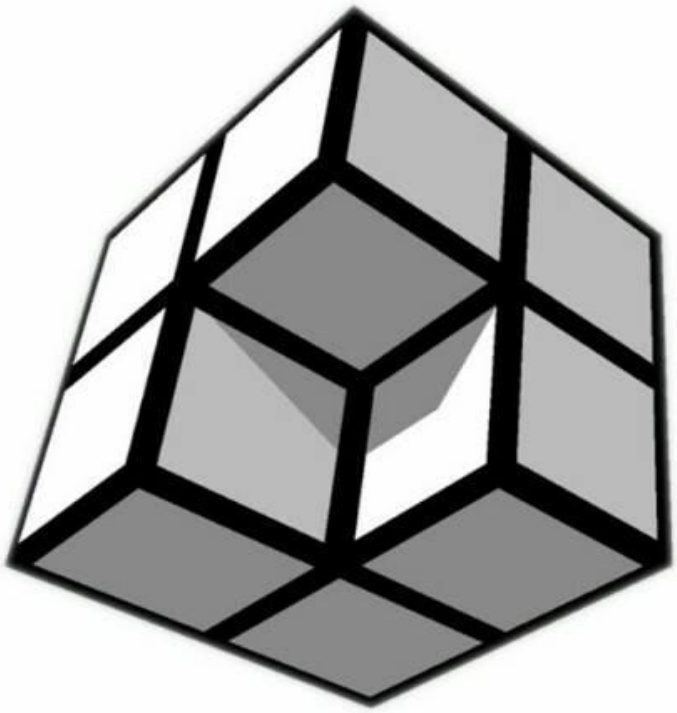


RMI

ROBOTICS AND MACHINE INTELLIGENCE

FOLLOWING ‘17

Following' 17

A shout out to all the robotics enthusiasts out there!

We are back with the much anticipated flagship annual event of RMI, the Following' 17! It's time to learn, develop, build and showcase your skills. This 2017 we've come up with a competition to tickle your grey cells. So gear up for it guys! This would be an amazing platform to learn and explore. Happy Robotics to You!

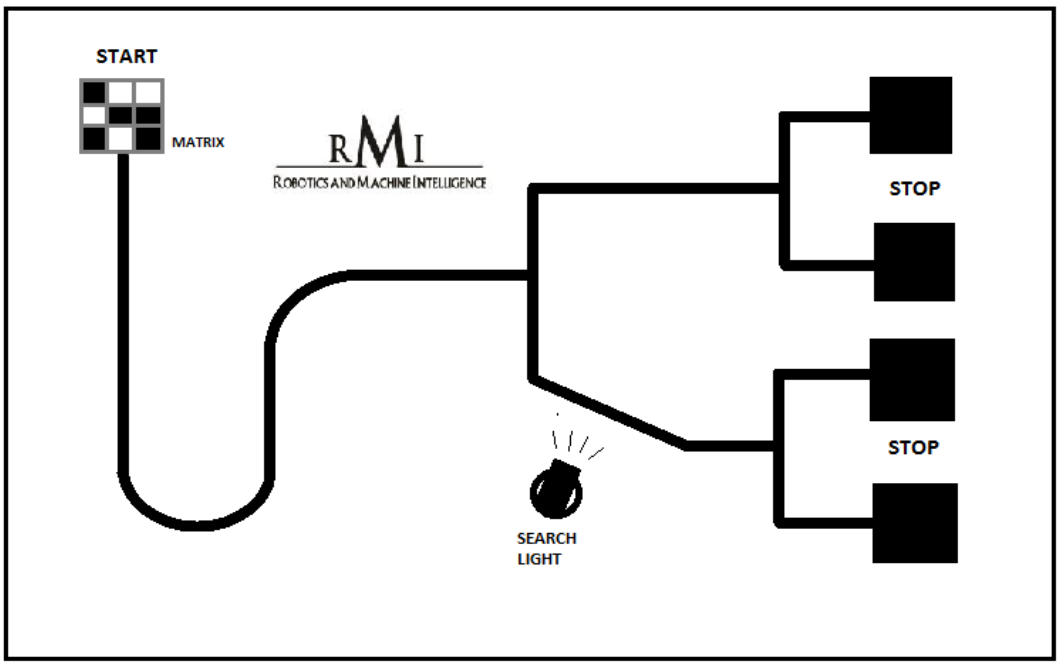
PROBLEM STATEMENT

If you can get this transmission then you did a good job hiding from the scouting droids, but you're right underneath the Empire's camp! **Our last rescue operation –Genesis '16** was a huge success, hundreds of pilots lived to fight another day. But every victory comes at a price, gather your comrades and make an escape vehicle, the Stormtroopers are closing in fast!

After the attack the security was strengthened and several outposts with search beams cover the landscape and scan for hostiles. At your location we have dropped a jammer cloak to bypass the search beams. We have also seared a code on the ground with the star ship's main laser (disguising it as an attack), which will guide you to extraction point.

Be wary the cloak is active only if you are still, so when the search lights hit you immediately stop all motion.

Hope you make it! Good luck cadet. **May The Force Be With You**.



*Sample track, the original track may vary. (For representative purposes only)

Your bot needs to navigate through a line maze and arrive at one of four destinations. The information regarding the decisions to be taken at junctions ahead would be provided with the help of a **3X3 matrix** and the bot should be capable of decoding this based on the following logic. Your bot will start with your sensor array on the first row of the matrix. After the matrix has been read, the bot has to continue on to the maze automatically, and reach the corresponding destination.

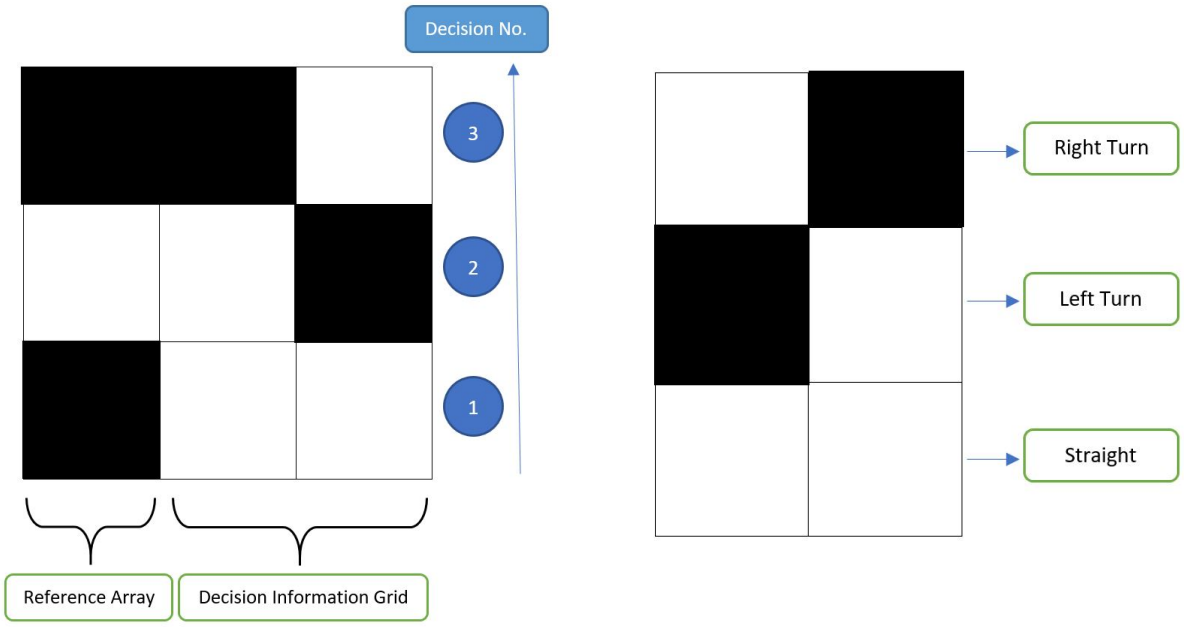


Figure 1 a) (Left) Code Format; b) (Right) Decision Logic

The reference array as shown in the matrix will be exactly the same, you can use it to differentiate between decisions. The other two columns are for indicating the decision to be taken. Also, you should somehow "show" what your bot reads from the 3x3 matrix code. It can be shown/displayed in anyway, it's left to your imagination!

The searchlights will be placed at strategic positions along the line maze. The bot needs to halt upon detection of light, and resume following the line otherwise.

ARENA DESCRIPTION:

1. Arena consists of **black** line on a white background**.**
Width of the track will be **3.00±0.2cm**
2. The code matrix would be a **6 cm X 6 cm** grid which comprises of **nine** smaller squares of dimensions **2 cm x 2 cm**.
3. Track will have straight line paths, curves and turns (90 degree, circular and obtuse angles).
4. Track would consist of junctions and decision needs to be taken based on the code matrix provided.

RULES:

1. A team can have a maximum of **three** members.
2. Maximum bot size must be **30cmx30cmx30cm** at start. The bot can expand after start.
3. Each team can have a maximum **two final runs** (best of two).
4. The judges can reduce the number of trials for any team if time constraint arises.
5. No two points on the bot can have a potential difference greater than **12V**.
6. The bot must be powered only by **on board batteries**.
7. Only 'Embedded-C' coding is allowed. Choice of microcontroller is left to the participant.
8. Any number of **restarts** can be taken from the checkpoints.
9. Maximum time for completing the track is **10 minutes**.
10. The starting procedure of the bot should be simple and should not involve giving the bot any manual force or impulse in any direction.
11. Participants are allowed to adjust sensors (Gain, Position etc.), change speed settings and make repairs after the first run.
12. The decision of the judges is final.

POINTS AWARDED:

1. **+20 points** for reading the code correctly. (Using the display mechanism discussed)
2. **+30 points** will be awarded if the bot chooses **the correct path at the intersection** and **-10** if it makes a **fault**.
3. **+20 Points** if the bot **stops at the searchlight**.
4. **Top 2 fastest** teams for each checkpoint will gain **+20 points**.
5. **Top 2 teams** with compact/best design will get **+20 points**.
6. Usage of **self-fabricated boards/sensors** (should be working) will add **30 points** to your score. Partial points also will be awarded based on the complexity of the board being designed. The magnitude of the points will be decided by the organisers after scrutiny.

Try to get your combination right to gain maximum points.

NOTE:

1. Completing the track is essential but not necessary. Total points scored will be the winning criteria.
2. The arena given above is just a sample and the main track may vary from this.

CONTACT:

Nikhil: +91 9618055524

Subhechha: +91 9087814691

Anand: +91 8939043197