

# **ROBOYUDH'26 RULE BOOK**

## **LINE FOLLOWER**

<b>INTRODUCTION.....</b>	<b>2</b>
<b>ROBOT SPECIFICATIONS.....</b>	<b>2</b>
<b>ARENA SPECIFICATIONS.....</b>	<b>2</b>
<b>SAMPLE TRACK.....</b>	<b>3</b>
<b>ROUNDS.....</b>	<b>3</b>
<b>RULES AND REGULATIONS.....</b>	<b>3</b>
<b>MARKING SCHEME / CRITERIA.....</b>	<b>4</b>
<b>PENALTIES.....</b>	<b>4</b>
<b>DISQUALIFICATIONS.....</b>	<b>5</b>
<b>SAFETY GUIDELINES.....</b>	<b>5</b>
<b>APPEALS AND DISPUTES.....</b>	<b>6</b>

## I. INTRODUCTION

The **Line Follower** is an exciting event that tests the navigation and problem-solving skills of autonomous robots (Rovers) in a controlled maze environment. Robots are tasked with solving a maze using infrared sensors to follow a path and complete the maze in the shortest time possible. The event requires precision, quick decision-making, and efficient backtracking algorithms, with time being the key to victory.

## II. ROBOT SPECIFICATIONS

### 1. Size & Weight:

- **Dimensional Limit:** Must fit within a 25cm x 25cm x 25cm box.
- **Weight Limit:** Must not exceed 3kg (Battery included).

### 2. Design and Construction:

- Battery Voltage must be under 16.8 volts
- Robots must be autonomous and wireless (e.g., no Bluetooth, RF modules).
- The robot must be built primarily by the team. Ready-made robots are not allowed.

### 3. Inspection:

- All robots must pass an inspection before the event to ensure they comply with size, weight, and design regulations.
- Non-compliant robots will be disqualified.

## III. ARENA SPECIFICATIONS

1. **Arena:** A white paper surface measuring 250cm in width and 250cm in length.
2. **Path:** The track that robots must follow will be black, between 1.5cm and 2.5cm in width.

### 3. Attempts and Retries:

Maximum two attempts per team

Best time will be considered

Restart is allowed only when permitted by judges

### 4. Time Measurement:

The timer starts when the robot crosses the start line and stops when it crosses the finish line.

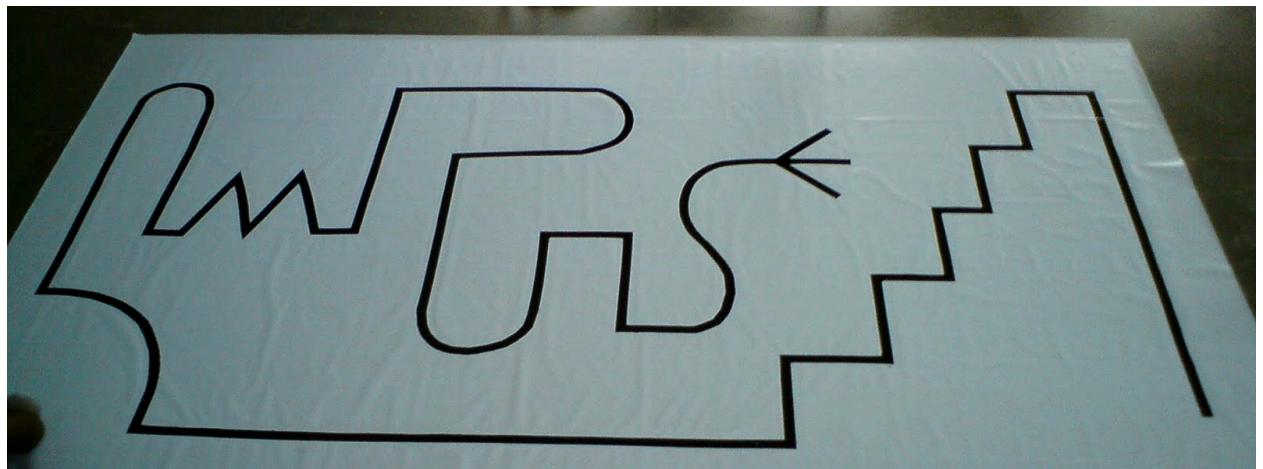
A stopwatch will be used for timing, with the judge's time being final.

### 5. Maximum Time:

The maximum allowed time to solve the maze is **5 minutes**.

Failure to complete the course in the allotted time will result in disqualification.

## SAMPLE TRACK



## IV. ROUNDS

1. **Initial Round:** Each robot will get two attempts to navigate the track. The best time will be recorded.
2. **Elimination Round:** Teams that do not complete the track within the time limit or fail to follow the path correctly will be eliminated.
3. **Final Round:** The top robots from the elimination round will compete for the best time to solve the maze.

## V. RULES AND REGULATIONS

### 1. Restarts:

To last checkpoint : In case of losing the track or stoppage. (Timer is not reset)

To start-line : In case of referee deeming the current run as invalid. (Current attempt is invalidated and moving on to next attempt)

### 2. Requests for Restart:

A team can request a restart if:

- The robot does not follow the line.
- The robot stops midway or loses its way.

### 3. Adjustments:

- **Reprogramming or adding/removing parts** during a run is strictly prohibited.
- **Adjusting sensors** is allowed only with referee consent.

## **VI. MARKING SCHEME / CRITERIA**

- **Time Taken:** The robot that completes the track in the least amount of time will be ranked the highest.
- **Accuracy:** Robots that deviate from the line or show unstable navigation may face penalties in the form of time additions.
- **Performance:** Smooth, consistent performance will be rewarded with bonus points.

## **VII. PENALTIES**

- **Line Deviation:** If the robot deviates from the path or goes off-track, it will incur a penalty in time
- **Human Interaction:** If the robot is touched, a penalty will be added.
- **Timeout:** Failure to complete the maze within 5 minutes will result in automatic disqualification.

<b>Violation</b>	<b>Penalty</b>
Human intervention	+ 5 sec
Damaging the arena	Disqualification
Wireless control detected	Disqualification

## **VIII. DISQUALIFICATIONS**

A robot will be disqualified if:

- It does not meet the size or weight regulations.
- It communicates with the operator or uses external wireless communication (e.g., Bluetooth).
- It fails the inspection.
- It violates any other rule set forth in this guide

## **IX. SAFETY GUIDELINES**

### **1. Robot Safety:**

- Ensure all robots are safe for handling and operation.
- Ensure no sharp edges or harmful parts are present that could cause injury.

### **2. Operator Safety:**

- Only authorized personnel can handle the robots.
- Follow all instructions from referees and event coordinators for safety procedures.

## **X. APPEALS AND DISPUTES**

- In case of any dispute regarding the time measurement or any other rule, the team may submit an appeal to the event coordinators.
  - All decisions made by the referees are final, but the appeal process will be reviewed if necessary.
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