Diy 4.2 : Minesweeper

The Story So Far …

It was a fine peaceful morning in the Pentagon,USA until a buzzer suddenly started ringing. NSA satellites have

detected that several mines have been planted and set active in our Institute ground, Lords. They suspect the terrorist group ‘Qul Aeda’ responsible for planting the mines. How they came inside the campus and planted them has not yet been understood, but the main priority as of now is to defuse them.

The NSA have launched a drone with EMP gun capable of frying the circuitry of the mines, rendering them useless, however they need to be given the exact coordinates of the mines to destroy the mines without collateral damage. They have contacted us saying that they can provide us the satellite view of the ground, marking the locations where the mines can possibly be, but their satellites cannot pin-point the location of them, neither can it confirm if

the mine is actually present at that spot or is it just showing up due to interference.

It is too dangerous to send a bomb squad to the ground, hence the responsibility has fallen on you freshers. You have to build a bot that can check if a mine is actually present at the possible locations designated and pinpoint them so that the drone can target them. Your Bot has to be equipped with a strobing beacon to signal to the drone. March carefully Soldier, our hopes are on you now!

Problem

Build an ***Autonomous Robot*** that can move towards the possible locations of mines and detect if it is active or not. You will be provided with image feed of the arena,the possible locations of the mines will be marked with circles of some colours(red and green tentative). The Mines will be IR transmitters, and for each run, a fixed number of random mines will be active, while the others will be off.

Your Bot will be marked with a marker of a Different colour than that of the mine markers (blue and ##some_colour for front marker)

Your robot has to travel to the possible locations of mines by processing the images provided to you, and if the

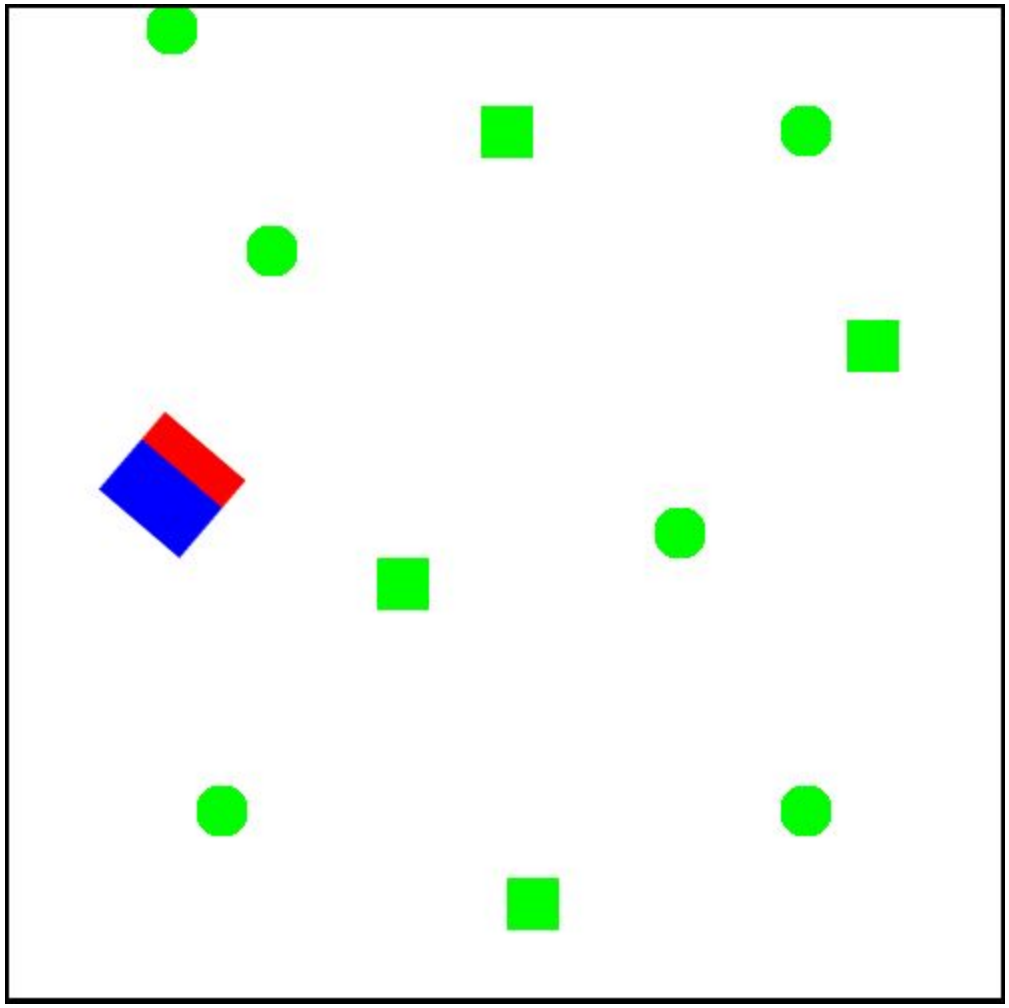
mine is active, has to sound a buzzer or light a bright LED for about 3 seconds.

The starting of your bot will be one of the four corners, that shall be chosen randomly by us. The run will end when your bot has detected all the active mines.

Bot and Arena Specifications

Your Bot should be of dimensions not more than 15x15x15 cms with a maximum of 10% tolerance. We have to place a marker on the top of the bot so that our camera (oops, I mean satellite) can track the bot movements and you can determine the position of the bot in the arena, hence the top has to be more or less flat.

The Arena is a square the length of whose side is 120cms. The arena ground will contain about 10 (tentative) IR transmitters at various places.



General Rules

1. The participating teams can have maximum of four members.
2. Lego kits are not allowed.
3. Bots larger the specified size may be disqualified.
4. Any Damage to the Arena will lead to disqualification of the team.
5. All decisions of Team Robodarshan are final.
6. The participants will be provided with 220 Volts, 50 Hz standard AC supply. Participants will have to themselves arrange for any other power supply required for their robot.

7. Robodarshan volunteers will assist participants in managing the wires.
8. The participants can NOT touch the bot during runtime, if the bot gets stuck at the corners, volunteers will help in unsticking it.
9. Time and scoring details will be notified later.

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