IIT Bombay

Letter of Participation

This is to certify that Pranay Rajak, a student of Vivekanand Education Society's Institute of Technology, Chembur, Maharashtra 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. Bipin Yadav
2. Viraj Patkar
3. Pranay Rajak
4. Utkarsh Saste

This team has participated in Hologlyph Bots theme.

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

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Certificate of Merit: awarded to finalist teams.
Certificate of Completion: awarded to teams for completing all the tasks of the competition.
Certificate of Participation: awarded to teams for partial completion of tasks in the competition.
Letter of Participation: awarded as an acknowledgement of participation on e-Yantra Letterhead.

Theme: *Hologlyph Bots*

Theme Description: Through this theme, participants studied the kinematics of a holonomic drive robot. They designed simple controllers to make the bots perform desired motion along curves. They tested these concepts in simulation and implemented this in hardware, which brought its own set of interesting challenges. The team's perseverance was tested, with challenges like designing and fabricating robust and ergonomic+aesthetic robots, establishing reliable communication between the robots and the computer, implementing localisation using real world (non idealistic) overhead camera and so on.

Theme Learning: *Kinematics of Holonomic Drive Robots, Control & Waypoint navigation, Bot Designing and Building, Image processing ,ROS2 and MicroROS*

Team Learning: The team has been awarded **Level 4** in the e-Yantra Robotics Competition (eYRC).

This level indicates that the team was able to complete initial tasks (mostly Task 0, Task 1 and Task 2 out of the total 6 tasks)

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