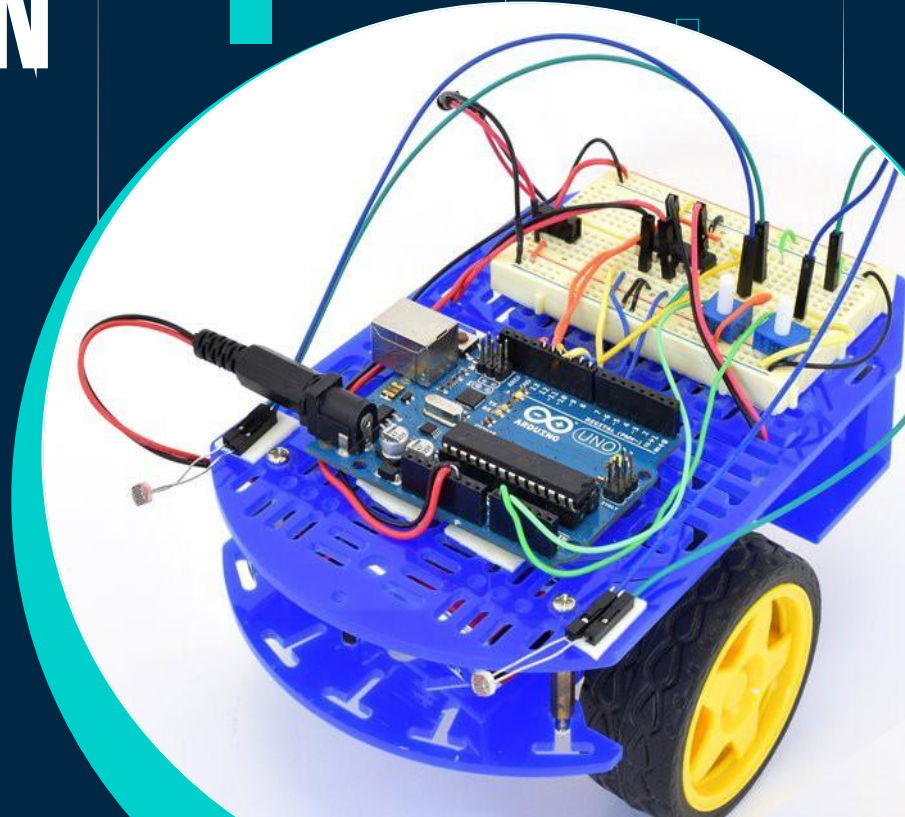


IMPLEMENTATION of LIGHT FOLLOWER ROBOT

Principles Of Robotics (CSE-426) ■





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INTRODUCTION

- In recent years, the field of robotics has made remarkable advancements, bringing about innovative solutions to various industries and everyday life. Among these advancements, autonomous robots have gained significant attention for their ability to perform tasks independently, without the need for human intervention. One such remarkable creation is the Autonomous Light Follower Robot, which is revolutionizing navigation in a diverse range of environments.
- The autonomous light follower robot is a robotic device equipped with sensors and intelligence that allows it to detect and follow sources of light. It is designed to navigate and track light sources autonomously, without the need for human intervention.
- The primary feature of this robot is its ability to detect and respond to light. It typically employs a light sensor, such as a photodiode or a light-dependent resistor (LDR), to detect changes in light intensity. The robot's onboard microcontroller or computer processes the sensor data and generates appropriate commands to control its movement and orientation. The light follower robot uses its sensors to detect the direction and intensity of the light source. It then adjusts its wheels or other locomotion mechanisms to move towards the light. The control algorithms implemented in the robot's programming enable it to make real-time decisions and adjust its movement accordingly to maintain its position relative to the light source.

INTRODUCTION

- The applications for autonomous light follower robots are diverse. In surveillance and security, these robots can be used to monitor areas and track suspicious activities by following a light source. In photography and videography, they can assist in capturing moving subjects or objects that emit light. They can also be used in interactive displays and exhibitions, where they follow and interact with visitor's light-emitting devices.
- The autonomous light follower robot is a versatile and intelligent device that combines sensor technology, control algorithms, and locomotion mechanisms to autonomously detect and follow light sources. With its ability to track light, it finds applications in various fields and offers a range of possibilities for innovation and automation.



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Components with Price

Product Name	QTY	Price	Item Total
1) 15g Solid Rosin Welding Soldering Flux Paste High Purity	1	BDT 10	BDT 10
2) 4WD Smart Robot Chassis Kit	1	BDT 835	BDT 835
3) 9V Battery Connector	1	BDT 10	BDT 10
4) Arduino Uno R3	1	BDT 1,100	BDT 1,100
5) Breadboard (Medium size)	1	BDT 75	BDT 75
6) Doublepow DP-D01 Rechargeable Battery Charger	1	BDT 380	BDT 380
7) CoperWire 40 Pcs Set – Jumper Wire Type: Female to Female	2	BDT 100	BDT 200

Components with Price

8) Jumper Wire 40 Pcs Set – Jumper Wire Type: Male to Female	2	BDT 100	BDT 200
9) Jumper Wire 40 Pcs Set – Jumper Wire Type: Male to Male	2	BDT 100	BDT 200
10) KOOCU V900 Precision Soldering Iron	1	BDT 535	BDT 535
11) L298N H-Bridge Duel Motor Driver, Stepper Motor Driver	1	BDT 179	BDT 179
12) Premium Quality Soldering Lead 20g Low Melting Point	1	BDT 80	BDT 80
13) Sony 9v Rechargeable Battery 450mAh	1	BDT 440	BDT 440
14) LDR Module	2	BDT 75	BDT 150
Total Cost			BDT 4,394



MD. RIFAT AHMED

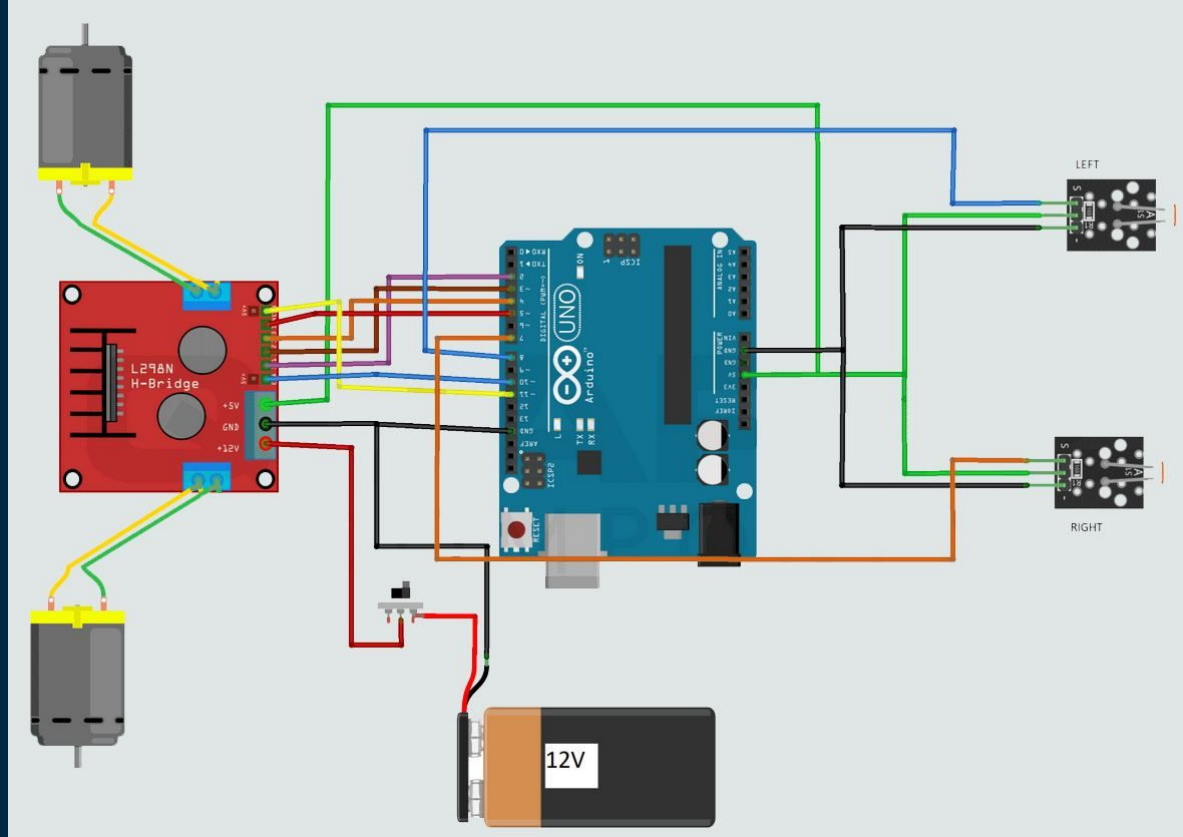
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CIRCUIT DIAGRAM





SABRINA ISLAM

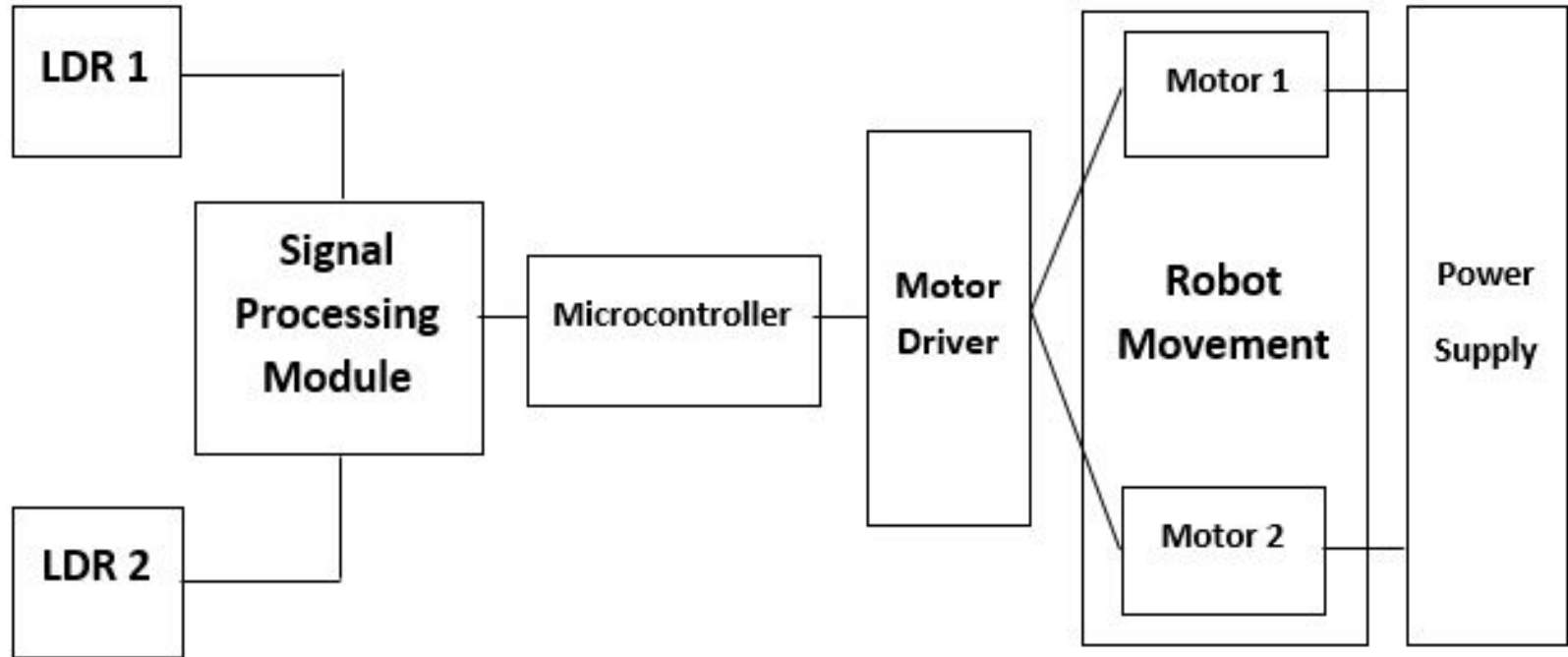
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BLOCK DIAGRAM





KAMRUN NAHAR SHUCHONA

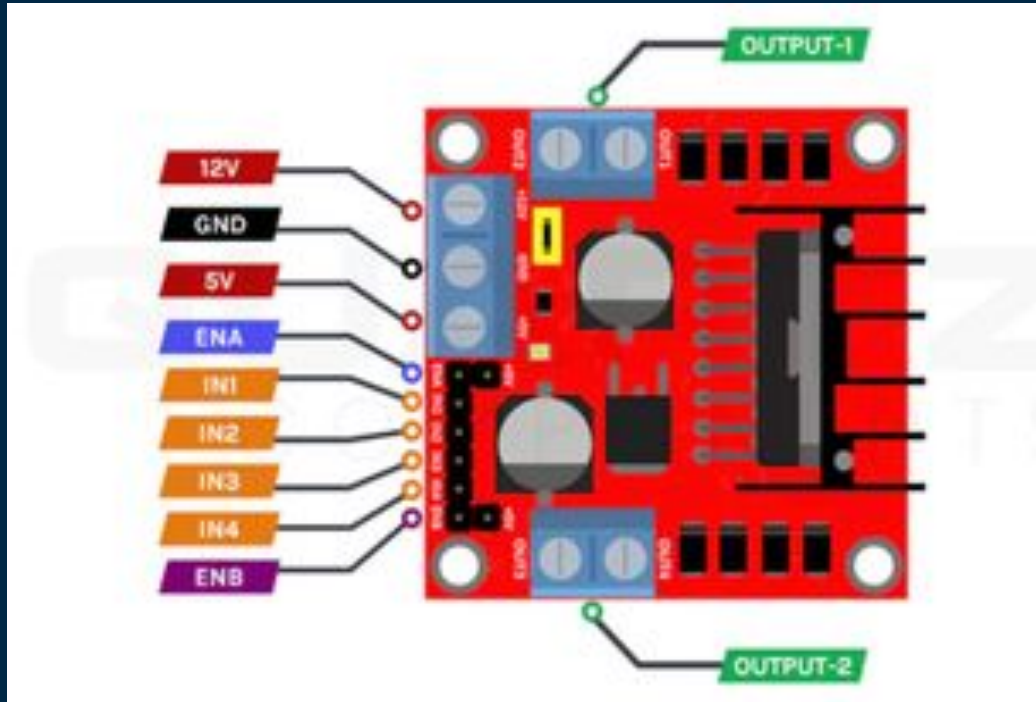
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MOTOR DRIVER





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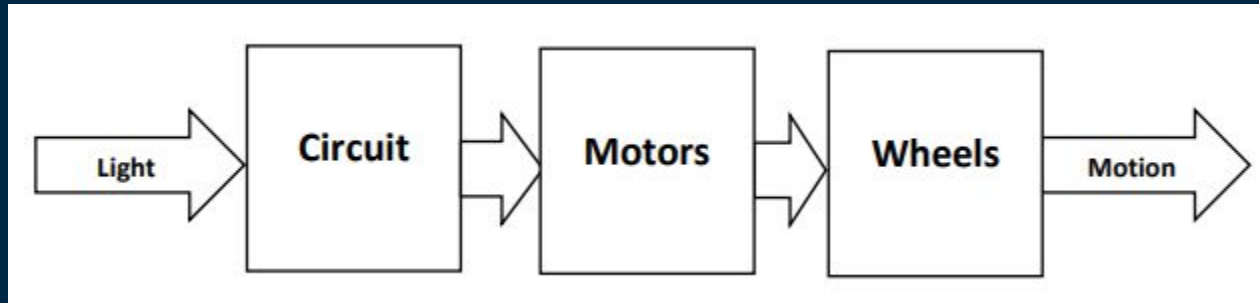
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PROJECT DESCRIPTION

- The light following robot is an autonomous robot designed to detect and follow a light source. This project combines principles of robotics, electronics, and programming to create a robot that can track and pursue a light-emitting object or source. The robot utilizes a light detection sensor, signal processing module, motor control system, and robot movement mechanism to achieve its objective.
- The main goal of this project is to develop a robot that can autonomously navigate towards a light source in its environment. The robot should be able to adjust its movement in real-time based on the position and intensity of the light source, effectively following it as it moves. This project offers an opportunity to explore and implement various concepts, including sensor interfacing, signal processing, control systems, and motor control.
- The light detection sensor is a key component of the robot, responsible for detecting the presence and characteristics of the light source. It can be a photodiode, phototransistor, or similar light-sensitive device. The sensor output is then processed by a signal processing module, which may involve amplification, filtering, and conversion to extract relevant information about the light source.

PROJECT DESCRIPTION

- The robot uses a special electronic circuit to control the speed of two motors through the use of two light sensors. The motors are connected to the robot's wheels, which allow it to drive around. Figure shows a simplified diagram of this process.



PROJECT DESCRIPTION

- If both light sensors detect the same amount of light, the wheels spin at the same speed, so the robot goes straight. If one light sensor detects more light than the other, one wheel will spin faster, which will make the robot turn.
- The robot movement mechanism consists of motors and wheels or other locomotion mechanisms. These allow the robot to move in various directions and make precise adjustments based on the light source's position. By continuously monitoring the light source and updating its movements accordingly, the robot can actively pursue and track the light source within its operational range.
- Throughout the project, various engineering concepts such as electronics, microcontrollers, sensor integration, and control systems will be employed. Additionally, problem-solving skills and attention to detail will be essential in optimizing the robot's performance in detecting and following the light source accurately.
- By successfully completing this project, a functional light following robot will be built, demonstrating the ability to track and follow a light source autonomously. The robot can be further expanded and enhanced by incorporating additional features like obstacle avoidance, wireless communication, or mapping capabilities, depending on the project requirements and desired functionalities.



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CODING PHASE

The background is a solid dark blue. It is decorated with various geometric elements: small squares in pink, orange, and teal; thin white vertical lines; and a larger teal square. The text 'CODING PHASE' is centered in a large, white, bold, sans-serif font.



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CONCLUSION

- The development of a light following robot offers an exciting and practical application of robotics and automation. By successfully creating a robot capable of detecting and tracking a light source, we have demonstrated the integration of various hardware and software components. Throughout the project, we have learned about the importance of sensor integration, signal processing, and motor control systems. The light detection sensor serves as the robot's "eyes," capturing the light source's presence and intensity. The signal processing module analyzes this information, allowing the robot to determine the direction from which the light is coming. The development of a light following robot provides valuable insights into robotics, sensor integration, and control systems. It opens doors to further exploration and innovation in the field of autonomous robots, inspiring future projects and applications in diverse domains

THANK YOU

