Hover Rugby

Pool Event   **Points: 50**

Ever fascinated by the wrestling giants competing against each another for honor, pride and glory! And the speed of a rugby player to achieve his aim. If so, then this is the event for you. Here it will be your hovercraft that will do the talking. So get up, design the most efficient quick wrestling hovercraft that you have ever imagined!!!

Problem Statement:
Each pool has to design and fabricate **single** hovercraft that are light-weight, easily maneuverable, quick and strong. They must out throw their opponent in a match of hovercraft rugby. Also they must enter the goal area to score points.

Gameplay:
1. 3 teams will play a hovercraft match at one time.
2. There will be one single goal post at the end of the **Wide-Zone** (see arena fig.).
3. Initially the hovercrafts will be kept at 120 degrees at three different entry gates.
4. Each team will try to touch the respective specified face of the voltage detector at the center before others.
5. The one that succeeds to touch the buzzer first, gets access to enter the **Game-Zone** (see arena fig.).
6. The rest two hovercrafts will try to stop the striker hovercraft, and they succeed only if they hold down the striker in the **Smack-Down-Zone** (see arena fig.) for **10 seconds**.
7. Each set can be of maximum **60 seconds** duration.
8. **Three rounds** will be played in the match, minimum **2 sets** in each round (if time left it will further be repeated with same position).
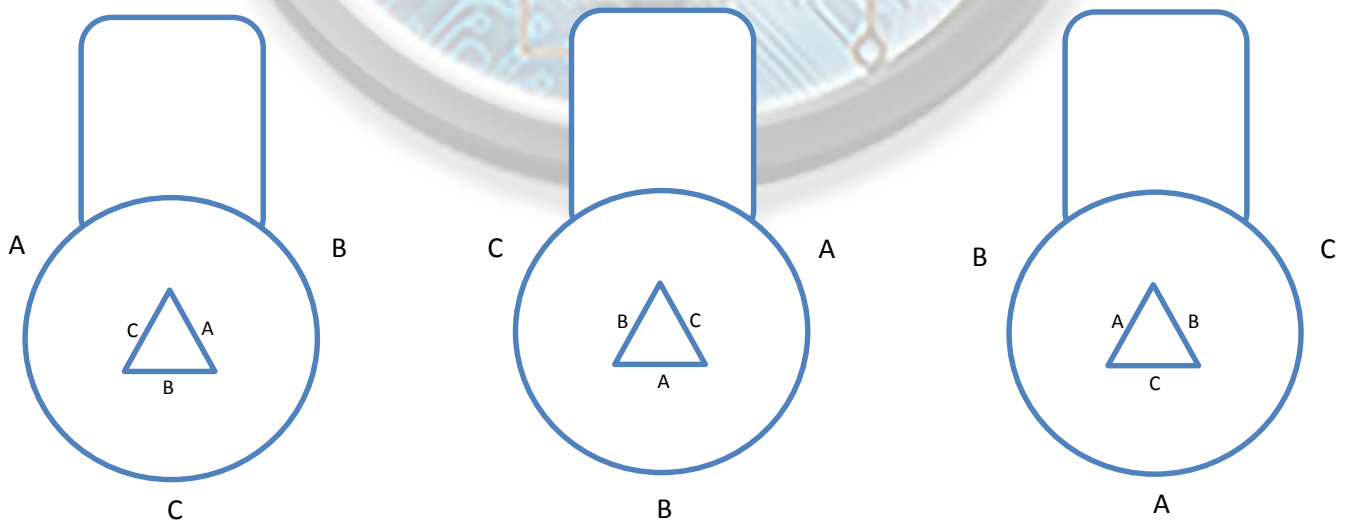
Initial position of A-B-C to be decided by lottery

Rules and Regulations:

1. A hovercraft is a vehicle which floats on a cushion of high pressurized air and propels itself on this air-cushion using a thrust producing mechanism.

2. Control is generally achieved by the use of rudders, though it is not the only solution.

3. The overall hovercraft dimensions must not exceed 50cmX50cmX50cm. It must fit in a square of 50cmX50cm in its direction of motion (5% tolerance).

4. The model can be fabricated using foam, wood, coroplast (sunpack) or any other material with permission from the coordinators which will not damage electronic components of bots like knives , pointed pencils , iron rods etc.

5. Participants must make all parts of the craft themselves, which includes the hovercraft frame and a LED strip to be attached to the hovercraft to distinguish from others' craft**.**

6. Usage of readymade kits is strictly prohibited. Use of readymade actuators/motors, remote controls and propellers is allowed.

7. The use of IC engines is prohibited. Only electrical motors are allowed.

8. A team has to use **single model** at a time throughout the competition. However, spare models can be fabricated, if material permits. In case of any damage to the craft, small modifications are allowed.

9. The potential difference between any two points on the hovercraft must not exceed 12V.

10. Specified electronics will be provided to pool, in case any electronic malfunctions we won't provide extra electronics unless justified properly (need to be discussed during event with referee and event coordinators)

If anyone is found not following above rules, they will be disqualified.

Arena:

The overall arena is a flat surface, with single goal post. The surface in the **Game-Zone** will be rough and 3-Face buzzer at the center of **Wide-Zone**.
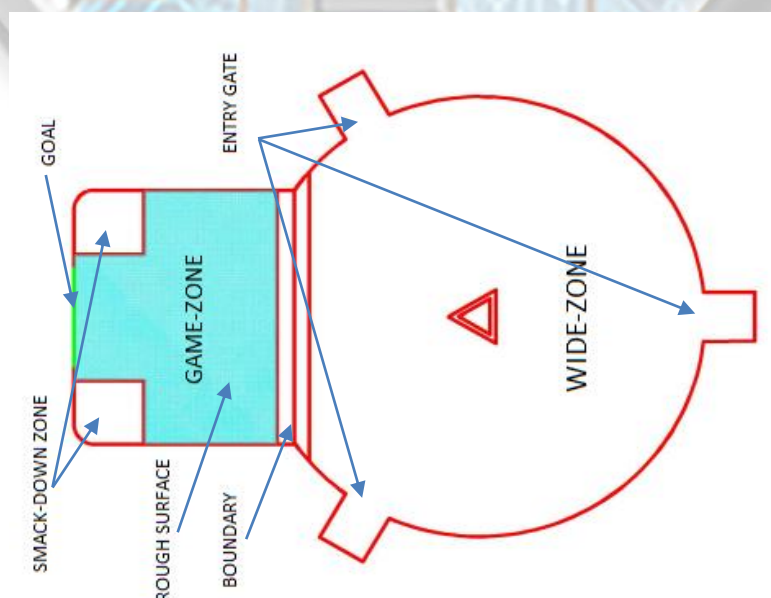
Event Structure:

1. Each match between three opponents will contain three rounds of 120 seconds time duration each.

2. Between two rounds there will be a break time of 3-5 mins.

3. Each team will play matches against every other team, thereby producing the overall result, thereby producing 4th directly and the top-3 finalists.

4. Your craft has to completely enter the goal area between the 2 poles.

5. Score for each craft will be summarized separately, then added to give the total score for a team in that round.

6. The scores of each round will be added cumulatively, the team with maximum score will be the winner of the match.

7. In case of tie in a match i.e. all three pools have exactly same score at the end of a particular match, the method of "GOLDEN GOAL" (a single set match, positions being the same when the match ended, and the first pool to goal/tackle wins) will be followed.

Scoring rules:

• The hovercraft which touches the specified buzzer face first, gets **+2 point**. Else if it hits wrong buzzer, the team gets **-1 point**, and the goal gets open for the one to which the particular face was specified.

• If the striker hovercraft successfully goes past the goal line will lead to a further **+5 points** for that particular craft.

• If a hovercraft among the non-striker/defender hovercrafts touches the striker-hovercraft in the **Smack-Down Zone** and for the next 10 seconds it holds the striker hovercraft in the same **SDZ** boundary, the non-striker hovercraft gets **+3 points**. Next hovercraft to do so within 10 seconds gets **+2 points**.

• A set will not stop until the **60 seconds** duration or a goal is scored or a successful tackle.

• Once the attacking/striker craft scores a goal and lands on the OAT surface/or the defender(s) hold the striker in **SDZ**, it has to restart from the specified entry gates. Each team is allowed to take **1** technical timeouts of **45 seconds** in each round.

• If any of the non-striker/defender hovercraft enters the game zone before the striker crosses the boundary, then penalty of **-1 point** for them.

• For every human intervention (even if a team member lands into arena un-intentionally), penalty of **-1 points**. If any hovercraft needs human intervention in the Game-Zone then it will be put to reset at the boundary of **Game-Zone** and **Wide-Zone** (facing goal side).

• Once the 10-sec timer for striker starts, striker cannot take reset, other defenders can take a reset.

• If a controller continues to run his hovercraft after referee whistle, then it will lead to - **1 point** penalty. Also if because of this any electronics get damaged then that controller will be eliminated.

Activities allowed:
• Hitting the other craft.
• Dragging the other craft to the edge.
• Using any kind of fire, spray, liquid or any other activity that may cause serious damage to the arena or the electronics (as per coordinators discretion) is not allowed.
• Only 3 members from a pool allowed on OAT Stage (1-Controller, 1-Captain and 1-Helper)

Components:
Below are the components that will be provided to each pool. Apart from these, each pool is authorized to purchase any other materials required at the expense of their respective pool budgets, on proper verification of bills by us. The materials provided to you at the event venue include:
• 2 electric motors (EMAX GT2210/13)
• One 9gm servos
• 3 propellers (not greater than 8" diameter)
• 2 ESC (30A)
• Batteries, receiver & transmitter will be provided during practice slots only.

Note: ** In case of any disputes, the decision of the coordinators would be final and binding to all.
Note: About the triangular detector, the length of each side will be roughly 50cm. and the height x diameter of each buzzer pad is 3in.x5in.
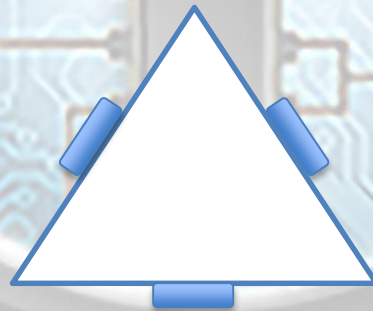
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