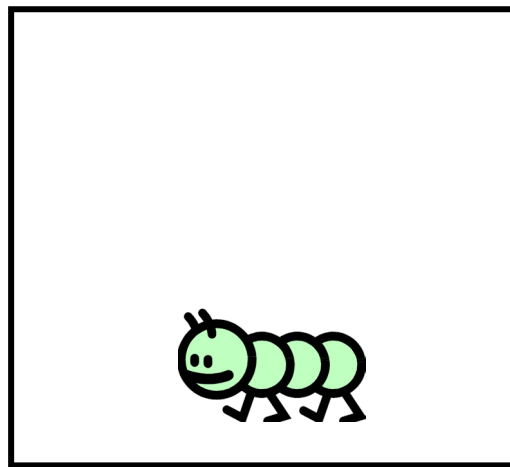


17ELB013: A brief description of the events in The RobotOlympiad

Gymnastics (Rover 2 and Stampbug)

In this event the robot performs an entertaining and challenging range of stunts. Almost anything is allowed and the display must be accompanied by suitable music of the team's choice.

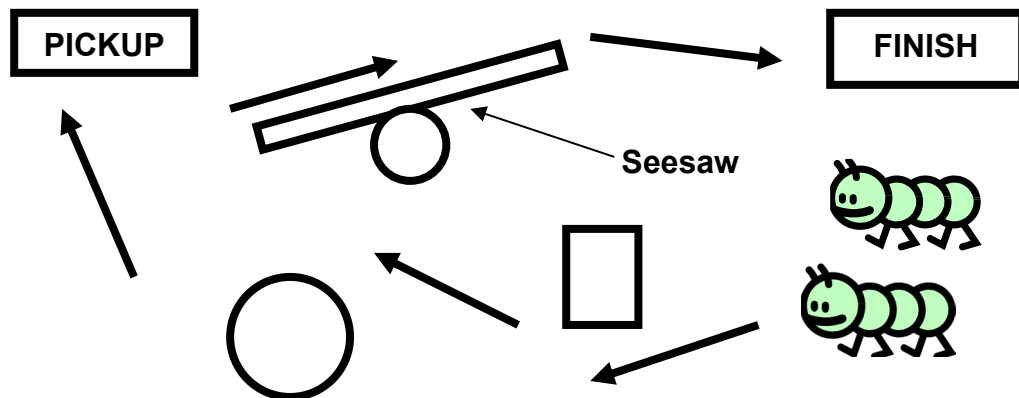


Performance area
2m x 2m

The robot must not be remotely controlled by a group member during the performance. Groups must incorporate suitable hardware to perform a variety of stunts. The performance must include a lighting display (LED or other), which operates while the robot is moving (i.e an independent system). Students are encouraged to incorporate a variety of functions into the routine. Students can chose to combine both robots into one single physical unit or just use one by itself. At the Olympiad competition, marks will be awarded for **musical interpretation, entertainment factor, technical content, visual/audio/special effects, mechanical aids and floor coverage**. Marks are deducted if the robot steps out of the performance area.

Orienteering (Boe-bot)

Boe-bots will attempt to complete an unseen obstacle course under non-wired remote control. The four groups will be split randomly into two semi-finals. In each semi-final, two groups will attempt the obstacle course at the same time. The fastest two groups will proceed to the final. There will be a second final for the third and fourth places. Each group has to pick up a token at the far end of the course, return to the start line **and drop the token**. The team may supply the token to be collected but it must be between 10 mm and 30 mm across. The obstacle course will have a seesaw which must be carefully traversed by the boe-bots (without falling off or dropping the token). Penalty time will be added on for knocking over gates. Other reasonable obstacles will also be present. The remote control unit for the Boe-bot must be self-built; you are **not** permitted to use items such as TV remote controls, games console hand units, mobile phones etc. The course will have both small intricate sections and long straights.



Maze solver (Boe-bot)

The boe-bot will be required to enter a maze (starting from completely outside the maze), navigate through it and exit completely at the far end. The maze will have one T-junction; one route from the T-junction will lead to a dead-end and the other to the exit.

For illustration purposes, let's assume the right turn at the T-junction is a dead-end and the left turn is the way out. Each team will have 3 runs each.

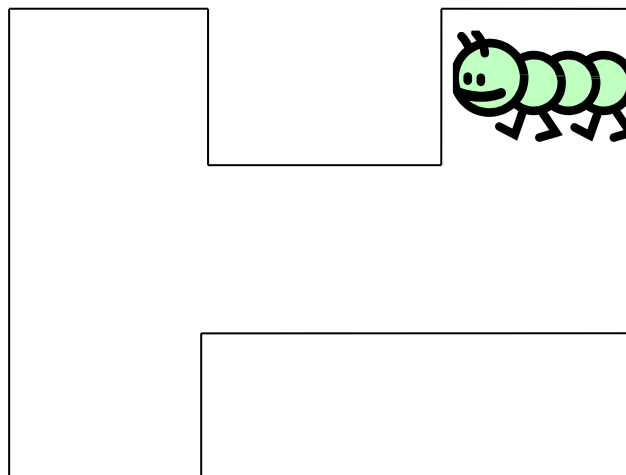
1st run: the boe-bot has to turn **right** at the T-junction (get to the dead end, turn around and find the way out through the maze exit)

2nd run: the boe-bot has to turn **left** at the T-junction (this will lead directly to the maze exit)

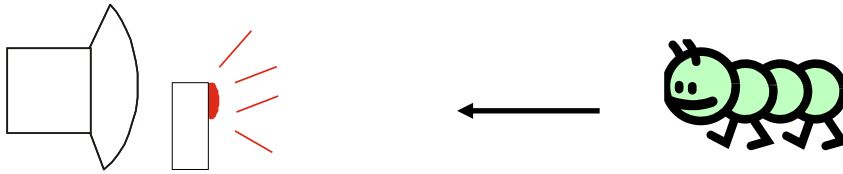
3rd run: based on what the robot has learnt from the first two runs, the **robot** has to decide which is the quickest route out of the maze; turning left or turning right at the T-junction. The decision must be made by the boe-bot alone; there can be **no** input from the group. However, groups can have an operator controlled mechanism for telling the boe-bot which run to do.

All three run times will be added together and the team with the shortest total time wins the competition.

Time will be added on for knocking over walls and not completing the task. The wooden walls are 50mm tall and 10mm thick. The tops of the walls are painted white gloss. When four walls are put together, a unit square of 220 x 220mm is created. An example maze is available on LEARN



Pied Piper (Rover 2)



A speaker will play a music track and the robot has to locate the speaker before the song ends. The robot will start from a distance of about 1m from the front of the speaker but the direction the robot faces when it starts will be determined by the judge. There will be a light fixture with a bright Red LED ~5cm in front of the speaker. The robot has to stop as close as possible to this light fixture. The distance will be measured from the closest part of the robot to the closest part of the light fixture. The robot must not touch the speaker or the light fixture; there will be a penalty time added for this. At a bare minimum, groups must use the music to help navigate the robot towards the speaker. In addition, other localisation techniques can be used to improve the accuracy and reliability of the system.

Groups doing this task should put forward their choice of music track to Chinthana Panagamuwa at their earliest convenience. He will then choose a single music track to be used by all companies.

Note: The lights in the competition room will be left switched on and the curtains will be open, i.e. make your system robust.