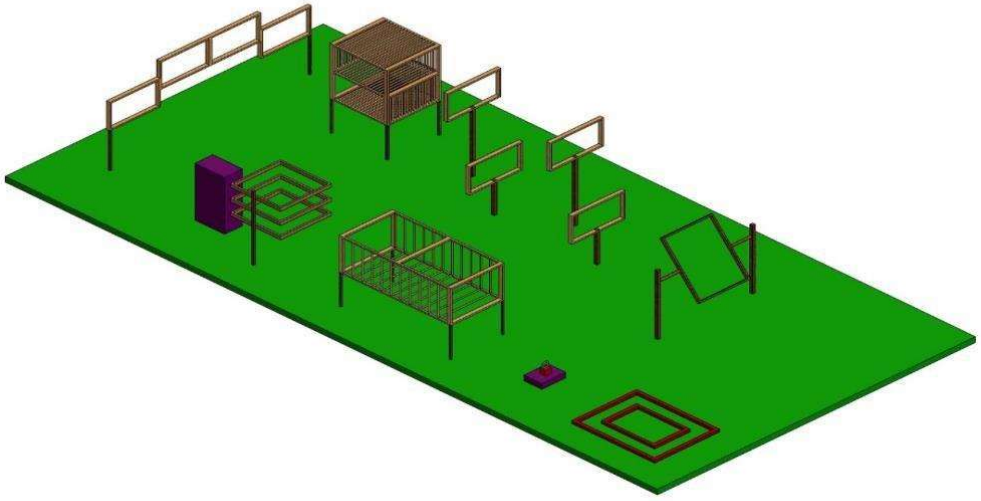
- RTF models will not be allowed, however pre-programmed boards may or may not be used. Off the shelf frame and electronics can be used
- Already built frames can be used.
- No restriction on the material used in making the machine but metal propellers are not allowed.
- A team can use only one model throughout the event in all the rounds.
- The organizers reserve all rights to change any or all of the above rules.
- Changes will be highlighted on the website and will also be mailed to all the registered participants. However, you are suggested to keep checking the website regularly.

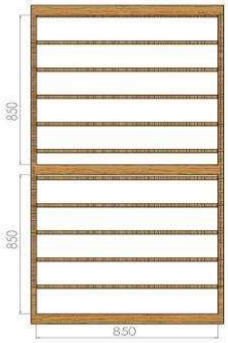
ARENA:-

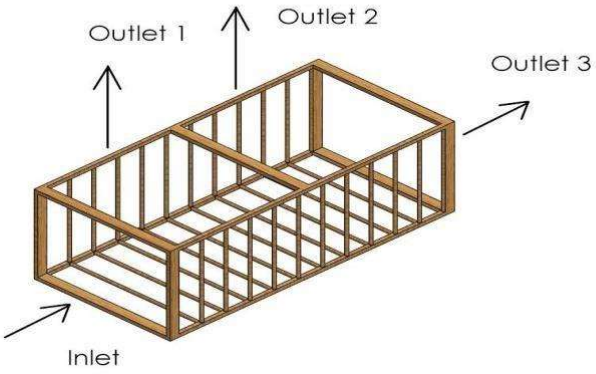
ROUND 1:

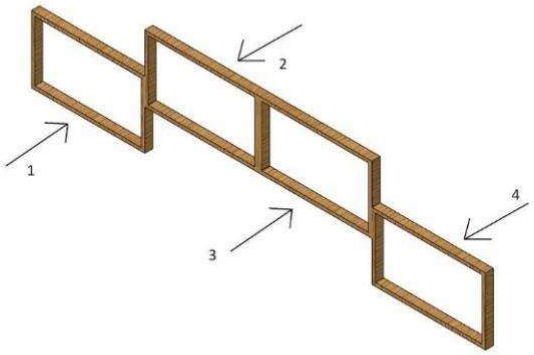


ROUND 2:

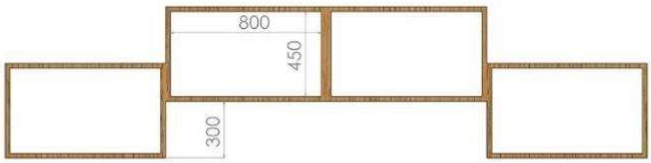




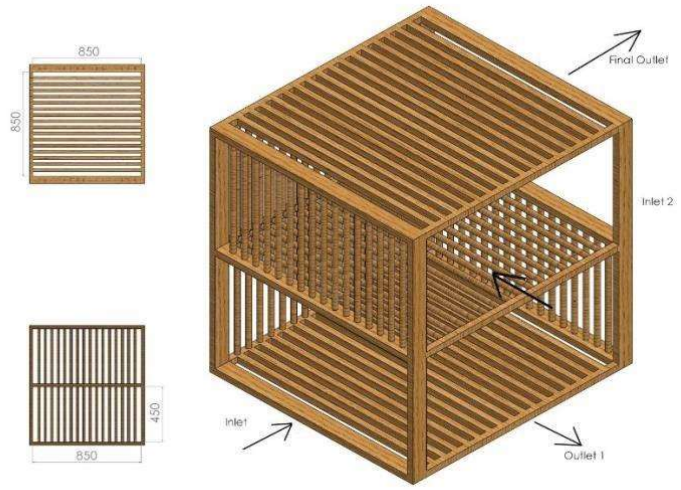


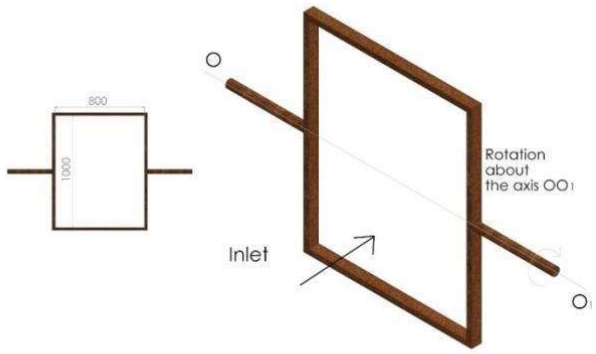


Zig-zag path



All inner rectangles have the same dimensions


850
850
Final Outlet
Inlet 2
450
850
Inlet
Outlet 1


800
1000
O
Rotation
about
the axis OO1
Inlet
O1