



eYantra

Engineering a better tomorrow

ERTS Lab  
Department of Computer Science and Engineering  
Indian Institute of Technology Bombay,  
Powai, Mumbai-400 076.



## Certificate of Completion

This is to certify that [Samarth Agarwal](#), a student of [The LNM Institute of Information Technology, Rajasthan](#) has participated in the **e-Yantra Robotics Competition (eYRC 2023-24)**.

He/She is a member of the team having the following team members:

1. Arunil Jain
2. Shashwat Anand
3. Harsh Chandgotia
4. Samarth Agarwal

This team has successfully completed all the assigned tasks in [GeoGuide](#) theme.

Prof. Kavi Arya  
Principal Investigator, e-Yantra  
Professor  
Department of Computer Science and Engineering  
Indian Institute of Technology Bombay



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## Theme: *GeoGuide*

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### Theme Description:

In this theme a combination of an overhead camera and a two wheeled robot is used to navigate an arena which is an actual satellite image taken from the map. As the robot navigates, its real-time position is continually updated on the actual map through the use of QGIS Software.

Tasked with visiting five events positioned within the arena in a predefined priority sequence, the robot relies on the overhead camera setup to identify these events and their respective locations. The robot uses an ESP32 microcontroller along with other sensors and actuators.

**Theme Learning:** *Machine Learning Algorithms, Image Processing, Remote sensing, GIS, Build-a-Bot, Shortest Path Algorithms, Wireless Communication*

**Team Learning:** The team has been awarded **Level 2** in the e-Yantra Robotics Competition (eYRC).

*This level indicates that the team was able to demonstrate a clear understanding of the problem statement via a full implementation and was in top 10-30 ranked team in the competition*

**Certificate Table**

Certificate Level	Certificate Description
Level 1	Certificate of Merit
Level 2	Certificate of Completion
Level 3	Certificate of Participation
Level 4	Letter of Participation

*\*level 1 > level 2 > level 3 > level 4*