LINE FOLLOWER

BML MUNJAL UNIVERSITY
FROM HERE TO THE WORLD

INTRODUCTION:

The virtue of life is to follow the ideal path and attain the ultimate. Here is a wonderful and lucid representation of this virtue in the TECHNICAL ARENA. This problem statement requires teams to build a line following robot which help you get to work.
The participants must create an autonomous vehicle (hereafter ROBOT), that will move on the COMPETITION FIELD and do certain tasks The goal of the contest is to design an autonomous robot that will follow a black line on a white background, without losing the line. The robot to complete the course in the shortest period of time and maximum points, while accurately tracking the course from start to finish wins.

BOT SPECIFICATIONS:

- The maximum size of a robot is (20 x 20 x 15) cm. Dimensional limits for robots shall be strictly enforced. Robots must have passed inspection prior to competing.
- Robot has to operate autonomously once the lap of the round has started at any cost and should not be remote-controlled or it cannot be controlled externally by any team member. Any kind of microcontroller based programming or any simple logic based design both will be accepted for the operation of the bot.
- **Power Source:** The robot must be powered by a power source such as a fixed battery. The robot cannot be powered by a stationary power source connected to the robot by a cord. In case of an electric power supply, the voltage difference between any two points during any point of time should not exceed 12-15V.
- **Construction: -** Any robot kit or building material may be used, as long as the robot fits the above specifications and as long as the design and construction are primarily the original work of the team. Robots built from robot construction kits, like **3PI, Lego Mindstorms or Meccano**, are **NOT** permitted.

ARENA:

- The entire arena is encapsulated in a square space with dimensions 250cm x 250cm. The background of the arena is white in colour with black line of 25mm in width (All measurements have 10% tolerance).
- The organizing committee will make every possible attempt to ensure that there are no ‘bumps’ between the tiles although there may be slight deviations in height and width of up to 3mm. Competitors must be prepared to deal with these slight imperfections.
- The will be one START point and one FINISH point in the entire field.

- The path junctions are all marked off to clearly indicate the start and end of a path. An example of the arena is given in Figure 1. This is different from the final arena which will only be revealed on the day of the competition.

SAMPLE ARENA:

RULES AND REGULATIONS:

❖ GAMEPLAY:

The entire gameplay is divided in the following two phases:

- Round 1: The robot has to pass through the mentioned checkpoints on the arena for scoring points and has to reach the finish line within the allotted time. The final points will be announced at the end of the robot's lap. The top 5 robots as per the scored points and lap time in round 1 will be qualified to the next phase, i.e., round 2 (The qualifying number of robots is subjective to change as per the organisers' discretion).
- Round 2: The qualified robots have to surpass the same gameplay as in round 1 and will score points according to the checkpoints crossed. The fastest robot which has the highest points will be titled the winner of the contest and the second fastest, the runner.

❖ RESTARTS:

- Maximum the bot can take 3 RESTARTS (From the last checkpoint).
- The clock time will not be stopped once it has started at the start point even at the time of restart.
- Any robot that loses the line course must reacquire the line at the point where it was lost, or at any earlier (e.g. already traversed) point or else it is subjective to restart from the last checkpoint.

❖ TIME ASPECTS:

- Time Limit a maximum of 7 minutes is allowed for a robot to complete the course.
- Time shall be measured by an electronic gate system or by a judge with a stopwatch of the whole bot course, based on the availability of equipment. In either case the recorded time shall be final.

❖ POINTS:

- The scoring points will be announced at the time of competition.

❖ PENALTIES AND DISQUALIFICATIONS:

- Robots that cause deliberate interference with other robots or damage to
- the field will be disqualified. (Damaging the path will lead to immediate
- disqualification).
- Humans that cause deliberate interference with robots or damage to the
- field will be disqualified.

- Participants who misbehave may be asked to leave the competition area
- and risk being disqualified from the contest.
- Any kind of touching of the robot, once the lap of the round has started
- (except for the three restarts) leads to the disqualification of the robot.

❖ TEAM SPECIFICATIONS:

- A team can consist of a maximum of 5 members and minimum of 3.
- All team members must be of the same educational institute.
- A team can register as two separate teams provided they are using two
- different robots, one for each registration.
- All students with a valid identity card of their respective educational
- institutes are eligible to participate in the event.

❖ GENERAL:

- Teams must adhere to the healthy spirit of competition.
- The bots will be checked for safety before the run and will be disqualified if
- found unsafe. Dimensional limits for robots shall be strictly enforced.
- Robots must have passed inspection prior to competing.
- The bots with maximum of **5 IR SENSORS** are allowed in the contest.
- 4)The organisers reserve the rights to change any or all of the above rules as
- they deem fit. Change in rules, if any will be highlighted on the website and
- notified to the registered teams.
- The rules will be enforced at the discretion of the referees, officials, and
- local law enforcement authorities.
- **The decision of the event coordinators will be final and binding**.
- All kind of necessary equipment will NOT be provided from the authority of
- 67 MILESTONES. All participants are advised to bring all kind of necessary
- equipment.
- No objections shall be declared against the judges' decisions. The lead
- person of a team can present objections to the Committee, before the
- match is over.
- As long as the concept and fundamentals of the rules are observed, these
- rules shall be flexible enough to encompass the changes in the number of
- players and of the contents of matches. Modifications or abolition of the
- rules can be made by the local event organizers as long as they are
- published prior to the event, and are consistently maintained throughout the event.

COMPETITION INFORMATION:

Venue: BML Munjal University, Gurgaon, Haryana.

Eligibility:

- Open entry for all.
- Minimum team size of 3.

For further queries, feel free to contact
PRADEEP PASULA
+91 8607565488
pradeep.pasula.14eee@bml.edu.in
VARUN ANDE
+91 8295025857
ande.varun.16ece@bml.edu.in