

N.A.V.Y.A ROBOTICS PRESENTS

# ROBO TRACK CHALLENGE

## PATHFINDER

Track **4m x 3m** | Line Width **15 mm** | Max Time **3 min** | Trials **2 per Team**

### 01. OBJECTIVE

Participants must design and build an autonomous robot capable of detecting and following a continuous black line on a white surface. The robot must complete the track independently without external assistance in the shortest possible time.

### 02. TEAM COMPOSITION

- Each team may consist of a maximum of **3 members**
- Only **one robot** per team is allowed
- Team members must be present during robot inspection and competition runs

### 04. TRACK SPECIFICATIONS

#### TRACK SURFACE

- The track will be placed on a white flex or laminated surface

#### LINE

- Single continuous **black line**, width: **15 mm**
- Track fits within a maximum area of **4 m x 3 m**
- May contain curves, turns, and different path sections
- Direction arrows or markers may be present as visual guides only

#### CHECKPOINT ZONES

- Track may include one or more checkpoint zones
- Robots must successfully pass through all checkpoints
- Checkpoint details shared on competition day

### 03. ROBOT SPECIFICATIONS – DIMENSIONS & WEIGHT

#### DIMENSIONS

- Maximum robot footprint: **250 mm x 250 mm**
- Maximum robot height: **100 mm**
- The robot must remain within these dimensions throughout the run

#### WEIGHT

- Maximum robot weight: **3 kg** including battery and all components

#### POWER SOURCE

- Robot must be powered only by **onboard batteries**
- External power sources are not permitted

#### VOLTAGE

- Maximum operating voltage allowed: **24 V DC**

### 03. ROBOT SPECIFICATIONS – AUTONOMY & SAFETY

#### AUTONOMY

- The robot must be **fully autonomous**
- Remote control, wireless communication, or external computation is **strictly prohibited** during a trial

#### SAFETY

- All wiring must be properly insulated
- Components must be securely mounted
- Any robot causing safety hazards may be disqualified

#### 05. START AND FINISH

- Track will have clearly marked **start and finish lines**
- In closed-loop tracks, start and finish lines may coincide
- A **250 mm x 250 mm** start box will be provided
- The robot must start completely inside the start box

**250MM**

MAX ROBOT SIZE

**3 KG**

MAX WEIGHT

**24V DC**

MAX VOLTAGE

**3 MIN**

MAX RUN TIME

**2**

TRIALS PER TEAM

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### 06. COMPETITION PROCEDURE – INSPECTION

All robots will undergo inspection to verify compliance before competing. Robots failing inspection must be modified before they are allowed to compete.

#### INSPECTION CHECKS

- Size – must not exceed 250 mm x 250 mm x 100 mm
- Weight – must not exceed 3 kg
- Safety – wiring, mounting, and general safety
- Compliance with all rules and regulations

### 06. COMPETITION PROCEDURE – TRIALS & TIMING

#### TRIALS

- Each team will be given **two trials**
- The best time from the two trials will be considered

#### START PROCEDURE

- The robot will be placed inside the start box by the team
- After the start signal, the robot must begin moving within **5 seconds**

#### TIME MEASUREMENT

- Timing begins when the robot crosses the **start line**
- Timing stops when the robot crosses the **finish line**
- Maximum time allowed for each run: **3 minutes**

### 07. TRIAL TERMINATION

A trial may be terminated under the following conditions:

- The robot repeatedly leaves the track and is unable to continue following the line
- The robot moves in the wrong direction and does not return to the correct path
- The robot is manually touched or assisted by the team during the run without permission from the judges
- The robot becomes non-functional or remains stationary for an extended period

### 08. DISQUALIFICATION CONDITIONS

A team may be disqualified if:

- The robot violates size or weight limits
- The robot uses remote control or wireless communication
- The robot damages the track or competition field
- The robot creates unsafe operating conditions
- The team engages in unsportsmanlike conduct

### 09. ORGANIZER RIGHTS

The organizers reserve the right to:

- Modify the track layout before the competition
- Interpret rules in case of disputes
- Disqualify teams violating competition rules

The **decision of the judges will be final and binding** in all matters related to the competition. Participants are expected to respect and abide by all rulings made by the organizing committee and judges.

**250MM**

MAX ROBOT SIZE

**3 KG**

MAX WEIGHT

**24V DC**

MAX VOLTAGE

**3 MIN**

MAX RUN TIME

**2**

TRIALS PER TEAM

Report by **7th April 2026 at 9:00 AM** · For queries contact: **Prasad Mergal 9309588185**

Checkpoint details will be shared with participants on the day of the competition · **All the Best!**

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