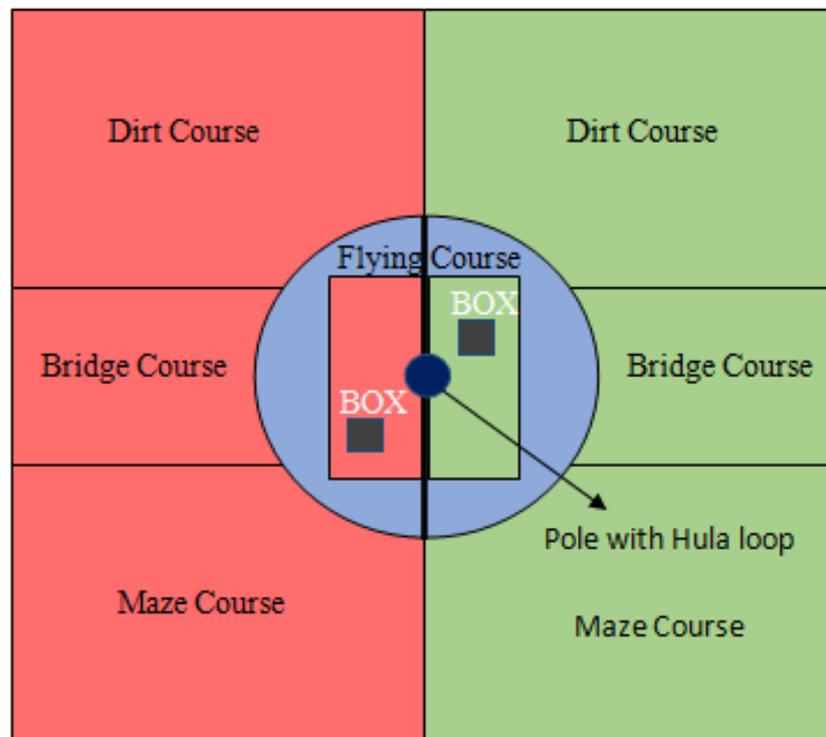


## AUTO-BOTS

### Task

- Each team has to simultaneously start with 3 different robots (2 wirelessly controlled and one fully automated) following three different courses and reach the end point to activate a wirelessly operated flying vehicle which passes through a ring to take an aerial photograph and read the message enclosed in the box which is visible only from the top.
- This is a time event so the time will be calculated from the start of 3 land vehicles till the time aerial vehicle crosses the ring.
- Bonus of 2 minutes can be achieved by accurately detecting the message in the box.

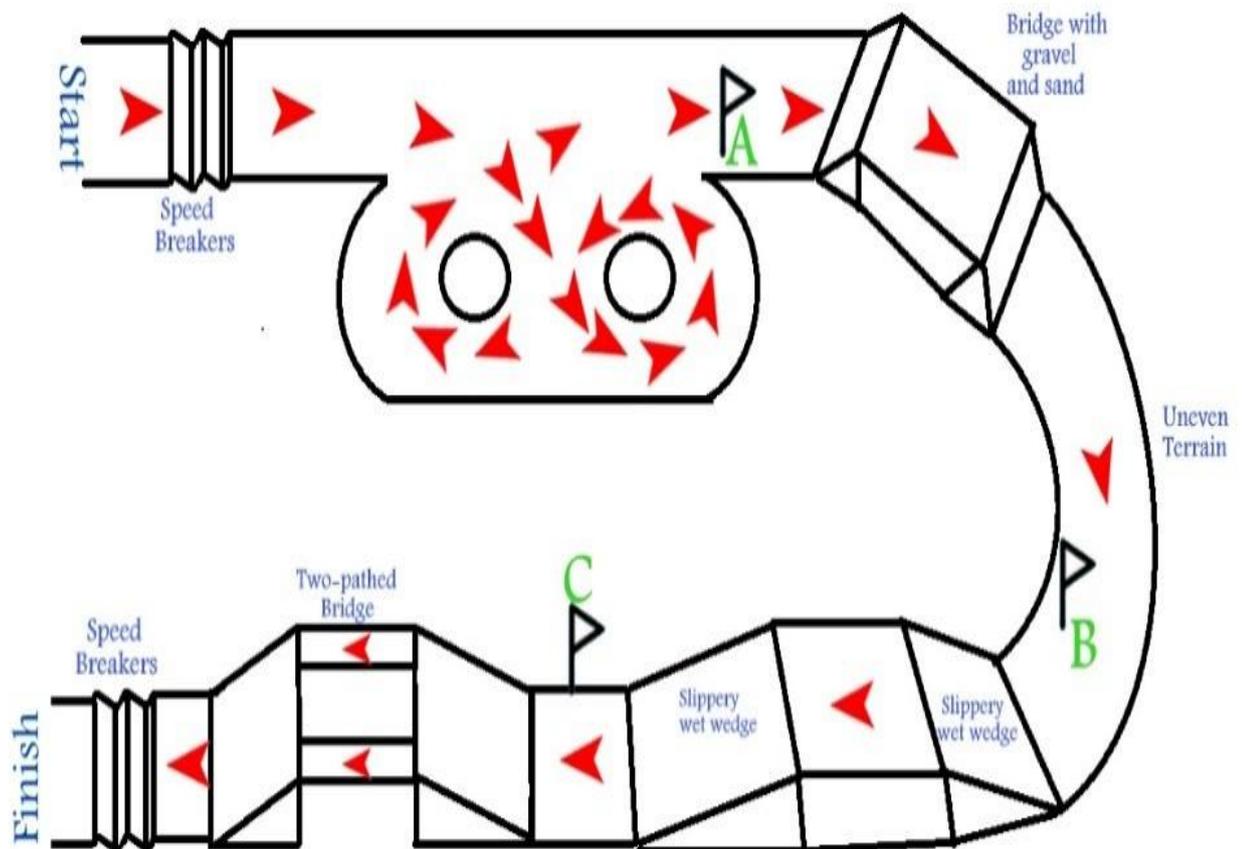


*Eagle's Eye View*

## Arena

### **Dirt Course:**

1. The bot will start from the start zone marked as green colour on the arena.
2. The width of the track will be of 40 cm.
3. The race track will be consisting of sharp left-right turns, bumps, slopes, gravels and sand, grease laden surfaces, etc.
4. Following are some of the main obstacles to be faced in the track:
  - Elevated tracks of not more than 30 degree.
  - Rough uneven terrains and Long bridges.
  - Pit holes and death wells.





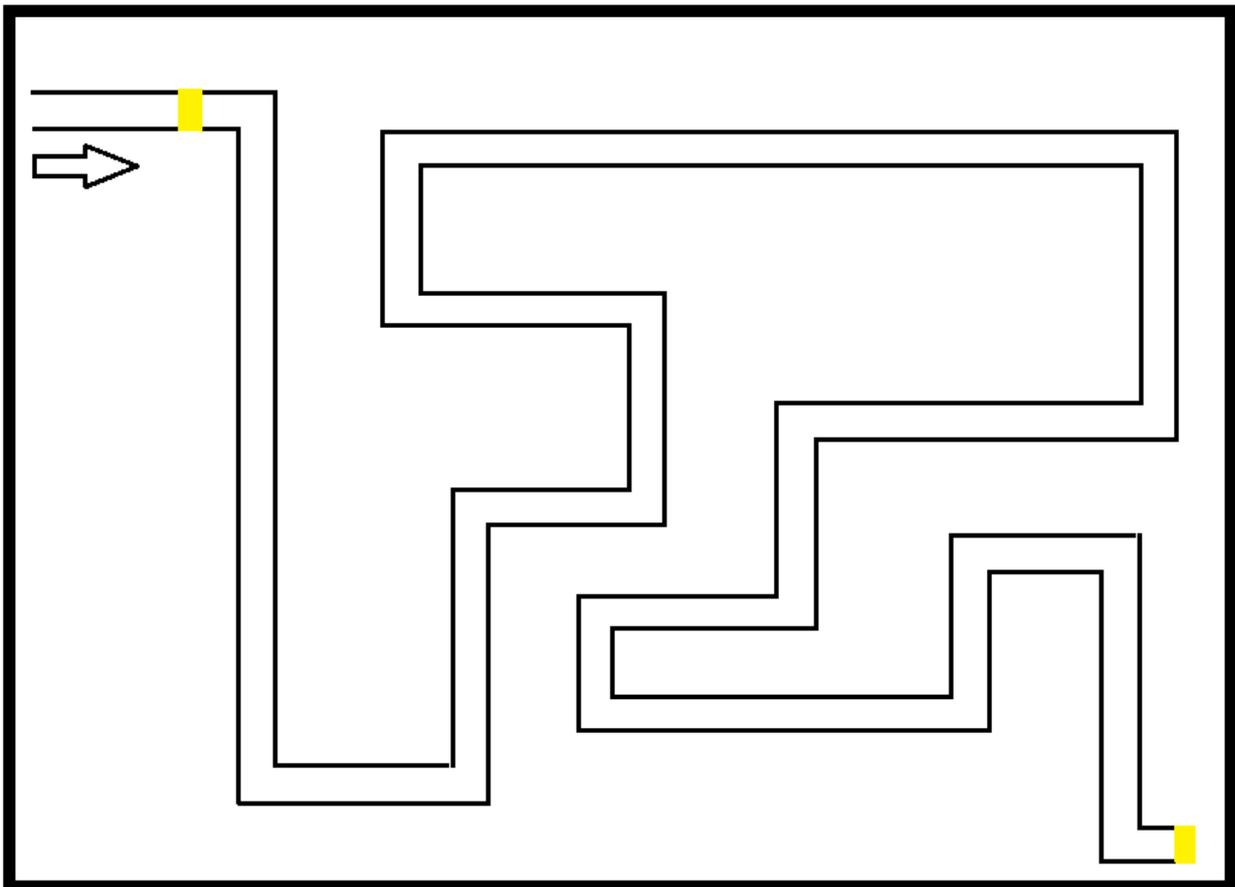
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**Maze Course:**

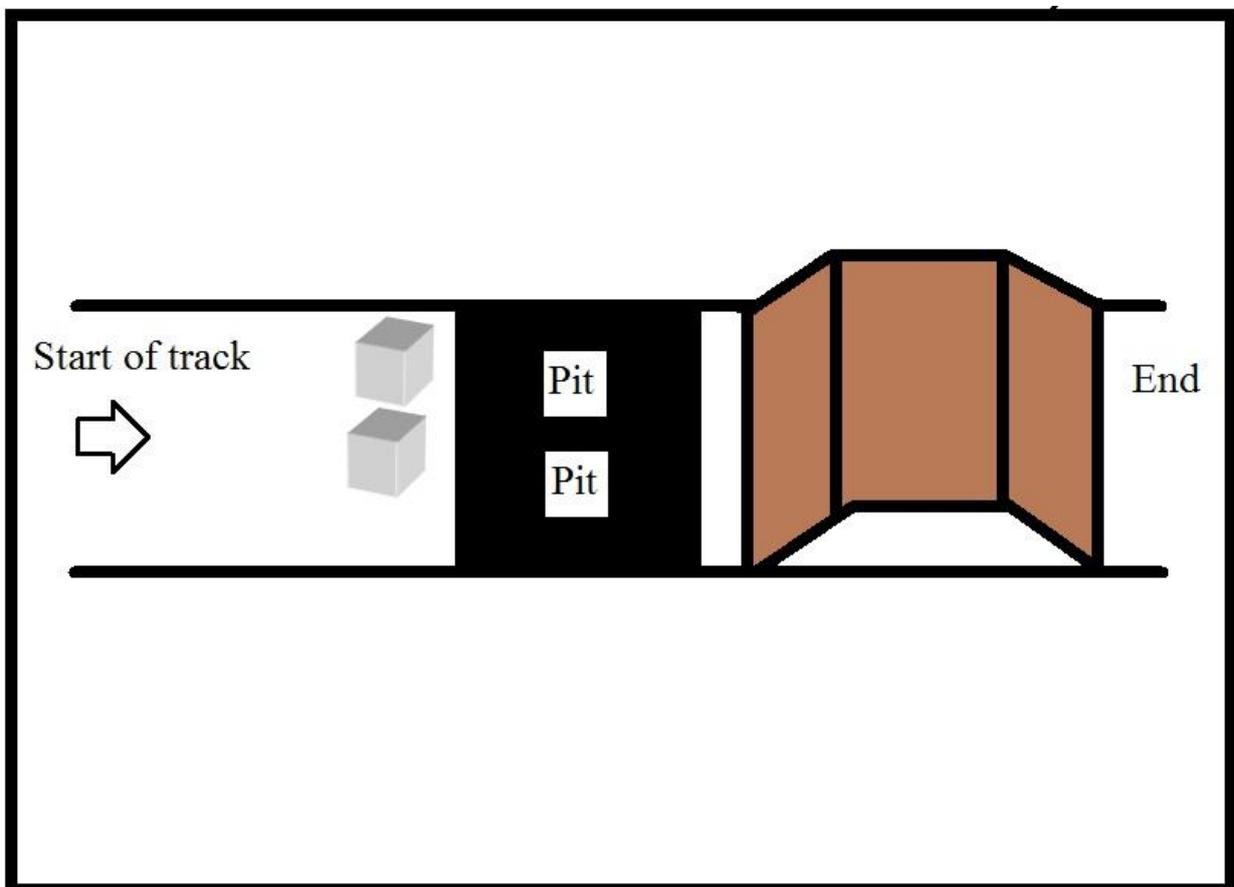
1. The bot will start from the start zone marked as green colour on the arena.
2. The width of the track will be of 40 cm.
3. **The race course will be a maze with the track surrounded by walls.**
4. The track will be consisting of sharp turns at 45 degrees and 90 degrees.





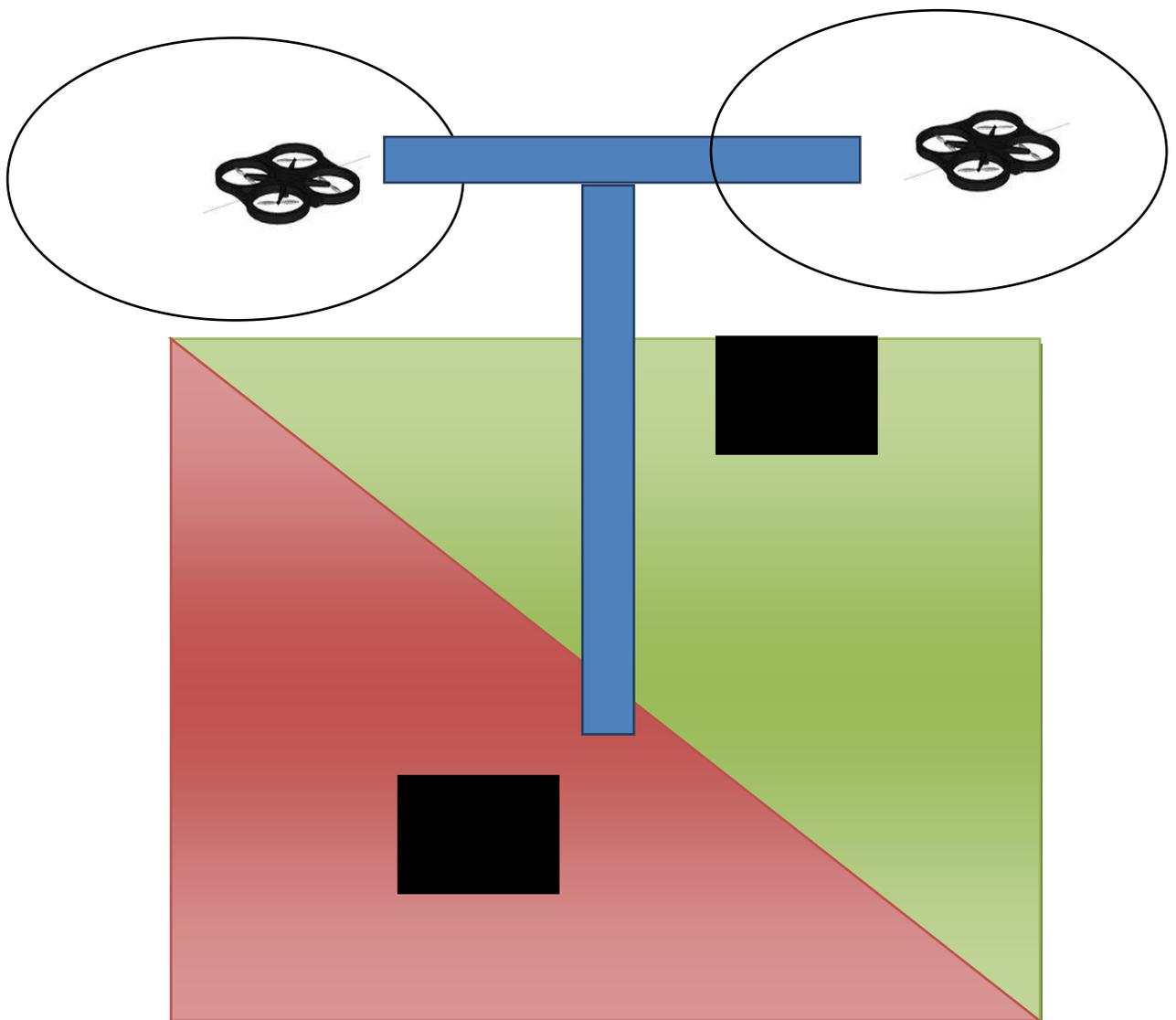
**Bridge Course:**

1. The bot will start from the start zone marked as green colour on the arena.
2. The arena will consist of an enclosure with blocks of size 40mm x 40mm x 40mm that has to be picked (can not be dragged).
3. The arena will also consist of a pit to be filled by the blocks in order to reach the finishing line.
4. Bot should reach to red coloured "End Zone" to complete the run.



**Aerial Course:**

1. The arena will consist of a hula hoop on a pole and a box.
2. The box will contain a message in the form of a picture which will be visible from top view only.
3. The bot will start from the start zone only after all the three land vehicles have reached the destinations.
4. The aerial vehicle will have to cross the hula hoop in order to finish the race.





## Machine Specifications

### **Dirt Course:**

1. The length, breadth and height of bot must not exceed 30 cm at any part of the game.
2. The bot can only be controlled by wireless control mechanism.
3. No Lego parts or any other readymade mechanism is allowed to be used although readymade gear assemblies, chassis or other components are permitted.
4. The participants must bring their own power supply and it should not exceed 18 V between any two points in the circuit.
5. No power supply will be provided during the competition. A.C. power will be provided only for charging purposes on the special demand of the team.
6. RC-engines in any form are not allowed.
7. The participants are advised not to use RF technology for the wireless robot as it can be interfered by other participants using the RF technology.

### **Maze Course:**

1. The length, breadth and height of bot must not exceed 30 cm at any part of the game.
2. The bot should be fully automated.
3. No Lego parts or any other readymade mechanism is allowed to be used although readymade gear assemblies, chassis or other components are permitted.
4. Any obstacle detection mechanism (image processing, Ultrasonic sensor, IR sensor) can be used to detect the walls of the maze.
5. The participants must bring their own power supply and it should not exceed 18 V between any two points in the circuit.
6. No power supply will be provided during the competition. A.C. power will be provided only for charging purposes on the special demand of the team.
7. RC-engines in any form are not allowed.

### **Bridge Course:**

1. The dimensions of the bot including gripper should be less than or equal to 300 mm X 200 mm X 300 mm at the start of the game failing which the team will be disqualified from the competition. However the bot can extend its dimension once the run starts. An error of (+5% /5%) is allowable.
2. The bot should be controlled wirelessly.
3. It is mandatory to use a dual frequency remote.
4. The dimensions of the remote are not included in the size constraint of the bot.
5. Bot must have an on-board power supply in any case.
6. Participants are not supposed to use any readymade Lego components or readymade gripping mechanism. However the participants are allowed to use readymade gear assemblies. Violating this clause will lead to immediate disqualification of the team.
7. Irrespective of the mechanism used, only one person will be allowed to control the bot.
8. The participants should use an on-board electric or nonelectric power supply i.e. the power source should be on the bot itself. The power source must be non-polluting and must satisfy the safety constraints determined by the organizers.
9. In case of nonelectric power supply, the participants must get it approved from the organizers beforehand via email. Organizers are not responsible for the inconvenience if the approval is not sought.
10. In case of an electric power supply, the voltage between any two points should be less than or equal to 24 V DC at all times during the run.



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*11. AC power supply will not be provided and cannot be used at the time of the competition.*

**Aerial Course:**

- 1. The aerial vehicle has to pass through a hula hoop 1.2 meters in diameter.*
- 2. The bot should be controlled wirelessly.*
- 3. It is mandatory to use a dual frequency remote.*
- 4. The dimensions of the remote are not included in the size constraint of the bot.*
- 5. Bot must have an on-board power supply in any case.*
- 6. Irrespective of the mechanism used, only one person will be allowed to control the bot.*
- 7. The participants should use an on-board electric or nonelectric power supply i.e. the power source should be on the bot itself. The power source must be non-polluting and must satisfy the safety constraints determined by the organizers.*
- 8. In case of nonelectric power supply, the participants must get it approved from the organizers beforehand via email. Organizers are not responsible for the inconvenience if the approval is not sought.*
- 9. In case of an electric power supply, the voltage between any two points should be less than or equal to 24 V DC at all times during the run.*
- 10. AC power supply will not be provided and cannot be used at the time of the competition.*

**Event Rules**

- 1. Each team should consist a maximum of 10 members.*
- 2. Each team should have unique participants i.e. no two teams can have even a single participant common.*
- 3. The team members can be from different institutes or colleges with their valid id card.*
- 4. The right spirit of participation is expected from the participants.*
- 5. The decision of the organizing committee will be final and binding.*
- 6. The organizing committee reserves rights to change the rules at any time and changes will be notified to the participants at that time.*

***The participants are advised not to use RF technology for the wireless robot as it can be interfered by other participants using the RF technology.***

**Judging Criteria**

**Scoring Criteria:**

- 1. Each bot will be separately tested on the track.*
- 2. At a time two teams will compete against each other and this will be a time based league competition.*

**Scoring Round:**

*Time elapsed in completing the 3 circuits followed by the aerial vehicle to pass the ring.*

**Bonus Round:**

*Aerial vehicle will have to take an aerial photograph of a box after crossing the ring, containing a message that the team needs to decode in order to gain an advantage of 2 minutes.*



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*While the time calculated will be from the start of land vehicles till the point aerial vehicle crosses the ring. NO time will be calculated for completing the bonus round.*

*The team taking the minimal time in final round will be declared winner.*

*Detailed description for the granting of points will be disclosed on the spot by the organizing committee.*

*In any case, the bot has to complete the whole track in order to avoid disqualification.*

## **Provisions at Competition Site**

*Power Sockets*

## **Faculty Coordinator Details**

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