robotix Iran

TECHNOXIAN WORLD ROBOTICS CHAMPIONSHIP IRAN

WORLD'S BIGGEST ROBOTICS CHAMPIONSHIP TECHNOXIAN

TECHNOXIAN IRAN

The 12th National Student and Open robotics Competition RobotixIran

First TechnoXianIran International Competition

KISH-IRAN-2025

DATE: 23-25 June

WWW.ROBOTIXIRAN.COM
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Fastest Line Follower

Introduction

One of the most popular and engaging leagues in robotics competitions is the **fastest line follower league**, where robots must be equipped with sensors capable of distinguishing black and white colors to navigate the track according to the competition rules. The team that completes the track with the highest precision and in the shortest time is declared the winner.

Age Requirements

This league has no age restrictions.

Teams

- Each team can have a maximum of **five main members**.

Robots

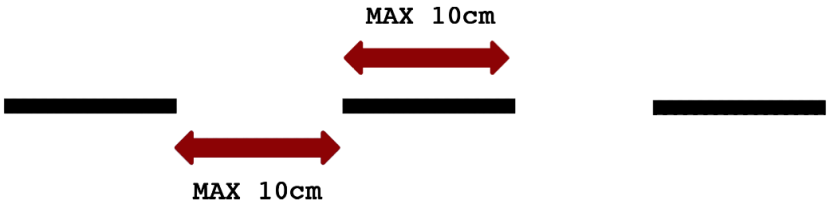
- Robots must operate autonomously using microcontrollers such as STM, SRC, KRC, ARDUINO, PIC, AVR, etc.
- Communication between the robot and external devices, such as laptops, Bluetooth modules, or any external systems (e.g., RF modules), is **strictly** prohibited.
- Each team is allowed to build and bring only **one robot** to the competition.
- Robots that are similar to others, as judged by referees, will be disqualified.
- Robots that are similar to other robots will be disqualified as the referees decide.
- Each robot must fit within dimensions of **25 cm x 25 cm x 25 cm**, including any attachments. Robots will be tested for size compliance using a box of these exact dimensions.
- Robots must be built by the team members. The use of pre-assembled robots from the market is prohibited.
- Failure to comply with any of the rules above will result in immediate disqualification.

Competition Track

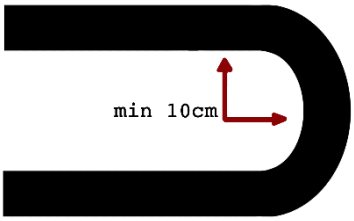
- The track is made of **MDF or plywood** with a **white base and black lines** or vice versa, determining the robot's path.
- The line width is approximately **18 mm** with a tolerance of **±2 mm**.

Track Challenges

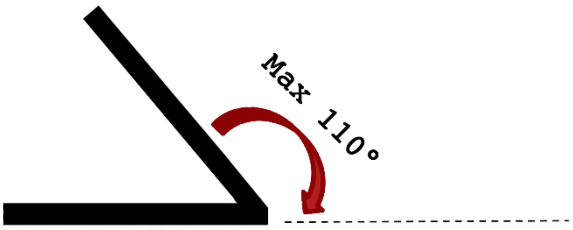
1. **Intersections**: The track may include intersections with angles no less than **45 degrees**.
2. **Gaps**: The track may have gaps with a maximum distance of **10 cm**.



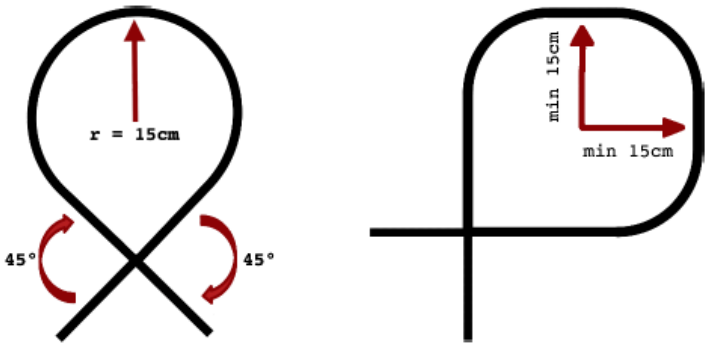
3. **Curves**: The track may feature curves with a **minimum radius of 10 cm**.



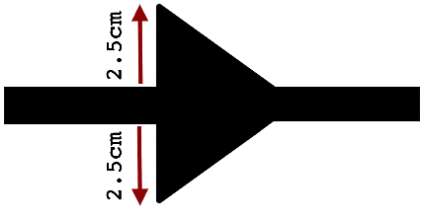
4. **Angles**: The track may include angled lines with external angle of up to 110 degrees.



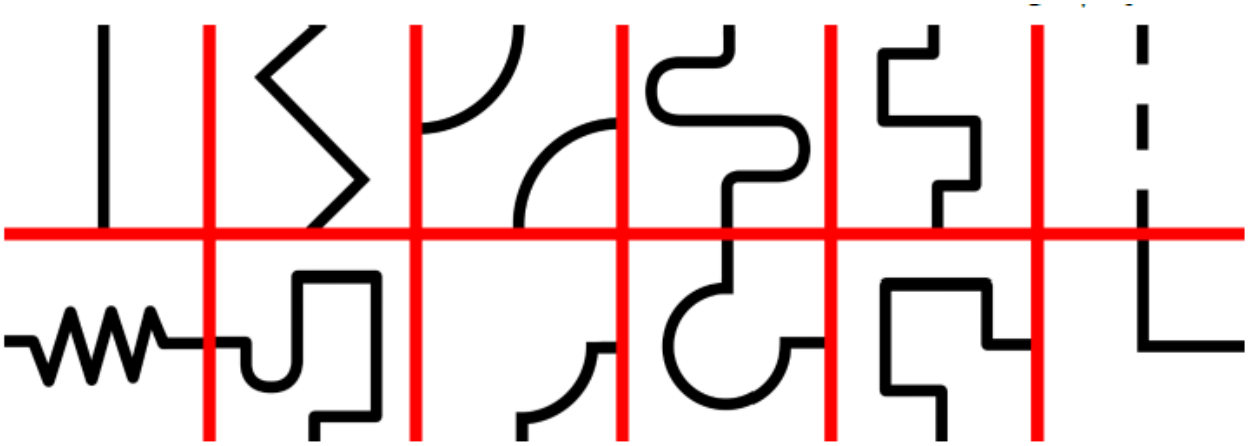
5. **Loops**: The track may contain one or more closed loops as follows:



6. **Color Reversal**: In some sections, the black and white colors of the track may be reversed. Teams should note that before entering such a section, there will be at least a **5 cm** straight path.
7. **Line Width Variation**: The width of the path may vary, increasing up to **2.5 cm** on each side.



8. **End of Track**: At the end of the track, there is a completely black zone measuring **45 cm x 45 cm** where the robot must stop.
9. **Parallel Lines**: Parallel lines on the track must have a minimum distance of **10 cm** between them.
10. Samples of challenges:



Key Points for Challenges

- All specifications include a maximum **10% error margin**.
- Any challenge may appear zero or multiple times on the track.

Competition Format

- The competition is held in three rounds and one technical challenge round.
- Teams must submit a technical report, including the design stages of the robot's mechanics, electronics, PCB design, modules used, and programming algorithms, as a printed document.
- The competition track is divided into several sections. Completing each section is considered a record (e.g., moving from point A to point B). If the robot fails to complete the entire track, partial scores may still be awarded.
- Robots must be submitted to the competition committee for inspection and quarantine before the track’s unveiling. Changes to the robot's code after the track unveiling are prohibited.
- Robots must include stickers that display the logo or name of the team.
- Each team can record up to three attempts and conduct multiple tests. Among these three records, the team's best record will be registered as their score. (In case of identical final records among multiple teams, secondary records will be considered.)

- Each team has 15 minutes to complete their three attempts, starting from the moment the team's name is called.
- It should be noted that if the allocated time ends, the robot will be recorded at its final position on the track, and the team will not be allowed to continue.
- During record attempts, teams may adjust sensors, adhesives, tires, batteries, etc., but replacing programmable components such as microcontrollers or any parts that could change the code is prohibited.
- All records and times will be measured using precise chronometers and specialized sensors.
- In case of any objections, teams must submit them in writing to the committee and referees.
- Scoring and evaluation are entirely carried out by the referees of each league, and the final decision is determined by the judgment of the referees and the league committee.
- Additionally, in case of unforeseen and unpredictable issues, the referees' and committee's decisions are final, and no objections will be accepted after the final announcement.

Violations

The following violations will result in the robot being returned to the start of the track:

1. Moving in the opposite direction of the track.
2. Spinning in one place for more than 5 seconds.
3. Losing the main path and re-entering the track at a different point.
4. Failing to enter loops, skipping turns, or not adjusting to changes in angles; this is considered leaving the track.
5. If the referees determine that a team has programmed the main path into the robot rather than allowing it to navigate intelligently, the team will be completely disqualified from the competition.
6. Using pre-assembled robots or robots not built by the team members.
7. Spraying or applying foreign substances to the surface of the track is prohibited.

Scoring

- Teams with the shortest completion time will have higher rankings.
- Scores for each round will be adjusted based on the difficulty of the track, and the final result will be determined after all three rounds.
- Teams unable to complete the entire track will have their records evaluated based on partially completed sections.

- If the robot fails to stop in the black end zone, **5 seconds** will be added to its time.
- Teams that complete only part of the track will be ranked after the teams that complete the entire track
- After the competition, the top 5 teams are introduced to the technical challenge round.
- The winning team's technical report and documentation will contribute up to 20 points to their total score, with an additional 10 points awarded for interviews with the team members.
- Based on the total scores, the top five teams will be ranked.
- Teams failing the technical interview may be disqualified if the technical committee decides.

Objections

- Objections must be submitted in writing immediately after the competition or during the round. Late objections will not be considered.
- The final decision on disputes lies with the referees and the organizing committee.
- After the results are announced, no objections will be accepted.

Organizational Chart

- Teams are responsible for staying updated on any rule changes up to one week before the competition.
- Teams must register within the specified timeframe and submit a 1-5 minute video (max 100 MB) showcasing their robot's functionality and their motivation for participating. Videos should be emailed to technoxian.iran@gmail.com.
- Robots will undergo technical inspections before the competition.

Attention: Only one trophy and cash prize will be awarded to the winning team, not to individual members.

GOOD LUCK!