



IESL ROBOGAMES 2018

University Category

TASK SPECIFICATION

Eligibility

- Participants are advised to form a team of up to 5 students. Any number of teams from a single university can enroll in the competition.
- All the team members should be students of the same university at the time of their participation in the competition.
- Each team should provide valid identification documents from their university on the competition day to prove their eligibility to participate in the competition.

Challenge

This year's RoboGames University Challenge will be to model a four legged Robot which can follow a line and also follow directions at a junction. The robot should navigate autonomously.



Robot Specifications

- Dimensions of the robot must not exceed 25 cm × 20 cm (length × width).
- Robot must be completely built by the team itself with their own design ideas.
- Robot should have a clearly indicated “ON/OFF” or “START” switch.
- Once the robot is switched on, it should be self-navigating. Wireless communication and remote controlled robots are not allowed in the competition.
- No off-the-shelf kits are allowed except smartphones (should be **proved** to judge panel and organizing committee that smartphone in **flight mode** before start), processing boards (i.e. Arduino or equivalent, Raspberry Pi, etc.), sensor modules and drive gears. If you have any doubt, contact the organizing team.
- After starting an attempt, the only interaction of the participants with the robot should be stopping if necessary.
- Traction **cannot** be given using **wheels** to Robot and Robot should go like a four legged animal. It (Robot) should not cause any damage to the platform. Any robot with the potential threat of damaging the game platform will not be allowed to compete.
- Robots should work under any ambient light condition. **Calibration** should be done on start for light conditions if necessary.
- There are no restrictions on the height of the Robot.

Platforms Specification

The whole area will be flat except some areas in the path which will be **uneven (not flat)**. Start and End positions are white in color on the Arena Floor which is black in color.

There will be a white border for the ease of determining the boundary.

The line lengths and curves will not be exactly the same as Figure 1. Overall design will be similar to the figure.

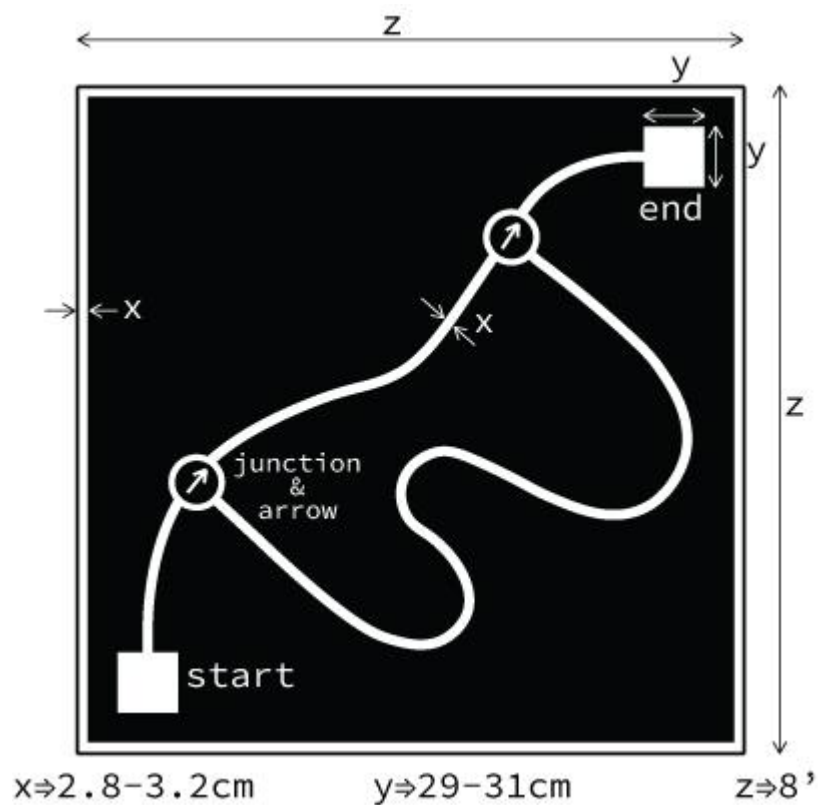


Figure 1

Arena Description

Arena Border

The border of the arena will be marked with a 3cm thick white solid line finished with matte.

Arena Floor

Arena Floor will be black in color with matte finish and will contain white lines for the guidance of the robot.

Start position

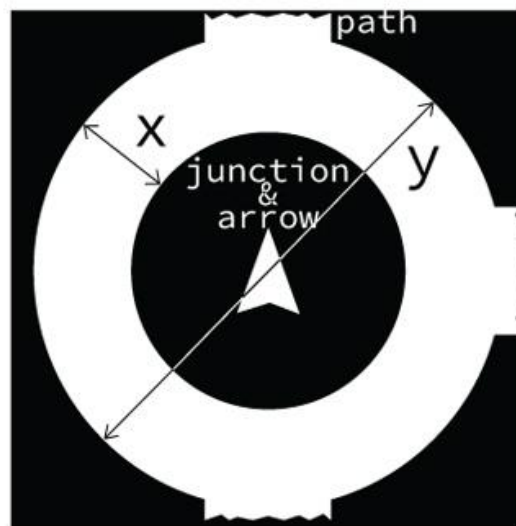
Start position will be 30cm x 30cm (width x length). Take a look at the diagram for further clarification.

End position

End position will be 30cm x 30cm (width x length). Take a look at the diagram for further clarification.

Junction

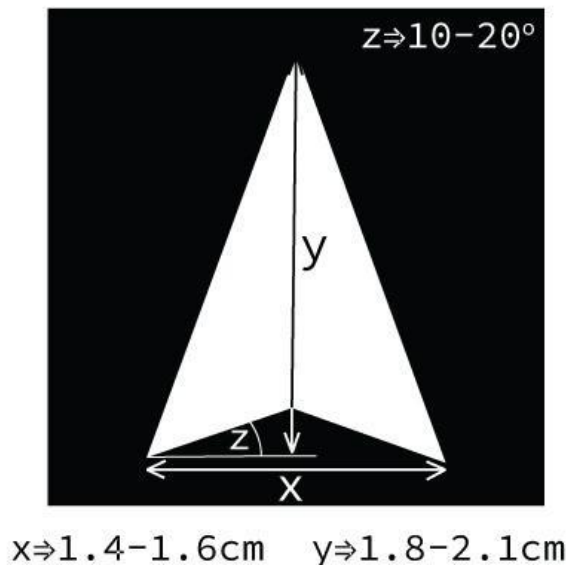
The junction will have a white outer line, black inner area line, and an arrow inside the black circle of the junction to give directions.



$x \Rightarrow 2.5-3.5\text{cm}$ $y \Rightarrow 10.5-11.5\text{cm}$

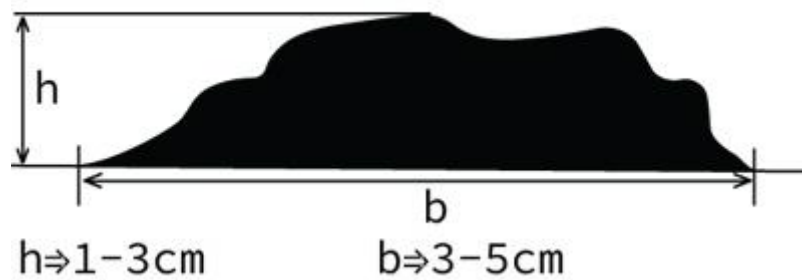
Arrow

The arrow inside the junction is giving the direction of shortest path to the destination.



Path

White line which has a thickness range of 2.8-3.2cm. Path can have some uneven (which are **not flat**) portions with a height range of 1-3 cm and width range of 3-5 cm.



Task Procedure

After your team name is called for the competition you are allowed to have one test attempt for your robot which is limited to 10 minutes.

After the test attempt you will have 2 more attempts which are used to give you marks. Maximum score of given two attempts will be taken as the score of the current round.

All robots will be collected by the organizers 10 minutes before the round begins. Robots will only be returned to the competitors after the round is completed.

Steps should be followed to complete the task,

STEP 1: Robot will be placed at the start point.

The robot should be kept inside the start position - white rectangle. Whole of the robot should be confined to the box. All the sensors of the robot should be inside the white rectangle.

STEP 2: Start the robot

On the command of the supervisor the robot's ON switch is triggered and it's put into full autonomous mode.

STEP 3: Follow the path.

STEP 4: Find a junction, then turn accordingly.

STEP 5: Repeat STEP 3 and STEP 4 until Robot find the endpoint.

Start Point

- White rectangle (Figure 1 - marked as start).

End Point

- White rectangle (Figure 1 - marked as end).

Timing Measurements

- The task will be timed from the time, the ON button of the robot is pressed to the time when the robot reaches the ending white square.
- Time taken to complete the task will be considered when giving marks.
- Time taken for the task should be less than 10 minutes and if the robot exceeds the time limit of 10 minutes your robot will be removed from the arena.