Geethanjali College of engineering and Technology

Circuit Chase

Robotica' 25

RULE BOOK

1.Overview:

The Circuit Chase Competition challenges participants to design and program robots capable of following a pre-defined path with precision and speed. The event encourages innovation in robotics and tests participants' skills in control algorithms, sensors, and obstacle handling.

2.Game Rules:

1. Robot Design: Participants must build a manually operated robot capable of following a black or white line on a contrasting background without human interference during the run.
2. Auto-Stabilization Limitations: Use of auto-stabilization, pre-built modules, or any external support hardware for guidance or balance is strictly prohibited.
3. No Alterations Mid-Competition: Teams cannot make adjustments to their robots between rounds. Any changes after initial inspection will result in disqualification.
4. A robot is allowed to participate only once in the event. The robot can participate once again with the same team if it satisfies the following conditions:

- The team has to register once again with a modified old robot/new robot before registrations close and a maximum of 3 registrations will be accepted.
- Wheels or motors or chassis materials should be changed to consider an old robot as a new one.
- Lending or sharing a robot between teams is strictly prohibited.

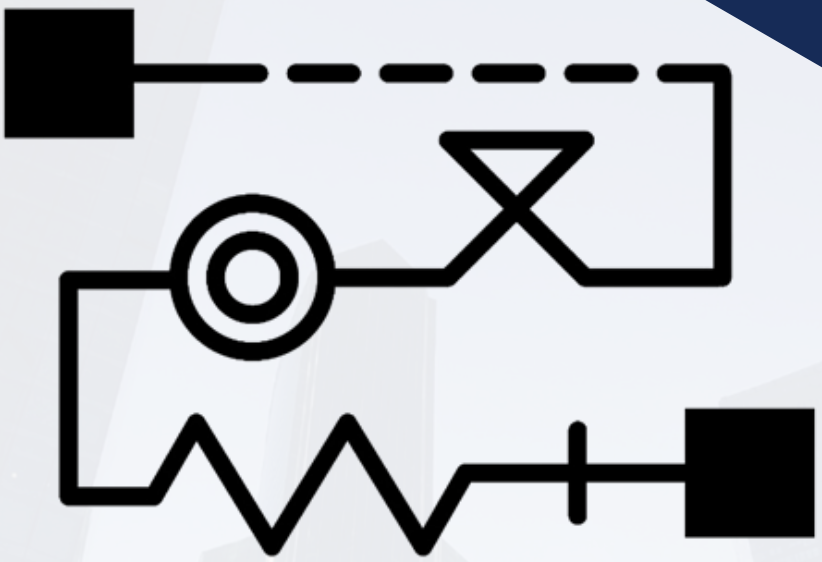
5.Damage Liability: The organizers are not responsible for any damage sustained by robots within the competition arena.

3.Robot Specifications

- **Dimensions:** The robot must fit within a 30×30 cm frame.
- **Weight:** Maximum weight must not exceed 3 kg.
- **Sensors:** The robot may use line-tracking sensors; however, they must be limited to detecting the line only (infrared or colour sensors are acceptable).
- **Speed Limits:** The robot's maximum speed should not exceed 1 meter per second.
- **Power Source:** The voltage must not exceed 12V, and no external power supply is allowed once the run begins.
- **Construction Materials:** Robots with sharp edges or metal components that could damage the track will not be permitted.
- **Pre-built Kits:** Use of LEGO, toy cars, or pre-assembled kits is strictly prohibited.
- **Onboard Control:** All components must be onboard. No external laptop/phone control is permitted after the run starts.

4.Game Structure

- Round: The competition will have two stages – a Qualifying Round and a Final Round.
- Qualifiers: The qualifying map will consist of simple curves and small zigzags.



Map

- Finals: The final map will be complex, featuring crossovers, loops, and checkpoints.

Note: The Final Round map will be revealed only during the finals.

- Checkpoints: 2–3 checkpoints will be placed. If the robot goes off-track after passing one, it must restart from the last checkpoint (not from the start).
- Calibration Time: Each team will be given 3 minutes before their run to calibrate sensors and adjust code.

5. Scoring & Penalties

- Base Scoring: Completion time is the main metric for ranking.
- Bonus: Robots completing the course without penalties will earn bonus points.
- Penalties:

  Leaving the line = +2 seconds.
  Manual touch = +3 seconds.
- Technical Timeout: Each team may take 1 technical timeout (2 minutes) during their run for urgent fixes.

6. Evaluation & Winning Criteria

1. Qualifying Round:
   - Each team must complete the qualifying map within a fixed maximum time limit (to be announced on the event day).
   - Teams failing to finish the course within this time will be eliminated from the competition.
   - Only robots that successfully complete the course within the given time window will advance to the finals.

2. Final Round:
   - Winners will be decided purely based on completion time of the final track.
   - The team whose robot completes the course in the shortest time (after penalties, if any) will be declared the winner.
   - In case of a tie, the robot with fewer penalties will be ranked higher.

7. Judgment Criteria

1. Precision and Accuracy: The robot's ability to stay on the line, even during sharp turns or complex paths.
2. Speed: The time taken to complete the track will be recorded and used as a primary score metric.
3. Penalty Points: Penalties will be incurred if the robot leaves the line or requires repositioning. Each penalty adds additional time to the robot's final score.
4. Course Completion: Successfully completing the track without penalties will earn bonus points.

8. Team Guidelines

1. Team Size: Team can have 1 to 3 members.
2. Arena Access: Only 2 members are allowed near the arena during a run.
1. Unique Robot Rule: A single robot cannot be used by multiple teams. However, if the same team modifies or builds a new version of their robot, they may re-register it — but only up to 3 times per team.
1. Tools & Equipment: Teams must bring their own tools and spare parts. No on-spot spares will be provided.
1. Collaboration: Members from different institutions are welcome to form teams.

9. Behaviour & Safety

- Misbehaviour towards participants, judges, or organizers will result in disqualification.
- Teams must respect allocated time slots; late arrivals will be disqualified.
- Robots with sharp metal edges or unsafe components will not be permitted to protect the arena.

10. Certificates:

- Participation Certificates: Awarded to all teams.
- Merit Certificates: Awarded to winners.

11.EVENTCOORDINATORS:

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