GUIDE BOOK

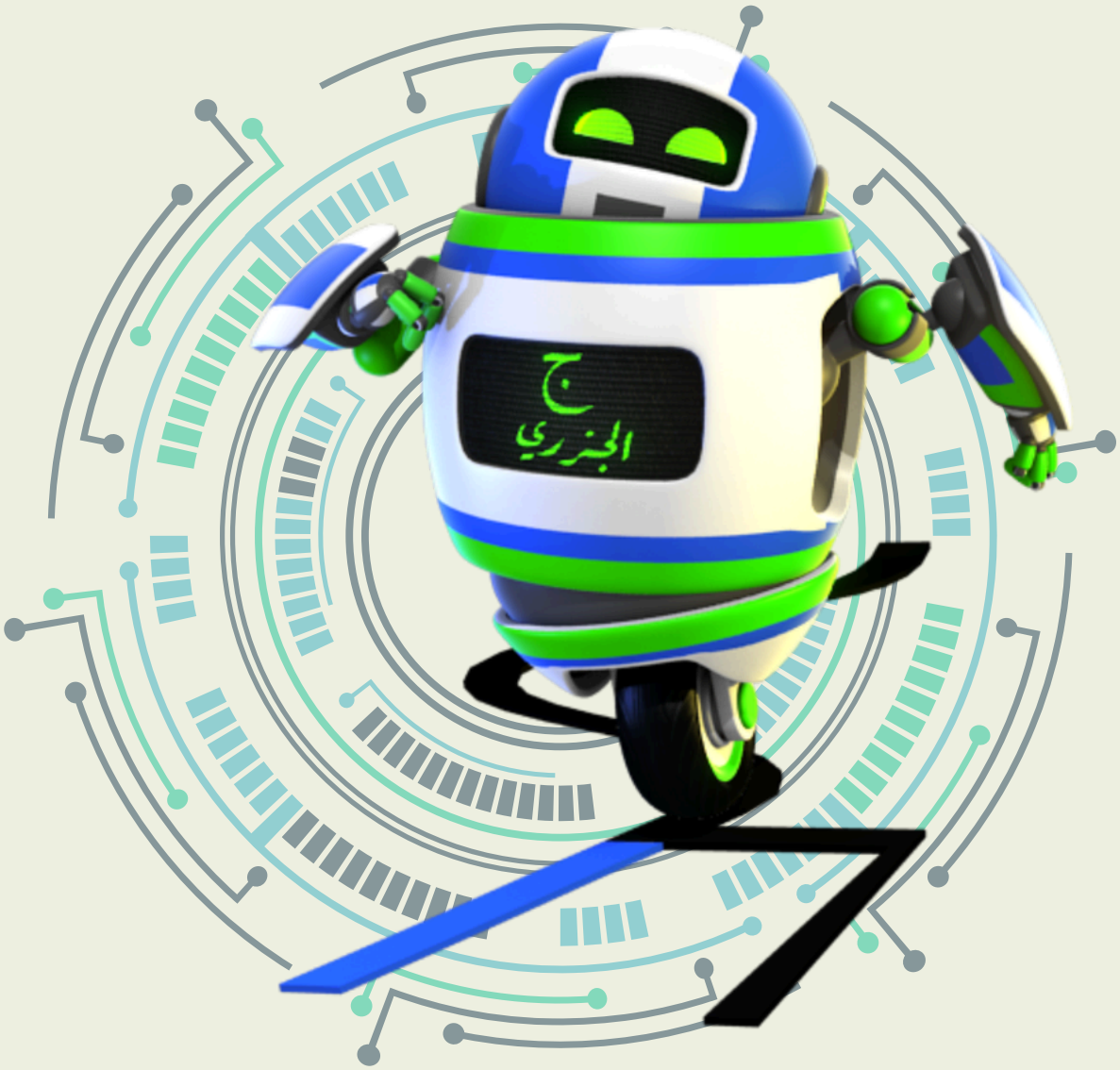


iisro

International Islamic School Robot Olympiad

أولمبياد الروبوتات العالمي لمدرسة إسلامية

LINE TRACER



GAME DESCRIPTION

Line tracer is a robot following black line on white floor (or white line on black floor) using sensor to end point.

CHALLENGES

Participants program maze solving according to questions given by the committee and judges. The robots operate automatically with the push of a button.

PARTICIPANT TERMS AND CONDITIONS

- The competition is open to participants from Indonesia and the Indonesian Foreign participants through the following categories :
  1. Junior Category [aga of Under 12 years old]
  2. Senior Category [age of under 19 years old]
  3. First Step (For line tracer Micro)

- Each team consists of a maximum of 7 participants including. Each participant (except assistant teacher/team manager) is only allowed to register join a team only.
- Team registration must be done online at the website.
- Eating & drinking are not provided.
- The Robot Kit is not provided by the committee
- The robot must be programmed using a laptop.

LINE TRACER MICRO

ROBOT

Robot type: No restriction

Construction (On site)

- Size: Robot should be less than 20cm X 20cm (H*W)
- **Size measurement**
  Structure size will be measured on the measuring board before the competition and robot must be switched on to be measured. Participants should self-check the size during construction time and practice time.

- **Weight :** No restriction
- **Sensor :** No restriction

Power source

Robots should work with an independent electric power supply it cannot use a combustible device.
There are no limitations on type of battery or voltage level.

Programming, setting and Control

Robots are allowed computer programming or onboard programming. The robot must be in an unprogrammed state

Operation

robot must start with start button, Robot should not be touched after starting match.

PLAYFIELD RULE

Playfield

- **Structure**
  Size and placement
  playfield with 400cm x 300 cm (W x L) size. (±10%)
  < playfield and mission is notified on match day>

- **Floor**
  Floor is made of glossy coated PET. Color is white
  Line: Black line with 2cm(±10%) wide.
  Sheet or tape can be placed to remove gap of floor.

COMPETITION

- **Match is placed in IISRO official playfield.**
- **This competition is a tournament.**
- **How to win** :
  One robots start following line together, and the fastest team robot is the winner of the match

- **Practice time** :
  Practice time will be at least 1 hour, and it will be notified on match day.
  After practice time, robot must be caging.

- **Choosing playfield**
  Lottery, scissor-paper-st
  choose playfield.

- **Match start**
  With robot on playfield floor, match starts by switching on robot after referee's start sign.

- **Time limit**
  Robots that could not finish mission in 1 minute after passing starting line will be disqualified.

- **Before the Competition**
  1. Robots must pass tests of dimensions, circuits and electronic components.
  2. All participants can check, repair, modify the robot and try the track during the trial.
  3. Robots must be submitted to the committee before the competition starts.
  4. Robots must be set/programmed when the competition starts, before the competition the robots must not be programmed.
  5. The trial time and the program provided are 45 – 60 minutes for all participants.
  6. Participants must be orderly and not interfere with other participants both on the track and outside the competition track.
  7. Cannot damage the opponent's robot.

- **Competition Time**
  1. Observers and coaches are prohibited from entering the area at the start of the competition. If the coach enters the competition area and assists the participant, the participant will be disqualified.
  2. When the competition starts, the robot is behind the starting line of the track before the signal.
  3. It is forbidden to change the battery and robot spare parts during the game.
  4. The racing system is a speed race.
  5. When starting, it is not allowed to provide assistance in the form of encouragement to the robot
  6. The robot must be able to follow the trajectory that has been made by the committee, the robot must not cut the trajectory to win.
  7. The robot must pass a predetermined path.
  8. Participants may not cover the robot by using the participant's body parts.
  9. A retry is performed if:
     - The whole robot body goes off track or the robot is totally stuck, must return to the last check point that has been passed.
     - The robot stays in place, jams, and other things that cause the robot to stand still, given a waiting time of 3 seconds then have to retry.
     - Participants ask the referee to retry themselves
  10. Rules may change at any time in accordance with the provisions of the committee.
  11. The referee's decision cannot be contested.

- **After the Competition**
  1. Participants can remove the robot from the track and guard it after the finish or the allotted time has run out.
  2. Damage to the robot before, during, and after the competition is not the responsibility of the committee.

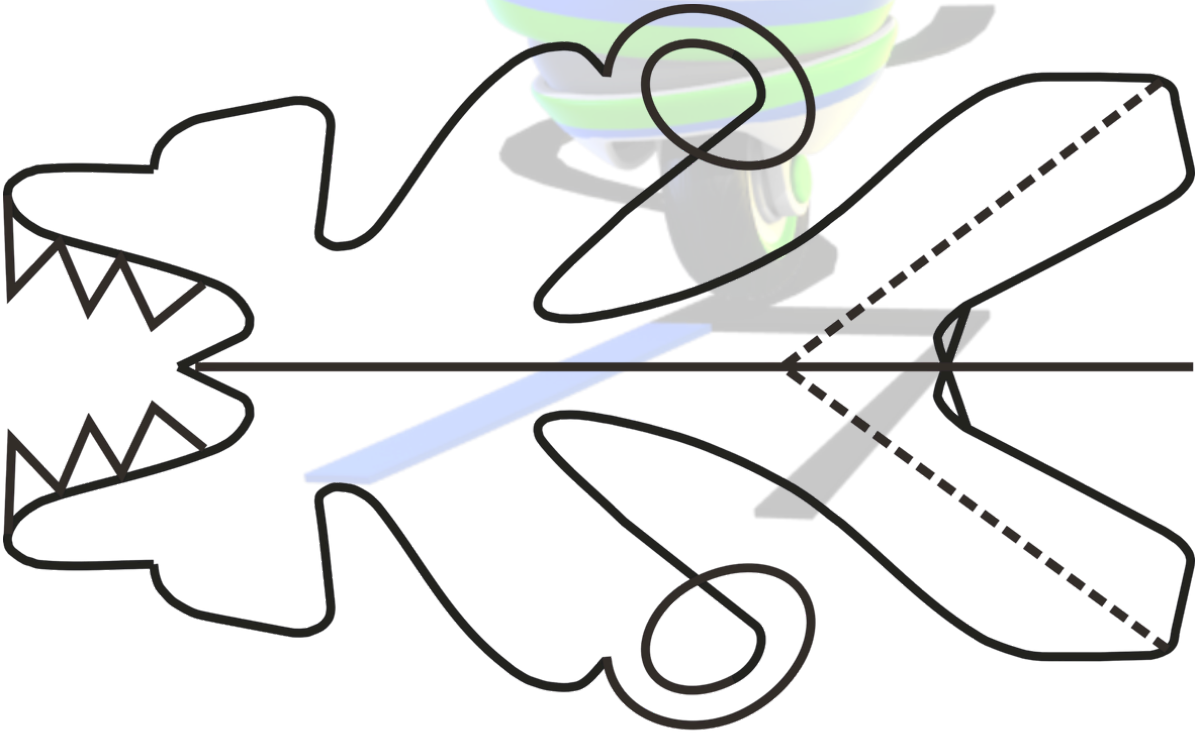
MATCH RULE

- **Match stop**
  1. Out of line : If both wheels are completely out of line, only progress right before out of line will be evaluated.
  2. Robot stop: If robot stops, then referee counts until 10 before announcing robot stop and
  3. Robot touch : During matches, participants and their robots are immediately disqualified and removed from match when participants touch robot without referee's authorization.
  4. Robot modification : robot modification is not allowed.

EVALUATION

- **How to win** : First robot to reach end point wins.
- **Extra time**

  If both team could not finish match by out-of-line or exceeding time limit, then extra time is given. Extra time is given maximum twice.
  If both team could not finish after extra time, then both teams will be disqualified



Track Line Tracer Micro

LINE TRACER ANALOG

ROBOT SPECIFICATIONS:

- Maximum length: 20 cm
- Maximum width: 20 cm
- Maximum height: 15 cm
- The robot must be either homemade or manufactured.
- The sensors used are optical sensors (photodiodes, phototransistors, etc.). The use of integrated sensors (transmitter and receiver in a single factory-made kit) is not permitted.
- The robot must not have any parts that could damage the field.
- The maximum battery voltage is 12,6 V.
- The robot and necessary tools must be prepared by each team.
- Recommendation: The robot is designed to overcome the possibility of external light interference. The committee cannot guarantee that the field will be free from external light interference (e.g., camera flashes, spotlights, or other external light).
- Analog robots are not permitted to use microcontrollers.
- Robots must pass dimensional, circuit, and electronic component tests.

TRACK SPECIFICATIONS:

- The race track consists of two joined blocks, each measuring 400 cm x 300 cm.
- The track is made of printed banner/billboard material with a white base and black track lines, with a thickness of 2.0 cm plus a 10% tolerance.

COMPETITION

Before the Competition

- Observer and coaches are prohibited from entering the area once the competition begins.
- All participants can check, repair, modify their robots, and test the track during the trial run.
- The trial run time is 30-45 minutes for all participants.
- Participants must behave orderly and not disturb other participants, whether on or off the track.
- No damage is permitted to opposing robots.

During the Competition

1. When the competition begins, the robot must be behind the starting line before the signal.
2. Changing batteries or spare parts during the competition is prohibited.
3. This competition is a speed contest.
4. No assistance is permitted during the start, such as pushing the robot.
5. The robot must follow the path determined by the organizers; robots are not allowed to cross the path to achieve victory. Robots must follow the designated path.
6. **Robots may not use sensors, timers, limit switches, or the like to change lanes; lane changes are determined solely by the participant's speed during retry attempts at checkpoints.**
7. The total time allotted for each competition session is 3 minutes.
8. The winning robot is the one that reaches the finish line first. If no one reaches the finish line within the allotted time (3 minutes), the robot with the shortest distance to the finish line will be declared the winner.
9. Participants may not use any part of their body to protect their robot.
10. **Rules are subject to change at any time at the discretion of the organizers.** The referee's decision is final.

After the Match

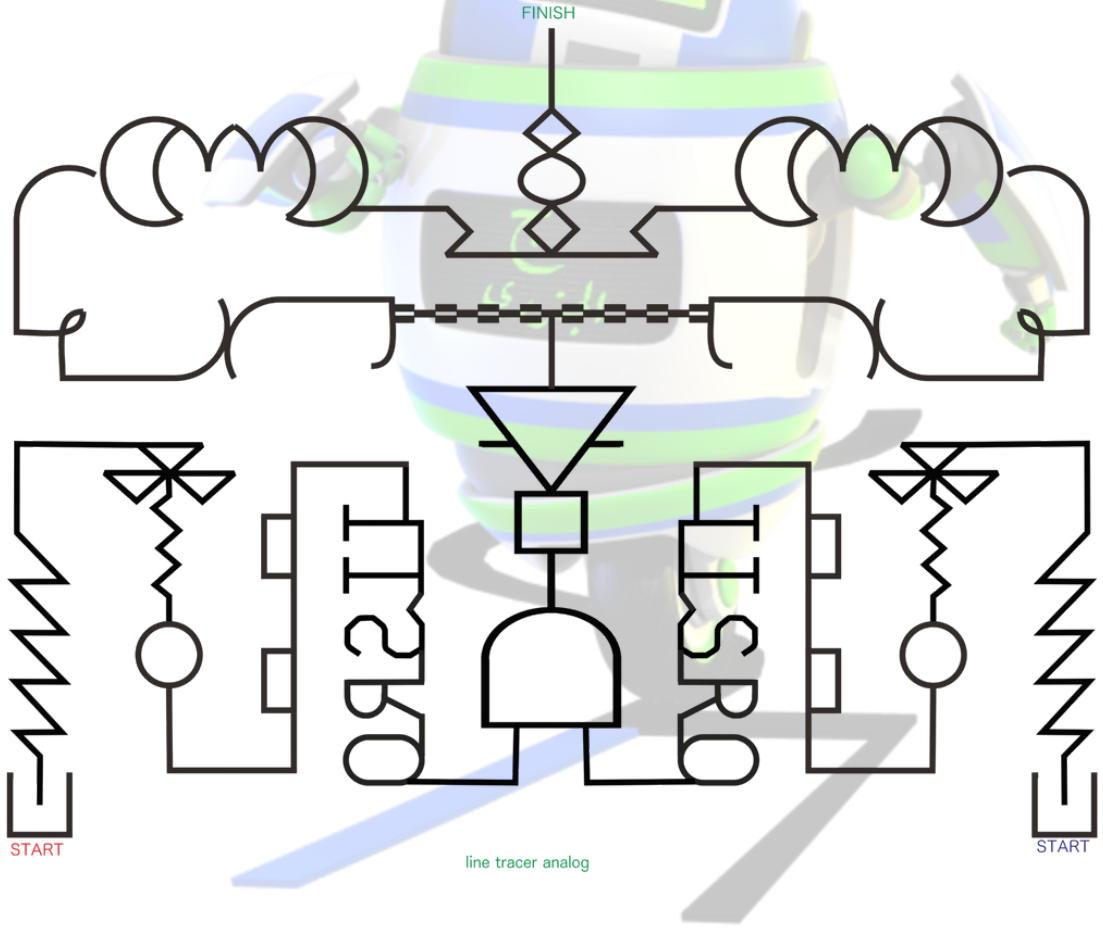
Participants may remove their robots from the track and maintain them after the finish line or after the specified time has elapsed.
The committee is not responsible for any damage to the robots before, during, or after the competition.

COMPETITION SYSTEM & WINNING

- Each match will pit two robots against each other on a single track. The start point is at two adjacent corners. A robot is considered to have reached the finish line if one of its parts reaches the finish line. The maximum time for a single match is 3 minutes. If no robot has reached the finish line after 3 minutes, the robot with the greatest distance is declared the winner.
- The call time for participants is 1 minute per call for two calls. If the call time is not reached by the maximum call time, the participant is deemed to have forfeited or withdrawn.
- The competition system uses two systems: a tournament system and a knockout system.

TECHNICAL RULES

1. If a robot experiences a technical error (repairs are permitted), the robot will continue the race from the last checkpoint.
2. The race is over when one robot has finished or when the race has been running for 3 minutes and the referee decides the race cannot continue.
3. Once the race is underway, participants are prohibited from touching their robots unless approved by the referee.
4. Any matters not yet determined will be determined later in accordance with the committee's regulations.



Track Line Tracer Analog