

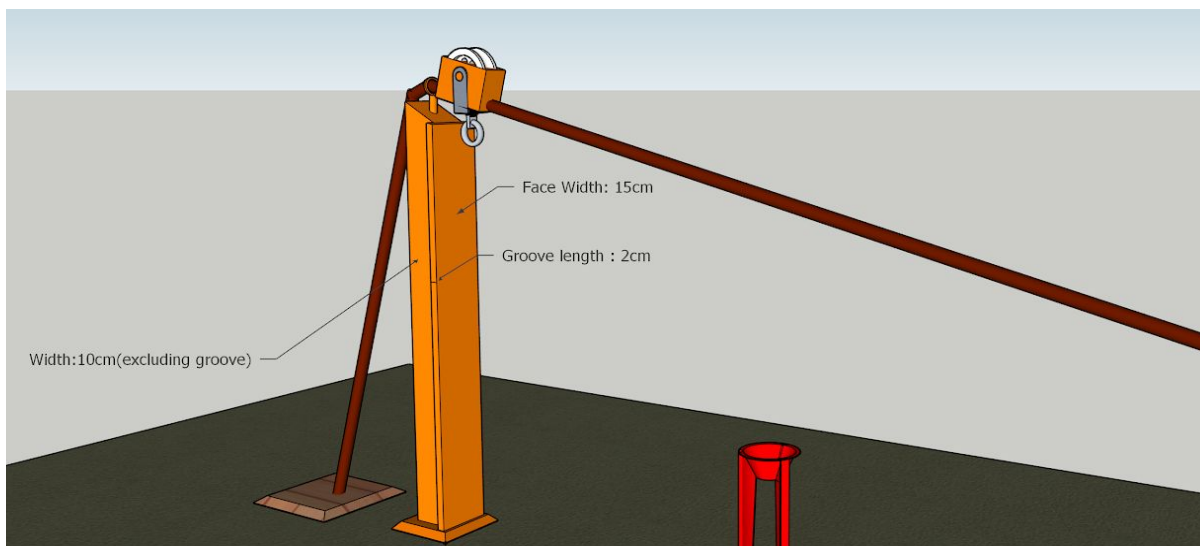
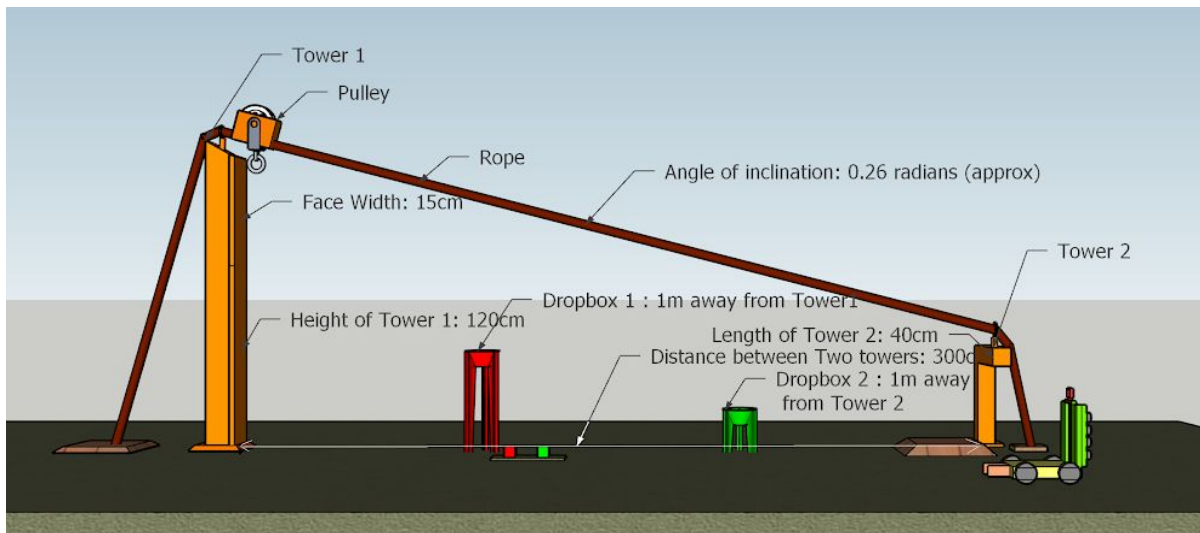


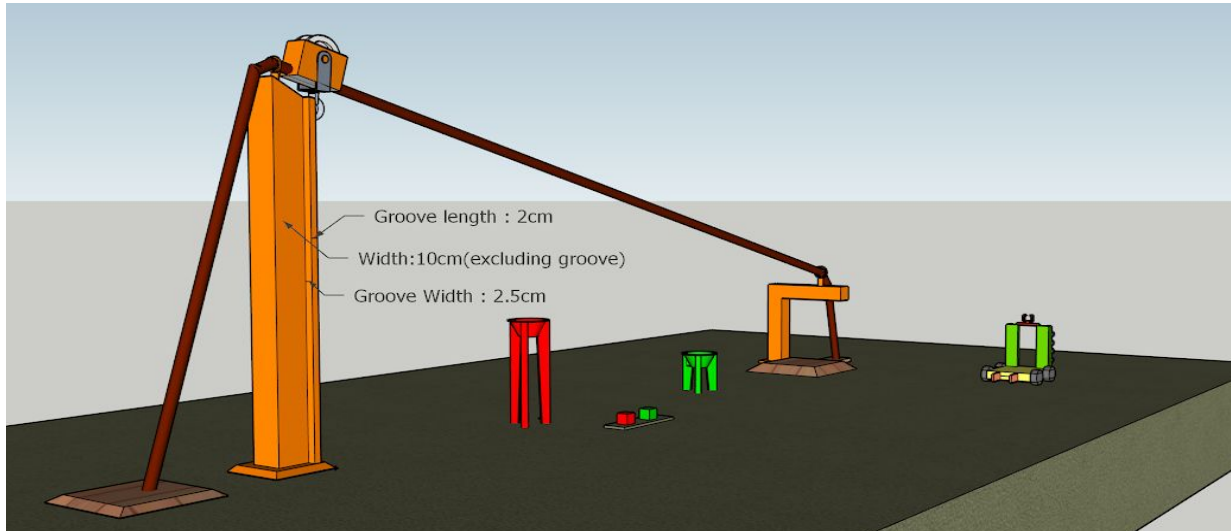
Escalade(Prelims) Problem Statement

AIM:

To design a manual wired/wireless bot which can move on the ground, climb rigid cubical tower with grooves by clamping itself, traverse down a rope and can hold the blocks with a gripper.

ARENA:





Dimensions:

- Height of tower 1 is 120cm.
- Height of tower 2 is 40cm.
- Distance between the two vertical towers is 300cm.
- For tower 1, face width is 15cm, groove length is 2cm, groove width is 2.5cm and width(excluding groove) is 10cm.
- Radius of the hoop is 3.5cm.
- Angle of inclination of the rope is 0.26 radians(approx).
- Distance of dropbox 1 from tower 1 is 1m and distance of dropbox 2 from tower 2 is 1m.
- Blocks(both red and green) are 7cm * 7cm * 7cm.

Note: The dimensions of the arena are subjected to 5% error, hence the participants are requested to make their bots adjustable to it.

GAMEPLAY:

A manually controlled bot begins the task from start position.

- The bot should pick up a block.
- Holding the block, it needs to clamp itself to the tower 1 (longer cubical tower). It has to climb this cubical tower.
- On reaching the top, it needs to hook itself to the hoop and traverse the rope under the influence of its weight.
- While coming down, it has to drop the block in the coloured net same as the color of the block.



- It has to detach itself from the hoop on reaching end of the rope and repeat the same steps as above for the second block.

RULES :

1. Each team will be given 3 runs for the task of which the best will be considered the final score.
2. A single run can be of maximum of 5 minutes.
3. The bot must start from the starting position ie near the blocks.
4. The bot must not be touched by any team member in the middle of a run.
5. In case of technical problems, the team can have a maximum of 2 timeouts (included in the runtime) which they can use to correct their bots.
6. During the timeout the timer will not stop and the team has to start their bot from the previously stopped position.
7. Damaging the arena will **disqualify** the team.
8. In case of any discrepancy the decision of organisers will be considered final.
9. In case of any changes to rules registered participants will be notified through email.

BOT SPECIFICATIONS:

1. The dimensions of the bot must not exceed 30cm * 30cm * 40cm (length,breadth,height) excluding hook/gripper(hooking mechanism) and extended arm gripper(gripper mechanism for blocks) whatsoever.
2. Bot should have a gripping arm capable of lifting small light objects and a hook/an extended arm to hook itself to the hoop.
3. The bot can be controlled by a wired or wireless remote control.
4. Bots must not be made from lego parts or readymade assembly kits.
5. It should be able to hook onto the circular hoop so as to slide along the rope.
6. The weight of the bot **should not** exceed **5kg**.
7. Battery can be either onboard or kept outside (no restriction on battery placement)

TEAM SPECIFICATIONS:

1. A team can have a maximum of 4 members only.
2. Participants from different educational institutions may also form a team.



3. A team can register as two separate teams if they are using two different bots for the event.

SCORING :

- For picking up a block 10 points
- For climbing up the rod 25 points
- For hooking to the hoop 10 points
- For dropping the block in the net 20 points
- For unhooking 10 points
- For touching the bot(each time) - 5 points
- For exceeding the bot dimensions(for each extra cm) - 5 points

Number of blocks = 2

The task is to be performed twice, once for each block.

Thus, total points = 150

RANKING CRITERIA

1. The team finishing in the least time will be declared winner.
2. In case when two teams are not able to complete the event in given time, the team dropping more number of blocks in the coloured nets will be the winner.
3. In case of a draw, again a fresh match between those teams will be commenced.

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For more details, mail us: robotics.techniche@gmail.com

Sketchup file: [Click Here](#)