University of Kelaniya

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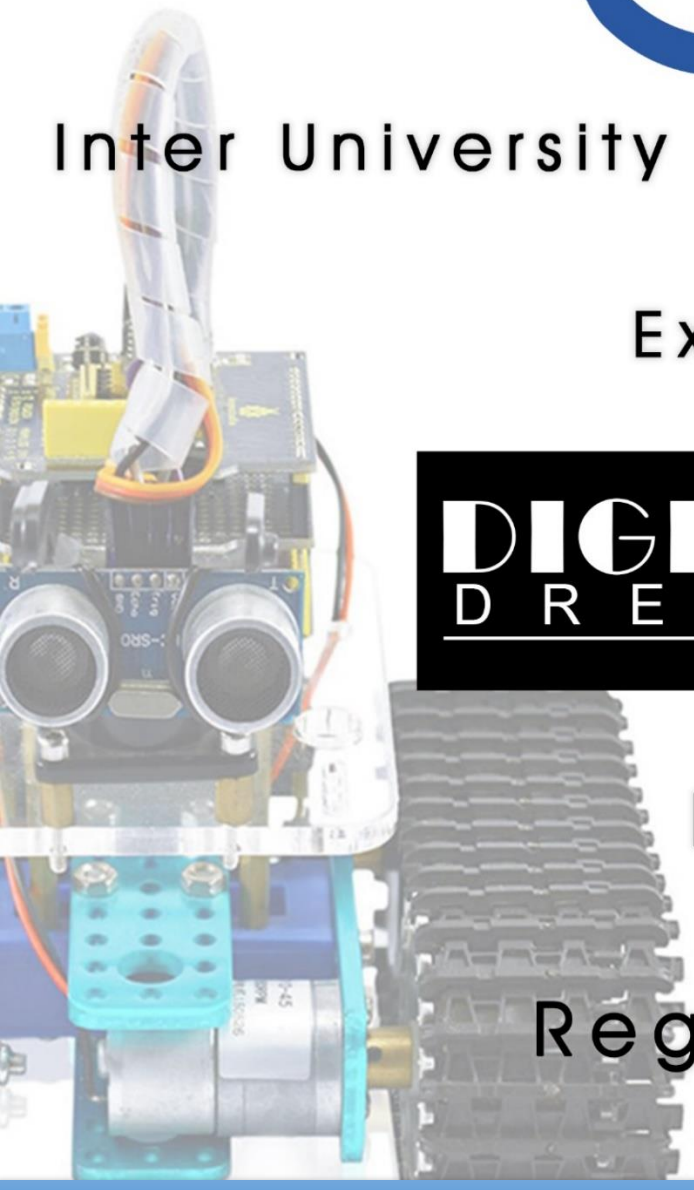
VIDYA

Inter University Robotic Competition & Exhibition

DIGITAL DREAMS 2017



Rules & Regulations

Inter University robotics competition

Challenge

Digital Dreams 2017
The task assigned for the Inter University Robotic Competition would be to design a **'Garbage disposing robot'**. The robot should be capable of collecting Aluminum balls and Plastic balls in the arena separately one at a time. Once a ball is picked up by the robot it should be able to dispose the ball into the respective box based on the material from which the ball is made. (if the Robot picked a plastic ball, then that ball must put in to the plastic box). The robot should navigate autonomously.

Rules and Regulation

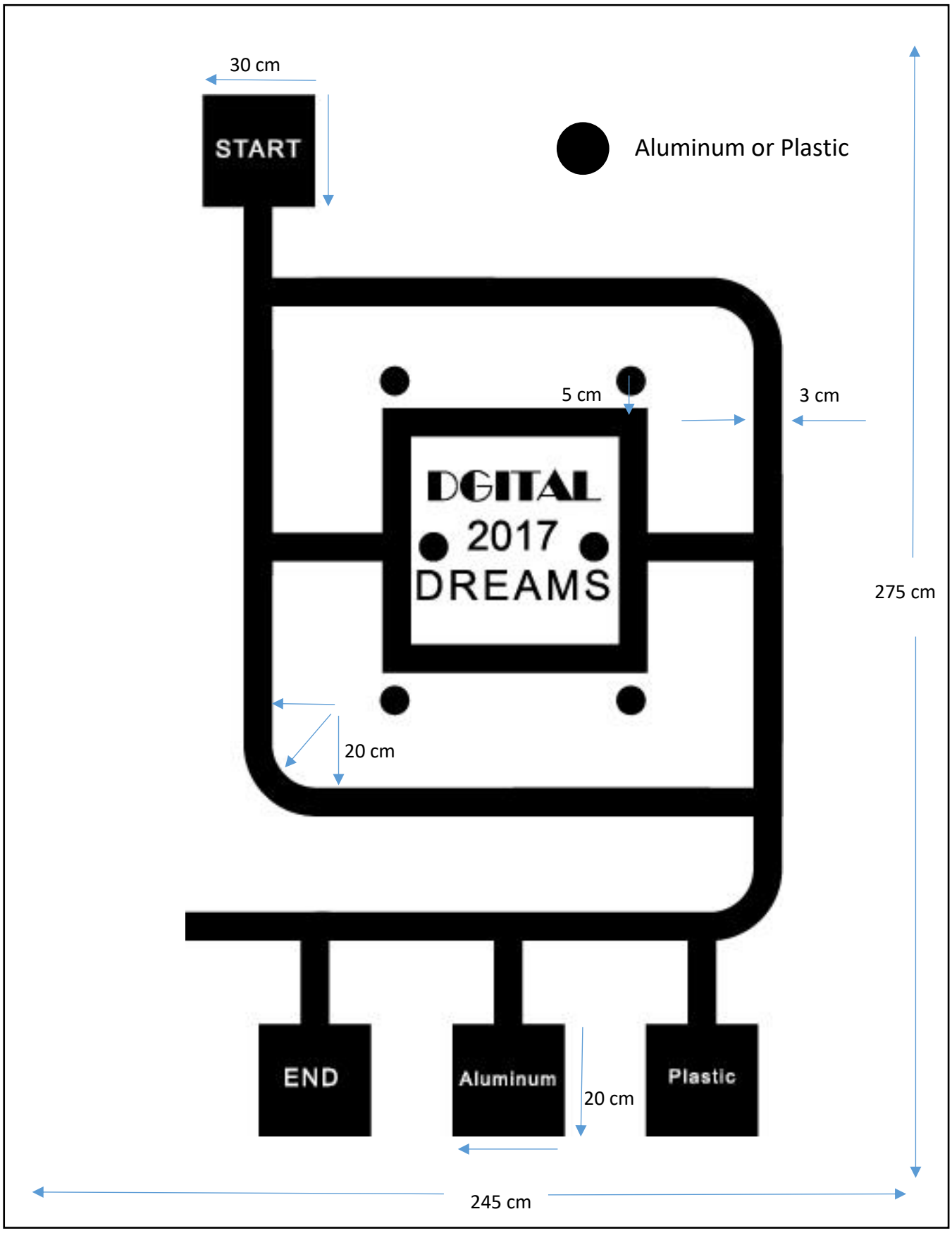
Eligibility

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

Robot Specifications

- Both length and width of the robots must be 30cm or less. There is no height restriction.
- Robot should have, a clearly indicated ‘‘ON/OFF’’ or ‘‘START’’ switch. Robot must not communicate with any external device after placing on the arena. All the decisions have to be made by the robot itself.
- Robot can be wheeled or tracked and it 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.
- Robot must be powered by a battery which doesn’t exceed 24V.
- Robots should work under any ambient light condition.

Arena Description



- **Radius of the ball within 5cm -10cm.**
- **Dimension of the box 20cm×20cm×20cm**

Competition

The competition has two rounds.

- First round
  - ✓ In the first round, there is only one ball on the arena (it can be Aluminum or Plastic). The Robot must successfully identify the material of ball and put it into the correct box. For example, if the Robot picked Plastic ball then it must put into the plastic box.
  - ✓ Finally, Robot should come back to the END Position.
- Second round
  - ✓ The arena will be full of balls. The Robot should collect balls one by one then put it into the correct box.
  - ✓ Finally, Robot should come back to the END Position.

Invent procedure

1. Robot will be placed at the start position.

   The robot should be kept inside the start rectangle. whole of the robot should be confined to the box. All the sensors of the robot should be inside the black rectangle.

2. Starting the robot

   When the judge panel say to start the robot, the competitor should start the robot only by using that switch.

3. Detecting a ball

   The robot is expected to explore the Aluminum or Plastic balls by following the black lines.

4. Picking the ball

   The robot is expected to bring the detected ball and checked material of the ball.

5. Putting the ball in to the box

   After the Robot identified the material of the ball and put it into the correct box by following the black lines.

6. Returning to the end position

   Finally, the robot should return to End position after successfully putting the all balls at the correct boxes.