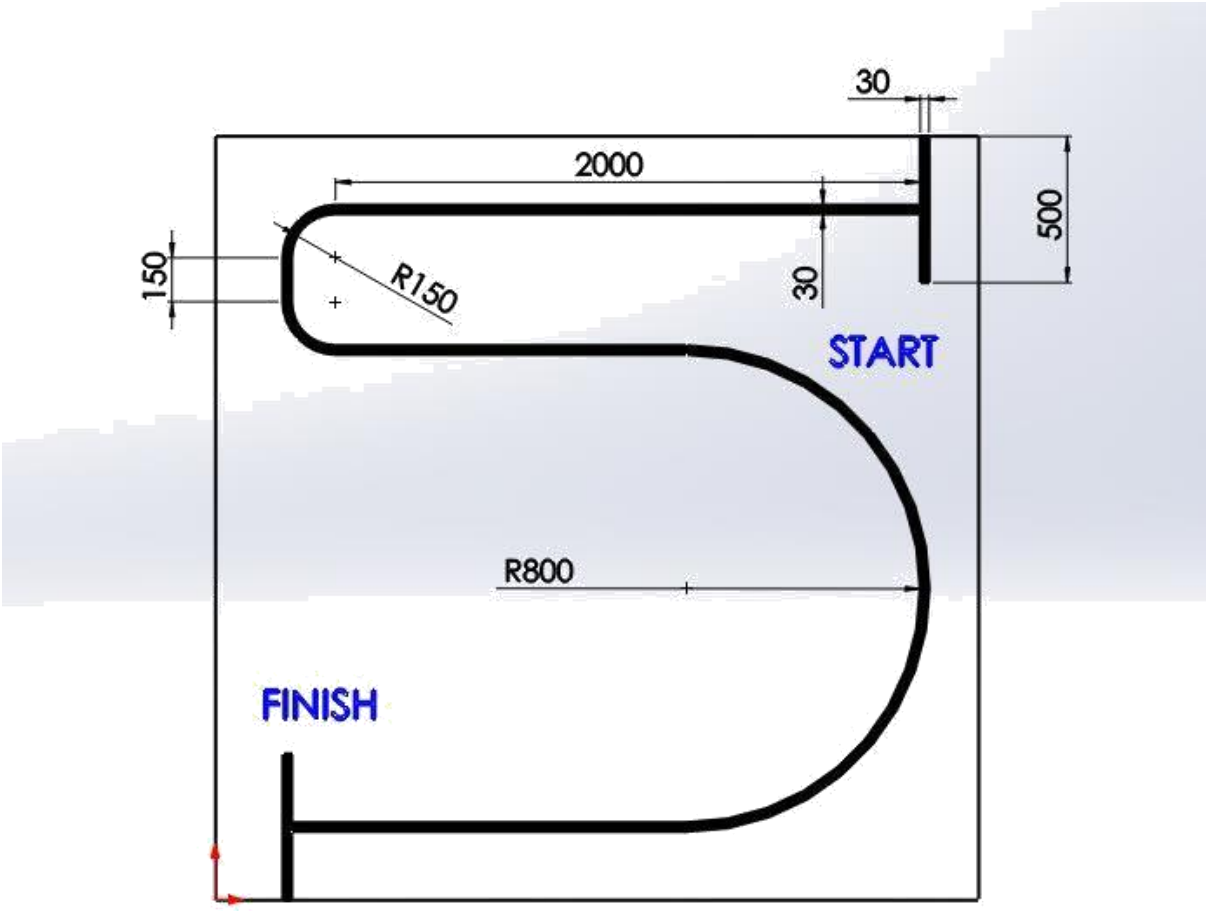
Hover-Ace

Task

Team must build an autonomous hovercraft to traverse through the arena using line following mechanism.

Arena

- The track comprises of 30mm thick black line on a white surface.
- The track comprises of straight lines and arcs. The radius of the arc will be fixed at 30 cm or 45 cm. The angle of the arc is 90 degrees.
- The starting line and the finishing line will be located in the straight section of the track. They will be 50cm long and 30mm wide black strips perpendicular to the main black line.



Dimensions and Fabrication

- The vehicle must strictly and purely be a hovercraft, i.e., it should operate by creating a cushion of high-pressure air between the hull of the vessel and the surface below. Any other vehicular design will be rejected.
- The bot must be fully autonomous with all powering and motoring mechanisms self-contained.
- The hovercraft must fit inside a cube of side 50 cm. Bot must be started individually by only one on-board switch. However, a team may have separate on-board switches for restart. This switch has to be shown before the run to the organizers.
- The use of IC engines is strictly prohibited. Only electric motors will be allowed.
- Ready-to-Fly (RTF) and Almost-Ready-to-Fly (ARF) kits are strictly prohibited. Glass/carbon fibre sticks, servo-mount, motor-mount can be purchased and used if required.
- The bot must use only on-board power supply. No external off-board power supply is allowed.
- Bot must be started individually by only one on-board switch. However, a team may have separate on-board switches for restart. This switch has to be shown before the run to the organizers.

- A maximum of 3 restarts will be given to the teams. Every time a team opts for a restart, the bot will be restarted by placing the bot back to the starting position.
- The voltage difference between any two points on the hovercraft should not exceed 24V.
- Human operators are not permitted to enter any information into the bot during the event. The bot must not communicate with any wireless device either.
- Teams are allowed to use readymade micro-controller boards/readymade sensor kits. However teams are not allowed to use readymade Lego kits or any such assemblies.

Rules

- The maximum time given to a team will be 10 minutes.
- Hovercraft bot must be self-contained and not externally operated by wire or by remote radio control during the race.
- The design of the track must NOT be pre-fed into the bot. It must be purely line-following.
- Except for the battery pack, the handler shall not make any addition, removal, replacement or change in the hardware of a bot during the contest. It is however permissible to make minor repairs.
- The time measured by the organizers will be final and will be used for scoring the teams. Time measured by any contestant by any other means is not acceptable for scoring.
- In general, the decision of the organizers will be final and binding in all circumstances.
- Machines found damaging the arena will be immediately disqualified.
- Each team will be given maximum of three runs, out of which the least time taken to finish the course will be counted. If the bot deviates from the main black line before completing the track, that run shall be considered as invalid.

Judging

The team completing the whole course in least time will be declared as winner.

Team Size

A maximum of four members are allowed in a team. Students from different educational institutes are allowed to make a team.

Eligibility

All students with a valid identity card of their respective educational institutes are eligible to participate.

Prizes & Certificates

Participation certificates are given to each participating team members.