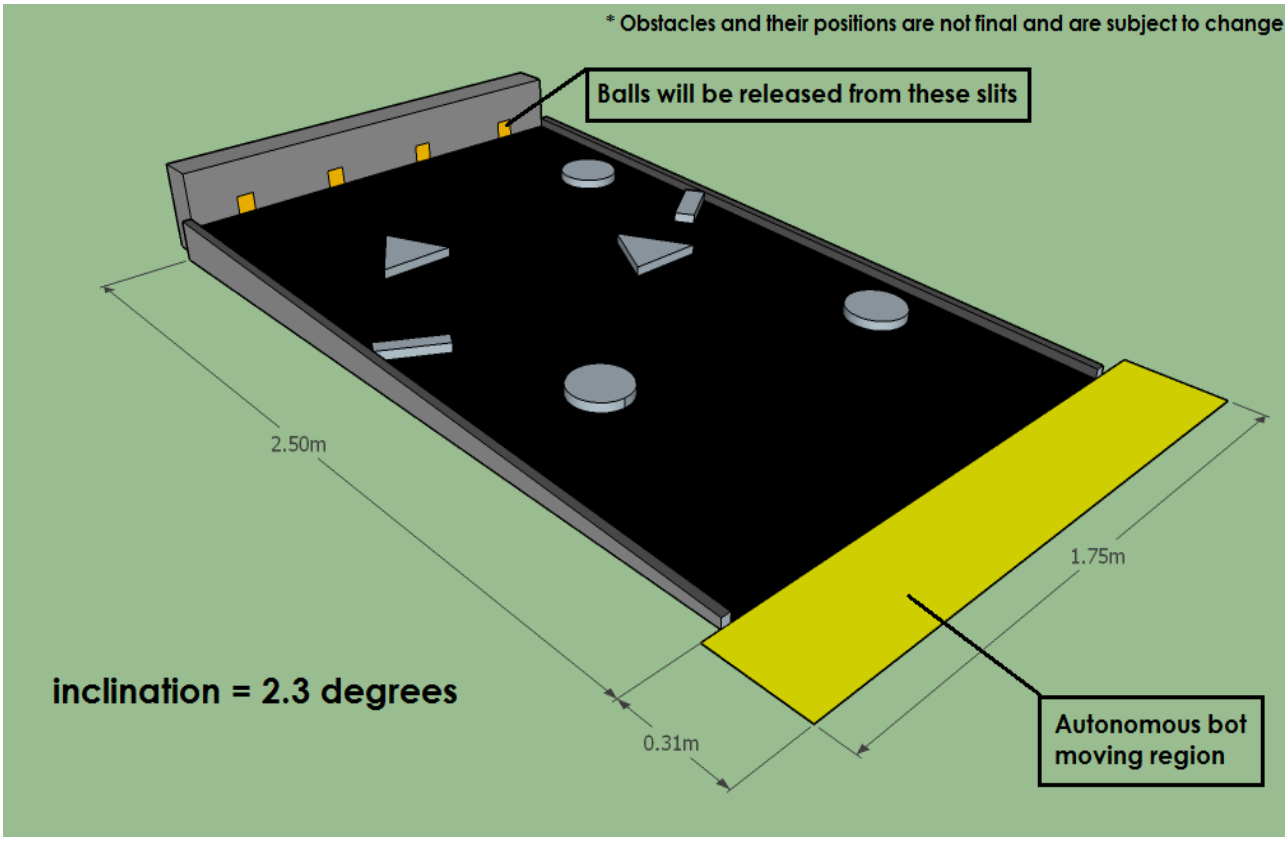
PHOTOTRON: Problem Statement

AIM: To make an autonomous robot which can track a coloured ball while it is falling through an incline and successfully catch it.

THE ARENA:

- The arena will be a black coloured inclined surface on which several obstacles will be placed.
- The coloured balls will be released from the yellow slits shown in the figure.
- The **obstacles will be coloured black in the original arena**. (Here they are shown for understanding purpose only).
- The autonomous bot will traverse along the yellow strip shown below.
- The distance between the last obstacle and the edge of the incline will be 60 cm.
- There may be a 5% error in dimensions.



Gameplay:

Pre-game setup:

- Calibration time of 10 minutes will be given to each team before commencing of the event, and after 10 minutes timer will start and the team members will not be allowed to change their code.
- Teams will be allowed only three chances (maximum) to do hardware setting (for 3 minutes) in the middle of the event in case of hardware glitch.

Game procedure:

- Four different coloured ball will be **released simultaneously** from one end. The bot will have to track a single coloured ball (which will be decided before the game starts).
- The ball will collide with the obstacles and change its direction. The bot will have to track the ball and catch it when it will arrive at the opposite end. **This will be repeated 10 times and the score will be noted in all cases.**

Ball specification: A standard table tennis ball of red, green, blue and yellow colour will be used for the event.

POINTS CRITERIA:

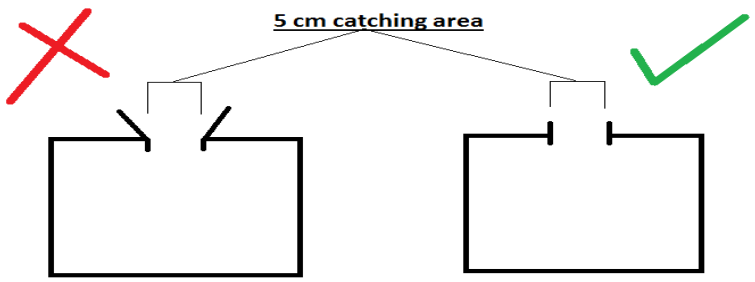
1. If the bot catches the ball, it earns **10points**.

2. If the bot (catching area) touches the ball, it earns **5 points**.

In case of a tie then obstacles can be changed and inclination can be increased.

BOT SPECIFICATIONS:

- The autonomous bot must fit in a cube of 25x25x25 cc
- Only an AC power supply of 220 V will be provided at the event.
- Bot must catch the ball within its dimension and the catching area must not exceed 5 cm.
- Each team is allowed to have only one bot.
- The catching area of the bot must be a hole of diameter 5cm only. There must not be any addition (like a v-funnel etc.) to the hole.



Reason: V-funnel used to increase catching area.

CAMERA SPECIFICATION:

- An overhead camera will be placed perpendicular to the center of the arena which will be provided by the organizers.
- The camera to be used would be C270h model of Logitech. 2. You can find the specifications of the camera on ---- http://www.logitech.com/enin/webcamcommunications/webcams/devices/7205

Points to be noted:

- AC power supply will be provided. It's the responsibility of Participants to make sure they have long enough power cables (or) extensions.
- The dimension and inclination of the arena can be modified slightly. If any modification done, participants will be informed through website and registered participants will be informed through emails.
- Obstacles are dummy model only. These are subject to change.
- It will be the participant's responsibility if there is any data misinterpretation of image of the arena taken by the overhead camera due to obstruction by the body of the bot.
- The teams must be prepare to calibrate their bots as per the given lightening condition at venue.
- Full efforts will be given by the organizers at the venue to reduce the sunlight and other lights which can affect the colour sensing of bot.
- Due to lightening there may be some deviation of the image taken by the camera so keep it as a note

TEAM SPECIFICATIONS:

- Each team must not exceed 4 members.
- They may not necessarily be from the same institute.
- Each team must have a team leader who must be present when called upon by the organizers.