HYLA

Project Report

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Introduction

Hyla – A Line Following and Obstacle Avoidance Robot

The Cardinal feature of hyla is to hold objects and transfer them from one point to another through following a preplanned path. It serves the purpose of helping a homemaker who's looking after any old/ill present in the household. Can be used as a waitress in luxury restaurants and motels for table & door services. And also, as a helper in science labs and industries.

Components

Here's the list of components used –

- Arduino nano
- L298N Motor driver
- IR Sensor
- Ultrasonic sensor
- Wheels & Gear motors
- Chassis
- Battery holder
- Batteries
- Jumper cables
- Glue gun
- Soldering tool
- Sunboard

Arduino Nano -

The Arduino Nano is a small Arduino board based on ATmega328P or ATmega628 Microcontroller. The connectivity is the same as the Arduino UNO board. The Nano board is defined as a sustainable, small, consistent, and flexible microcontroller board. It is small in size compared to the UNO board.

L298N Motor Driver -

L298N module is a high voltage, high current dual full-bridge motor driver module for controlling DC motor and stepper motor. It can control both the speed and rotation direction of two DC motors. This module consists of an L298 dual-channel H-Bridge motor driver IC. This module uses two techniques for the control speed and rotation direction of the DC motors.

IR sensor -

The IR sensor or infrared sensor is one kind of electronic component, used to detect specific characteristics in its surroundings through emitting or detecting IR radiation. These sensors can also be used to detect or measure the heat of a target and its motion.

Ultrasonic Sensor -
An ultrasonic sensor is an instrument that measures the distance to an object using ultrasonic sound waves. An ultrasonic sensor uses a transducer to send and receive ultrasonic pulses that relay back information about an object's proximity.

Gear Motors -
Electric Gear motors are used in applications that require high output torque and lower output shaft rotational speed, especially where space and available power are limited. This describes a wide range of common equipment applications across multiple industries.

Softwares Used -
Tinker CAD
Adobe Photoshop
Arduino IDE

Methodology -
The five major steps involved in the making process of hyla are -
1. Designing of circuit layout in adobe photoshop.
2. Designing of lower body in 3D TinkerCAD.
3. Coding
4. Designing of upper body
5. Assembling

Conclusion -
Scaled up version of Hyla is meant to serve the purposes mentioned earlier in the report.

References -
Youtube – To learn coding