

COLOUR CONTROLLED ROBOT



CSBB310: Artificial Intelligence Lab

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Problem Statement

The Color Controlled Robot project integrates a programmable color sensor into a robotic system that dynamically responds to Red, Green, and Blue colors. The sensor's detection algorithm guides the robot: Red triggers a circular path, Green initiates forward movement, and Blue prompts backward motion. This project demonstrates the practical use of color-coded commands, showcasing the potential for versatile and adaptive robotic systems.



Objectives

- Develop a color-controlled robot for autonomous navigation and task execution.
- Use advanced color recognition technology with a precise detection algorithm.
- Enable dynamic responses to the environment by accurately identifying colors.
- Showcase the potential in enhancing adaptability and functionality.
- Explore applications in automation, surveillance, and object manipulation.
- Demonstrate the feasibility and efficiency of color-controlled robotics.
- Contribute to advancements in intelligent robotic systems.



Assumption

Assumptions for the Color Controlled Robot Project:

1. Consistent Lighting Conditions
2. Uniform Color Surfaces
3. Limited Color Palette
4. Fixed Path for Blue Color
5. Stable Robot Platform
6. Minimal Interference
7. Adequate Power Supply
8. Limited Environmental Complexity
9. Programming Accuracy
10. Single Sensor Reliability



Agent Introduction

"In the Color Controlled Robot project, our intelligent agent is a sophisticated robotic system equipped with a state-of-the-art color sensor. This agent, embedded within the robot, acts as the eyes of the system, enabling it to perceive and interpret its environment through the lens of color recognition technology. The agent's primary function is to detect three key colors—Red, Green, and Blue—and translate these color cues into specific commands that dictate the robot's movements.

Our agent is not merely a passive observer; it serves as the decision-making hub, dynamically directing the robot's path based on the colors it identifies. Through the integration of this color-sensing agent, our project aims to demonstrate the potential of color-based control systems in enhancing the adaptability and functionality of robots. This innovative approach opens doors to a wide array of applications, showcasing how robots can intelligently respond to different color stimuli, making them versatile tools for automation, surveillance, and interactive tasks. Join us on this exploration of color-controlled robotics, where our agent brings a new dimension to the way robots perceive and engage with the world."

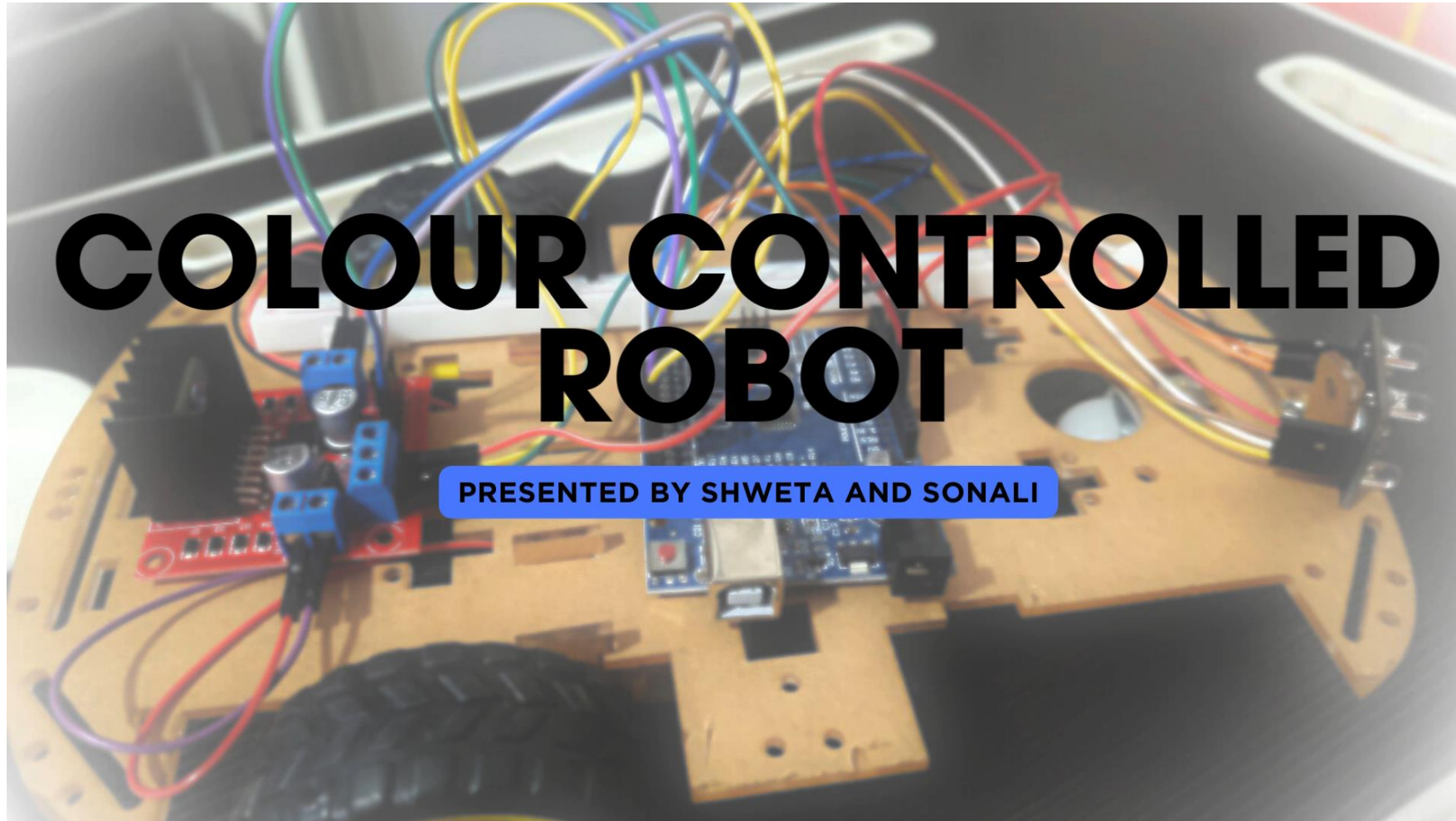


Automated Problem Solving Agent

- Intelligent Agent & Environment
- Complex Problems and AI
- Problem Representation in AI



Working Video





My learning

As an AI student, this project will provide hands-on experience in:

- 1.Sensor Integration: Integrating a color sensor into a robotic system.
- 2.Algorithm Development: Designing a color recognition algorithm for real-time decision-making.
- 3.Robotics Programming : Implementing commands based on color cues for autonomous robot control.
- 4.Versatile Applications: Understanding how AI in robotics can have practical applications, such as color-based navigation.
- 5.Problem Solving: Tackling challenges related to lighting conditions, environmental factors, and algorithm optimization.
- 6.Interdisciplinary Skills: Gaining insights into the intersection of AI, robotics, and sensor technology.

Overall, the project offers a holistic learning experience combining theory and practical skills in AI-driven robotics.



THANK YOU!