

## MUMBAI: ROAD TO DEVELOPMENT

presented by IEEE

### OVERVIEW

In the city of Mumbai, where BMC has not been consistent in its effort to repair the roads and the potholes which are major nuisances in our lives, it is time for us to take a little effort and do something about our roads.

Thus, this event comprises of 2 Phases namely: Phase 1 & Phase 2.

#### Phase 1:

- Phase 1 has a task of filling the pothole which creates issues to the drivers during driving a vehicle.
- In this, the bot is expected to sense the pothole generated at various locations and fill it so as to avoid more damage to the vehicle/road.
- For success, the team will be rewarded with points mentioned in Judging Criteria.
- After this, they would need to cross a see-saw bridge safely which signifies all the uneven roads in Mumbai and how the BMC is all deaf ears to this issue.

#### Phase 2:

- Phase 2 comprises of dodging a number of obstacles which are in the form of barricades.
- After this, the contestant will cross a bridge with a gap in it. There will be objects placed near the bridge. The contestant will have to pick up the object and fill in the hole so that his/her bot can safely go across.
- The points for these efforts are mentioned in the Judging Criteria.

So help us out in our efforts to keep roads safe for us!

## RULES

- The decision of the organising committee shall be final.
- The maximum time given for completing the task is 5 minutes.
- The operator of Manual robot cannot be changed during the event.
- The bot must move only over the given track at all times.
- The operator can choose between the two given paths to complete Level 1.
- If suppose the robot drops the garbage at any given instant, it is allowed to pick it up immediately and continue, but with the reduction of some points mentioned in the Judging Criteria.

## Restarts:

- In case of restart, the timer will not be set back to zero and time will not be paused.
- During restarts for the bot, a contestant cannot feed any information to it. Contestants are only allowed to place the bot at its position. No changes in the bot is allowed during the restarts.
- All restarts for robot require the approval of the organizers before it can be removed from the arena. If it were handled within the arena without approval, it will be considered as violation.

## Additional Rules:

- Team members will not be allowed to handle the objects (prop). Only the organizers are allowed to handle the objects in any situation. If the objects are handled within the arena without the approval of the presiding organizers, it will be considered as violation.
- Participants are not allowed to keep anything inside the arena other than the bot and the bot is not allowed to leave anything behind while traversing the grid. It should not make any marks on the floor of the arena. Any Robot found damaging the arena will be immediately disqualified.

- The organizers may stop any Robot at any time if they feel that it is performing or is about to perform any action that is dangerous or hazardous to people or equipment.
- No Robot is not allowed to use any flammable, combustible, explosive, or potentially dangerous processes.
- The time measured by the organizers will be final and will be used for scoring the teams. Time measured by any contestant by any other means is not acceptable for scoring.
- In case of any disputes/discrepancies, the organizers' decision will be final and binding. The organizers reserve the rights to change any or all of the above rules as they deem fit. Change in rules, if any, will be highlighted on the website and notified to the registered teams.
- If there is a tie, then the time at every mark would be noted and the team with minimum time will be awarded as winner.

## Participation Criteria:

- A team of maximum 5 students are allowed.
- Individual or group of less students can also participate.
- Students from any colleges can participate in this event.
- Also students from different colleges can form their group for this event, namely, "Mixed Team".
- An individual participant is also allowed to take part in this event.

## Safety for the Robots:

- All Robots must be designed and manufactured as to pose no danger of any kind to any person in the venue or Robots of the opposing team or to the game field.

- Combustible-fuel-driven engines, explosives, high-pressure pneumatics (e.g. 6bar maximum pressure), power-generating chemicals, and undamped spring actuators (which make an action less than half second) are all prohibited, for motion propulsion or expansion of Robot's size. Maximum of 24 Volts between any 2 points are allowed.
- If a laser emitting device is used, full care must be taken to protect all persons at the venue from harm during all procedures. In particular, the laser beams must be so oriented that the beam will not be aimed sloping upwards, or horizontally to hit the eyes of sitting spectators. Maximum laser level allowed: Refer Robocon Rulebook Laser.

## Robot Set-Up:

- One minute is given for setting of Robots before the game starts.
- Bot can be either wired/wireless, manually-controlled, or automated.
- The machine should fit in a box of dimensions 50cm x 50cm x 60cm (*lxbxh*) at every given point of the event. The bot should not exceed 6 kg of weight including the source of energy. Power supply given to the bot should not exceed 24 Volts.

## JUDGING CRITERIA

- Additional 20 points for using Automated Robots.
- Additional 10 points for successfully completing Phase 1 along with Phase 2.

### Phase 1:

- 1 point for each ball dropped into the pot hole.
- 2 bonus points for completely filling each pothole (10 balls per pothole).
- 1 point for successfully climbing up the see-saw and descending at an instance.
- 2 points will be deducted if the bot falls while climbing up the slope, or while descending

- 15 points for successful completion of phase 1.  
Total =  $12 (2 \text{ for bonus}) \times 2 + 1 + 15 = 40$  points.

## Phase 2:

- 2 points **for** successfully picking up the object .
- 2 additional points for successfully placing the object in the hole/gap.
- Total points for picking up and placing 5 objects is  $5 \times (2+2) = 20$
- 5 bonus points for picking up all 5 objects and placing it in the gap/hole (without dropping it even a single time).
- 15 points for successful completion of phase 2.  
Total =  $20 + 15 + 5 (\text{bonus}) = 40$  points.

## Violations:

- Negative scores may appear in some cases.
- When the Violation occurs in Phase 2, the team has to restart that phase from the starting point of Phase 2 (i.e., the point where the see-saw declines). The violations are categorized as follows:
  1. Any part of the Robot entering their respective restricted areas.
  2. Other actions that infringe on the rules without mentioning in the Disqualification are considered as violations.

## Disqualifications:

- A team will be disqualified if it commits any of the following actions during the match:
  1. The team performs any acts that are not in the spirit of fair play.
  2. The team fails to obey instructions or warnings issued by the referees.
  3. Bot is not allowed to damage the arena. (damage marks okay)

# abhiyantriki

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(Autonomous College, Affiliated to University of Mumbai)

## Final Score:

- Whichever team that has the most number of points in 5 mins is the winner.

**Note:** During the event, 2 teams can play at the same time in their respective arenas (If there is Arena 2).

Arena 2 is mirror image of Arena 1, so the code will have to be changed accordingly!

**Registration fee:** Rs. 500/- (team of 5)

**Prizes worth:** Rs. 12,000/-

## Contact:

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