**CONTRAHACER**

Does robotics fascinates you? Think you can take on some twist and turns ? Here's some tricky job for you robo-freaks.

**OBJECTIVE**

Design a manually controlled robot and an autonomous robot that can traverse through a maze and reach the end point using image processing of gestures produced by motion of manual bot.

## ****BOT SPECIFICATIONS:****

1.Autonomous bot size should not exceed 250mm X 250mm.

2.Size of manual bot must not exceed 350mm x 350 mm.

3.Potential difference between no two points should exceed 24V.

4.Wired and/or wireless implementation of bots is allowed.

5.Choice of selection for the bot marker rests with the team.

6.The teams are allowed to use ready-made wireless modules/readymade microcontroller boards.

**ARENA SPECIFICATIONS:**

1. The autonomous arena consists of maze with starting and ending zones as shown in video.

2.The dimensions of the autonomous arena are 2000mm X 2000mm.(excluding gate entries which are 350x250mm for starting and ending zones)

3.The manual arena consists of only wall boundaries with plane surface of 3000mm x 3000mm (carpet area excluding walls) with green base and overhead USB-camera mounted at a height of about 3m as shown in the video.

4.The autonomous arena would be having a maze in 3 levels as shown in the video with two dividing walls of thickness 100mm.

5.The details of the camera will be uploaded soon.

6.The actual colors can be different from specified. Hence the time for pre-game-play and calibration should be used wisely and judiciously.

(Note:- The actual positions of the gates may change from the ones shown in the video.

## PRE-GAME CALIBRATION and RULES

 1.Each team will be given two trials of 10 minutes for final run. The trials can be consecutive or after the other teams have finished their first trial depending on the participant’s choice.

 2. Each team will be given 15 minutes of setup time for calibration and testing prior to the final run and according to a schedule that will be made available at the start of the event.

 3.In the setup time, participants can boot their computer and have the program ready for execution.

 4.No bot can touch maze or wall boundary. If it does, 20 seconds will be added to their respective time.

 5.There will be maze checkpoints from the start till the end. Restart can be taken (if needed) from the last crossed checkpoint with penalty of 30 seconds.

 6.No change in coding is allowed during a restart. Only the orientation of the bot can be changed.

 7.The team reaching the finish-point in the shortest time wins.

 8.The time measured by the organizers will be final and will be used for scoring the teams.

 9.The autonomous bot has to be fully autonomous. Human operators are not permitted to enter any information into the equipment during a run. The human operator should not directly control the motion of autonomous bot with a joystick or by keyboard commands under any circumstances.

 10.It will be the participant's responsibility if there is any data misinterpretation of the arena image taken by the overhead camera due to obstruction by the body of the bot.

 11.All the bots have to work on the principle of image processing. Any sort of ambiguity will lead to immediate disqualification. In case of doubt, please confirm with the organizers about the validity of your procedure beforehand, via email or phone.

 12.In case of any dispute or ambiguity, event coordinators’ decision will be final.

 13. A computer shall be provided with MATLAB 2010 installed, but participants can bring their own systems.

 14.A team of maximum 5 members can be formed.