

ESONANCE 2016

EEE, IUT

resonance of engineering Innovation



ROBOMANA V3.0 : RoboRace

COMPETITION GUIDELINES

organized by

Department of Electrical and Electronic Engineering (EEE)

Islamic University of Technology

technical support

IEEE IUT Student Branch

Organized by :



Esonance 2016 RoboRace Rules

BOT Specifications:

- Robot must be a ground wheeled autonomous vehicle
- The robot must not be built from any sort of ready-made chassis
- **Length:** Maximum length is 30 cm
- **Width:** Maximum width is 20 cm
- **Height:** Not to exceed 20 cm
- **Weight:** 5 kg maximum
- **Power:** Maximum 24 volts on-board power supply
- The robot **must** have a single **kill switch** to turn off the power if necessary. There are no restrictions on the number of such switches.
- Each team has to bring their own power supply for robot. No additional equipment/parts will be supplied in the competition
- The robot cannot split into several parts during the run. No other gimmicks may be employed to gain unfair advantage

Arena Specifications:

- Competition arena will be made of a flat wooden platform.
- The arena consists of a semi-gloss painted road (track) with a centered white line of 2.5cm wide
- There will be several elements (turn, bridges, line gaps etc) in the track, the detailed view of which will be updated later.
- Position of check points, gaps, obstacles and hill/bridge may be anywhere on the track
- Lighting levels are unpredictable, so the robot must be able to operate over a wide range of lighting conditions

Scoring:

- Time will be given the first priority in case of scoring. Essentially, the fastest robot to finish the track wins the challenge
- The track will be divided into several zones by using checkpoints. Each checkpoint will have a maximum amount of time and points to offer. The time taken by a robot to cross each checkpoint will be calculated and scoring will be done based on this.
- Points will be awarded based on the formula: $(T_{\text{total}} - T_{\text{taken}}) * 100$ (Time in minutes)
- Say a checkpoint offers a total of 250 points and max time of 2.5 minutes. A robot takes 1 minute to cross the checkpoint, then points awarded would be $(2.5 - 1) * 100 = 350$
- In case of restarts, the extra time taken will be counted (Suppose 10 second penalty for each restart)
- If a robot takes more than the max time to travel through a checkpoint, then the extra time will be carried on to the next checkpoint

Rules:

- The number of rounds will be announced a week before the competition. *
- Only one team member may enter the arena and place the robot to start the run
- After the calibration time once the robot starts its run it cannot be touched. If it is picked up or touched, it will be considered as a ¹**restart**
- Points will be awarded only if the robot travels through the whole path of the checkpoint and crosses the line.
- No additional points will be awarded for crossing any element or crossing a checkpoint. Only the calculated points based on the runtime will be awarded
- A restart **must** be taken in case of a ²**line loss**
- A restart **can** be taken by the team if the robot takes a wrong turn or seems to lose the line. But they have to inform/declare the organizers prior to taking the restart
- Maximum number of restarts: 5 restarts (Max)
- Any kind of ³cheat/gimmicks will be ⁴penalized

1| **Restart:** In case of a restart the robot must be picked up and rerun from the last checkpoint it successfully crossed.

2| **Line loss:** The arena is green and the track is a white on black. If a robot enters the green zone, it will be considered as a line loss

3| **Cheat:** Any kind of wireless/wired communication with the robot will be considered as a cheat. The robot must be totally autonomous. Any other form of attempt to gain unfair advantage will also be considered as cheats

4| **Penalty:** Penalties include point deduction or total disqualification based on the offence. The judges will hold the total authority to penalize any team that are caught cheating.

***The judges have the right to modify the rules (if necessary).**

***Modifications will be notified to the contestants prior to the event.**