Trailblazer

OBJECTIVE:

Teams must build an autonomous robot capable of following a black line, analyzing directions, and navigating through the maze. The robot must optimize its path and finish the race in the minimum time.

Venue , Date , Timing:

Vollyball Ground (NIT Uttrarakhand)
28 February (6:00pm to 8:00pm)

ARENA:

- Arena Size: **8 x 10 ft (L x B).**
- Path Layout: The maze consists of random paths made of pressure-sensitive adhesive tape.
- Tape Width: **50mm**
- Alterations: The arena layout will be altered at competition time, but the general structure and rules will remain consistent.
- End Zone: The End Zone contains a black box with dimensions 300mm x 300mm (L x B), indicating the endpoint.
- Checkpoints: Defined by flags placed along the course.

EVENT STRUCTURE:

Round 1: Basic Navigation

- Objective: Test the robot's ability to follow a simple line-based path.
- Details: The track will consist of a single continuous path with basic turns and curves but without complex intersections. Robots must start from a marked starting point and navigate through the entire course to reach the endpoint.
- Scoring Criteria:

- Completion Time: Robots are scored based on how quickly they complete the track.
- `Score = 180 − Time taken to complete the run.`

- Advancement: The top 50% of participants from Round 1 (based on highest scores) will advance to Round 2.

Round 2: Advanced Maze Navigation

- Objective: Test the robot's ability to navigate a more complex maze with multiple intersections and sharper turns.
- Details: The maze will have several branching paths, intersections, and dead ends. The robot must detect and choose the correct path to reach the endpoint.
- Maximum Time: 5 minutes to solve the maze.
- Scoring Criteria:
  - Completion Time: Higher scores are awarded to robots that complete the maze in less time.

SCORING POINTS:

- A = 10 points for each checkpoint (scored once per checkpoint)
- T = 300 - Time taken to complete the actual run.
- L = 30 points for reaching the endpoint.
- Penalties:
  - 20 points will be deducted for leaving the path during the run. Additional points may be subtracted for any rule violations.
  - 10 points will be deducted if LED glows before the ending point of the track**.**

Total Score = (A + L + T) - P (Penalties)

Winner Selection:

- Winners will be determined based on the score in Round 2.
- In case of a tie:

1. The robot with the shortest cumulative completion time across both rounds is declared the winner.
2. If the tie persists, the robot with the minimum time taken in Round 1 will be considered.
3. If the tie persists, the team with the fewest penalties will be declared the winner.

BOT SPECIFICATIONS:

- Dimensions: The bot must fit within a box of **220mm x 220mm x 220mm (L x B x H**).
- Power Supply: The bot must have an onboard power supply. The maximum voltage between any two points should not exceed 24V**.**
- LED: The bot must have a red LED that glows once it reaches the End Zone.
- Construction: The bot cannot use pre-made kits (e.g., Lego), although pre-made gear assemblies may be used.
- Arena Damage: The bot must not damage the arena or leave any marks while moving.
- Unit Requirements: The bot must remain as a single unit throughout the competition and cannot split into multiple units.

GAME RULES:

- Software and Hardware Changes: Software and hardware changes are allowed only before the start of Round 1. No changes are allowed after the event has started.
- Bot Handling: Only one team member can handle the bot during the entire run, and they must start the bot without physical assistance or impulses.
- Run Start: The bot will be placed in the Start Zone, and only one team member can be near the arena at that time.
- Restart Limit: Each team is allowed a **maximum of 3 restarts** during each round. Note: The timer will not be reset for any restart.
- Disqualifications: Teams will be disqualified for damaging the arena or if the robot is disassembled during the run.

- Every team must submit a 2-minute video demonstrating the preparation of their bot before the competition. The submission deadline is February 26th 2025.

TEAM SPECIFICATIONS:

- Teams may consist of a minimum of 2 participants and a maximum of 4 participants.
- All team members must have valid student ID cards from their respective institutions and must be from the same institution.
- One bot per team is allowed.

PRIZE AND CERTIFICATES

- Prize Money: Prize money will be awarded after the final round, processed through NEFT.
- E-Certificates: E-certificates will be awarded to teams scoring above a minimum cutoff, which will be announced later.
- Prize pool for this event is: 30,000*/-

NUMBER OF REGISTRATION ALLOWED : 30

CERTIFICATE POLICY:

- E-certificates will be awarded to teams that meet the minimum score requirement (cutoff to be announced later).

GENERAL RULES:

- Participants must not bring any laptops or external devices (Wi-Fi, Bluetooth, etc.) into the arena.
- The organizer's decision will be final on all matters related to the competition.
- Results will be decided by the judges allocated for the event.

AN IMPORTANT NOTE:

- The organizers reserve the right to modify the rules or guidelines at any time. Any such changes will be communicated to the participants promptly.
- Decisions made by the judging panel will be final and binding on all teams. No appeals or queries regarding the judgment will be entertained.
- Prize pool is subjected to the number of participants and on the discretion of the organising committee.
- Teams are responsible for ensuring their submission complies with the guidelines.
- **Cliffesto'25** reserves the right to disqualify any team at any stage for non-compliance with the rules or misconduct.
- For any queries or clarifications, participants are encouraged to contact the **Cliffesto'25** organizing team.

Contact Details of Event Head

Name: Vidya Chauhan
Contact : +91 9368721276
E-Mail : bt23cse015@nituk.ac.in

* Prizes may vary depending on participation.