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Pick and place robot

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ABSTRACT

Autonomous robots are used everywhere nowadays and robotics is also gaining popularity all around the world. This motivated us to make an autonomous robot that can avoid obstacle from its path and do a specific task like Pick and Place object. The Project is designed to develop a Pick and Place robot for picking and placing objects.

Keywords— Renesas Microcontroller, DC motor, Bluetooth, Ultrasonic sensor

1. INTRODUCTION

Mechanical autonomy is a part of building science and innovation identified with robots, and their plan, production, application, and auxiliary demeanor. Apply autonomy is identified with hardware, mechanics and programming. The Pick and Place robot is a mechatronic framework which depends on a microcontroller that picks the item from source area and spots at the wanted area. For the location of hindrances, ultra-sonar sensors are utilized. The microcontroller controls the entire procedure. The Pick and Place robots are utilized in a wide assortment of material exchange applications. Essentially, the robot takes an item from one spot in the assembling procedure and spots it into somewhere else. Taking care of predictable formed parts and compartments with these robots can have an exceptional yield on ventures. In contrast to human, robots can labour for all-inclusive hours.

2. LITERATURE SURVEY

Andrew B. Cushing, Jackrit Suthakom and Gregory S. Chirikjian: An Autonomous Self-replicating Robotic System. It is from a division of mechanical engineering. John Hopkins University Baltimore, Maryland, actualize this system. This system comprises four subsystems: controller, left track, right track, and gripper/ sensor subsystem. All subsystems are associated with others utilizing magnets and share requirements. The two light sensors in its route framework to recognize items and furthermore to follow lines.

Chris Nowak, Rajaey Kasid, Chin Pei Tang: Distributed Sensing and Control Framework for Mobile Robot. This is from the branch of mechanical and aerospace building actualize a task on this system. The principle errand of the undertaking is to transport a bundle from a pickup station to a drop-off station. The bundle transportation is finished by a wheeled mobile robot (WMR) with a gripper framework before it, which feels in as a lifting gadget. The bundle accessibility on pick up station is finished by push catch on the stage of the station. Additionally, there is another push catch set up at the drop-off station to check whether the bundle has effectively sent.

Jan Kelly, Chris Melhuish and Owen Holland: The Development and Energetics of Slug Bot, a Robot Predator. It is from personnel of engineering, University of The West of England, Bristol. This robot equipped for independent activity and the rural land and the robot continues itself by chasing and getting slugs. In this plan, sensor is utilized for identifying slugs, the gripper utilized for getting them. This the two section are situated towards the finish of a since a long time ago explained arm. Amid checking the sensor and gripper will be effectively kept up at consistent tallness over the ground utilizing ultrasonic sonar.

3. BASIC SCHEMATIC

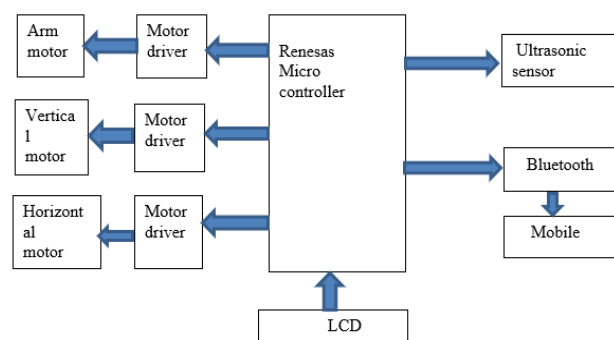


Fig. 1: Block diagram

4. IMPLEMENTATION

- Initially, we assume the rest position of the robot that is no power is supplied.
- As soon as power is supplied to it, it executes all the conditions like moving left, right, forward and backwards, opening and closing of the jaw, movement of the neck.
- Later, we control movements of the robot through the android application.
- We assume two motors as M1 and M2, M1 for horizontal and vertical movement and M2 is for movement of the robot neck.
- Each motor runs for a fixed duration of time.
- The robot stops if the ultra-sonar sensor detects any obstacle.

5. RESULT

The pick and place robot has been executed successfully. The robotic vehicle had been designed and the programs were burnt into the microcontroller. The project is successfully tested for all the commands. This robotic vehicle picks the object from the source location and places at the desired location. If any obstacle is detected by the ultra-sonar sensor, then the motor will stop running. An application is created to control the movement of the robot.



Fig. 2: Ultra-sonar sensor

6. CONCLUSION

Robots are instances of programmable mechanization, anyway, they are additionally utilized in flexible or even fixed mechanization frameworks. The two explanations behind choosing a robot working generation line are first to diminish work expenses and second to perform work that is exhausting, unsavoury or perilous for individuals. The robot can perform tedious assignments at a consistent spot, be modified accomplish and perform different horrendous errands, activity for a significant lot without rest or break period, and reaction in robotization producing activity on a ceaseless premise.

7. REFERENCES

- [1] Andrew B. Cushing, Jackrit Suthakom and Gregory S. Chirikjian. "An Autonomous Self-replicating Robotic System".
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