RADIX – AUTONOMOUS 2

WELCOME TO FIREFIGHTER NATION

Task Overview

Being the guardian of the city, your task is to save all those out who are screaming for help.

Your bot interprets the signal from those houses who have caught fire and needs to help them. For this your bot has to constantly keep an eye on each of its resident by following a given line .

Task Description

1. Your bot keeps scanning the city indicating buzzers and returns to the start, which is a dead end, then repeats it.
2. Whenever a building is on fire, the buzzer goes on which means the buzzer signifies a "Call for Action".
3. Whenever your bot detects a buzzer, it goes to the nearest station, fetches water (blue block) and delivers it to those in need.
4. Repeat this for N times(N- no. of buzzers).

Track Specifications

The autonomous bot will follow the given line, respond to audio signals from buzzer, visit nearest station where water will be available. The bot has to detect that water station, by glowing leds or similar device and then go to the building on fire(located with buzzer). Here at the building the led will stop glowing (means the bot has released water and extinguished the fire) and finally your autonomous bot will continue to follow the line till it detects yet another sound. The distance of building from track would be 13cm while distance of water source from track would be 4cm. This thing has to be kept in mind that as soon as the LED on the bot goes OFF, the buzzer on that particular building will go OFF.

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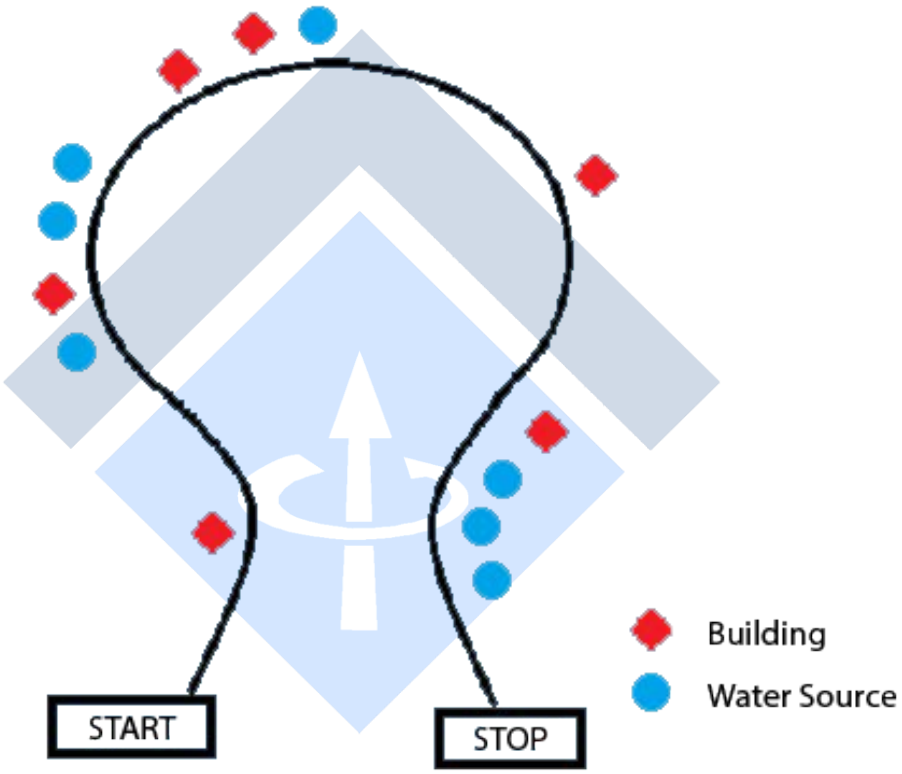
Sample Track



Robot Specification

1. The bot must fit inside a box of dimensions 25cm x 25cm x 25cm during the whole course of line-following.

2. The team has to make one bot. Tracks with buzzer circuit will be given(Participants need not worry about it).

3. The bot has to detect the water block with the help of leds or a similar device.

4. Machine cannot be constructed using ready made Lego kits or any ready made mechanism. Violating this clause will lead to disqualification.

5. The robot must not damage the track in any manner.

Power Supply and Propulsion

1. The machines cannot use an externally placed power supply but only on-board power supply. No external power supply will be provided. The on-board power supply used must be non-polluting and must satisfy the safety constraints determined by the judges.
2. In case the machines are using a non-electric power supply, the team must get it approved from the organizers beforehand via email. Organizers will not be responsible for inconvenience if approval is not sought.
3. Maximum permissible DC Supply Voltage that can be used is 24V.

General Rules

1. All the students enrolled in high school, undergraduate, postgraduate (excluding PhD.) program at any recognized institute (identity card will be checked) are eligible to participate.
2. Team must declare a name for their machine at the time of competition.
3. A team may consist of max 4 members. The members from different colleges can form a team.
4. If the robot goes off the track in its first attempt, it will be given 2 more chances. The teams can make some hardware changes during this period, like changing batteries, adjusting sensors, but no extra hardware can be added and no changes in the code can be made.
5. The teams may take their robots off the track twice while running for calibration and adjustments which would result in time penalties.
6. In case of a tie, the team which covers the track successfully in the least time will be declared the winner.
7. Rules are liable to minor changes which will be updated on the website.

8. In case any kind of dispute arises the judge's and organiser's decision will be considered final and binding to all and no argument in this regard will be entertained. Judges and organisers have the right to disqualify any team if they feel the team is not playing with fair interest.

Competition Structure

Stage 1-

Each autonomous robot will be tested for basic LFR and detection of water station using LEDs or other similar device. The robots that are able to clear this stage will be allowed to proceed to the finals.

Stage 2-

Teams qualifying the prelims will battle it out on the main arena for the grand prize. The arena will be revealed soon.

Judgement Criteria

1. The extent to which all the specifications of the entire robot have been implemented.
2. Extent to which it performed in arena.
3. Marks on how efficiently and fast your bot performs.
4. Finesse in algorithm and hardware fabrication.

Please regularly check the website for further updates on the competition and the change in rules and regulations, if any.

All the Best!

#HappyTroika ☺