



LINE FOLLOWER CHALLENGE RULEBOOK



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1.0 Competition Overview

The Fastest Line Follower Bot Competition is a thrilling showcase of speed, precision, and cutting-edge robotics. Competitors design and program autonomous robots to swiftly navigate intricate courses, following designated paths with agility and accuracy. Spectators are captivated as these robots race against the clock, demonstrating advanced sensor integration and real-time decision-making capabilities. The competition not only highlights technological innovation in robotics but also fosters strategic thinking and engineering excellence among participants. As robots blaze through the track, the Fastest Line Follower Bot Competition inspires a new wave of innovation in automation and reinforces its role in enhancing efficiency across various industries.

Team to build own autonomous robot within the specified dimensions to achieve the maximum speed on the given track and reach the destination in minimum time. The robot must start behind the starting point and is considered to have crossed the finishing line if any part of the robot crosses it in a full lap of the course. The robot must follow the black line.

2.0 THE FIELD (ARENA)

2.1.0. Field Dimensions

The Racing track of the Fastest Line Follower challenge has a track of a total length of **180 – 200 ft** (approximately) on an arena dimension of **24X24 SqF**. The width of the black line will be **25mm**. The surface of the track will be white with a black line marked on it. The track may contain crossed, curved, or discontinuous black lines.

The start and finish point will be the same.

The timing of each run will be measured by an automatic timing system.

3.0 The BOT

3.1.0. Size & Weight

The participating bots must be wireless and autonomous. It can be circular / Rectangular in style. Bot must fit inside a box of **20 centimetres length, 20 centimetres wide and 20 centimetres height** at any point in time. Maximum weight should not be more than **5Kgs** including battery, however, a tolerance of **5%** in weight is acceptable. Participants need to ensure:



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- Batteries must be sealed, immobilized electrolyte type (gel cell, lithium, NiCad, or dry cells).
- The electric voltage anywhere in the machine should not be more than 24V DC at any point in time for each robot.
- Infrared light-reflecting materials must not be used on the outside. If robots are painted, they must be painted matte. Minor parts that reflect infrared light could be used only if other robots are not affected. Robots must not produce magnetic interference for other robots on the field.
- If a team claims that their robot is affected by the other team's robot in any way, they must show proof/evidence of the interference. Any interference must be confirmed by a Referee if a claim is placed by the other team.
- The robot must be autonomous.
- Robots must be constructed and programmed in a way that their movement is not limited to only one direction and must move in all directions.
- No wireless communication between bot and operator will be allowed. Bluetooth, RF Module, etc not allowed on bot except for starting and stopping the robot.
- The body of the robot must be able to block the light beam of the timing system at a height of 3 cm;

4.0 FLF GAME PLAY

4.1.0. Start and Restarts:

- The robot will be placed at the starting point with the consent of the referee.
- The RACE CLOCK will start as soon as the robot crosses the starting point and will stop after the robot crosses the starting point again. This will be done by an automatic timing system.
- Bot may restart the run if the person handling it feels the necessity. A restart can be requested only if the robot doesn't follow the line, has stopped halfway, or has lost the directions/Black line.
- At any restart, the robot must be re-positioned back at the start point.
- It is not allowed to reprogram the robot or to add/remove parts on the robot during the run, but adjusting the sensors is permissible with the consent of the referee.
- The RACE CLOCK/RUN TIME will reset to zero on every restart. The COMPETITION CLOCK (maximum access time) will keep running during all restarts.



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- A robot must restart if bot does not start after pressing the Start Button for 30 Second, bot is touched by a human without the consent of the referee, bot moves out of the arena or the referee orders to restart.

4.2.0. Game Rounds: There will be two rounds in Fastest Line Follower gameplay

4.2.1. Elimination Round:

- Every team will be given 1 minute time to calibrate the bot and maximum 3 minutes for game play. 1 minute of calibration time will not be included in game play time.
- If Bot loses the track, bot operator must restart the run from the starting position
- Within 3 minutes of gameplay duration, team can take as many runs as possible. The run with least time will be considered.
- Maximum 30 teams would be qualified who reach to finish line in minimum time duration.

4.2.2. Final Round:

- Every team will be given 1 minute time to calibrate the bot and maximum 5 minutes for game play. 1 minute of calibration time will not be included in game play time.
- Qualified teams will compete in this round to achieve the minimum runtime.
- Team would be given 1 minute for calibration and maximum 5 minutes for gameplay.
- If Bot loses the track, bot operator restarts the run from the starting position
- Within 5 minutes of gameplay duration, team can take as many runs as possible. The run with least time will be considered.

4.0.0 Competition Structure

During official racing, there are key positions must be filled.

4.1.0. Referee

Each game is controlled by the referee. He has full authority to enforce the rules of the game which he has been appointed. The referee is encouraged to use the designated walking area next to the field. The decisions of the referee regarding facts connected with play are final.



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The referee may only change a decision on realizing that it is incorrect or, at his discretion, on the advice of an assistant referee, provided that he has not restarted play.

The referee is not held liable for any kind of injury suffered by an official or spectator, any damage to property of any kind nor any other loss suffered by an individual, club, organization, institution or other body.

The bot handlers are the only team member that may talk to the referee.

Duties

- The referee ensures a safe game for all participants and bots
- The referee ensures a fair game according to the rules of the game.
- The referee ensures that there is no interference by unauthorized persons or team members.
- The referee ensures that the game is started and resumed in time.

4.2.0. Assistant Referee

The assistant referee supports the referee wherever he can. He is encouraged to use the designated walking area next to the field, opposite the referee. No team members are allowed to talk to the assistant referee.

Duties

- The assistant referee indicates when misconduct or any other incident has occurred out of the view of the referee.
- The assistant referee discusses unclear situations with the referee

4.3.0. Bot Handler

Before the start of the game, every team has to designate bot handlers and a captain.

Duties

- The captain asks the referee for timeouts if necessary
- The bot handler can substitute a bot during game.
- The bot handler asks the referee for the permission to substitute a bot in the next stoppage and, if the referee agrees, substitutes the bot.

4.3.0. Game Preparation

All people that fill a role in the game have to be ready at least 10 minutes before the start of the game to allow the referee to make the following preparations

- **Game Result Sheet:** The referee obtains a game result sheet from the organizing committee. After the game, the referee fills in the final score, collects the required signatures and submits the sheet to the organizing committee.



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- **Designating Bots:** The referee asks both captain which bot they will use if team has multiple bots.

9.0. General Rules of Tournament

8.1.0. Prohibited Activities: WORSO expects all Competitors to act in a safe and legal manner. the actions of a single Team member may be grounds for Disqualification or Expulsion of the entire team. The following activities are prohibited; violation of any of these terms may result in Competitor and/or Team Disqualification, as determined by WORSO and/or Producer in their sole and absolute discretion.

- **Unruly Behaviour:** Fighting, belligerence, threat of physical violence or other unruly behaviour, including abusive physical contact with any WORSO Official, will not be tolerated and can result in the immediate Expulsion of the offending Team member's entire Team from the Tournament.
- **Vehicles in Pit Areas:** Scooters, bicycles, skateboards, skates and similar vehicles cannot be used in any of the Pit Areas. In addition, powered vehicles such as Segways, hoverboards or powered scooters cannot be used or stored in the Pit Areas. The only exceptions are wheelchairs (manual and powered) occupied by disabled persons, and vehicles used by authorized personnel for Tournament operations.
- **Running and Playing:** Running in the Pit Area, except in an emergency, is not allowed. Running while carrying a charged pneumatic tank, or any sharp or otherwise dangerous part, may result in the revoking of the Pit Pass of the offender. Engaging in horseplay, tossing balls or other items, or operating remote-control vehicles or equipment in the Pit Area is also not allowed.
- **Team Property:** No Team member may deliberately touch, handle or otherwise come in contact with any Robot, parts, tools or other equipment belonging to another Team, without the explicit verbal authorization from a member of the other Team
- **Smoking:** Use of either tobacco products, nicotine vapor devices (e-cigarettes) or similar non-nicotine delivery devices is specifically prohibited in any of the Pit Areas, and in any other indoor or nearby outdoor area that is marked as "No Smoking".
- **Alcohol Use:** No alcohol may be consumed at the Tournament by any Team member at any time. In addition, no alcoholic beverage may be brought into any of the Pit Areas. A Team member under the influence of alcohol is not allowed in any of the Pit Areas, and cannot participate in any activity involving the preparation, transport or operation of any Robot at the Tournament.
- **Illegal Drugs:** No possession of illegal drugs or other substances or any use thereof will be tolerated at any time or place during the entire production, on camera or off. Penalty is immediate dismissal of the entire Team of the offender from the Competition and Program.



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- **Firearms and Explosives:** No firearms, weapons, explosives or other dangerous items or materials of any kind may be possessed or brought to any Tournament location by any Competitor or anyone else other than authorized law enforcement personnel.
- **Lasers:** Deliberate pointing of any laser at any other person at the Tournament will not be tolerated and may result in the immediate Expulsion of the offending Team member's entire Team from the Tournament.
- **No Pets:** No pets of any kind are allowed anywhere at the Tournament. The only exception is a certified service dog being used to assist a disabled person

8.2.0. Prize: Winner of the tournament will be awarded cash prize, certificate and trophy. WORSO reserve the right to make changes to the total prize pool amount and/or the prize pool allocation prior to the commencement of the Tournament.

- **Prize Forms:** Each Team Member will be required to fill out and sign his/her Team's Team Member & Prize Allocation Form prior to commencement of the Tournament. The Team Member Prize & Allocation Form specifies how that Team wants its prizes (if any) allocated amongst the Team Members. Only Team members listed on the Team Member & Prize Allocation Form are eligible to receive a prize (if any). Additionally, prior to the awarding of any Tournament prizes, each Team member entitled to part of the prize will be required to execute a Prize Acceptance Form outlining the amount of the total prize that the Team is entitled to, and portion of the Team prize to which the individual Team member is entitled.

8.3.0. Rule Changes During Competition: Rule changes between years can have unforeseen consequences. If a rule is found to cause significant negative impact to the competition, the rules may be adapted under the following conditions:

- Only between phases of the competition
- Only for major problems, as a last resort.
- The change must be approved by all team leaders (by an unanimity vote)

8.4.0. Final Authority: Organizer shall have final authority over the interpretation and application of all Rules and decisions regarding the Rules shall be made by WORSO in their sole and absolute discretion. Decisions by WORSO in regards to the interpretation and application of the Rules, the Tournament and the Program shall be final and not subject to challenge or appeal.

Notice: These Design Rules may change at any time with or without specific notice to you. Any changes made to these rules will be noted in a revised Design Rules document with a higher Rev number. You acknowledge and agree that it is your responsibility to read, understand, and comply with any and all rules provided herein or otherwise by WORSO. It is strongly encouraged that you check these Design Rules often for any changes that may affect your design, build, and/or ability to compete in the Tournament. WORSO reserves the write to remove any Team from the Tournament at any time for any reason (including, without limitation, failure to meet safety and/or technical requirements) in its sole and absolute