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FLOOR CLEANING ROBOT USING ARDUNIO

Prof. S. A. Jalit, Amish Bijwe, Swaraj Tayade, Ankush Mondhe, KaushalRathi, Harshal Raut, Ananta Wakle

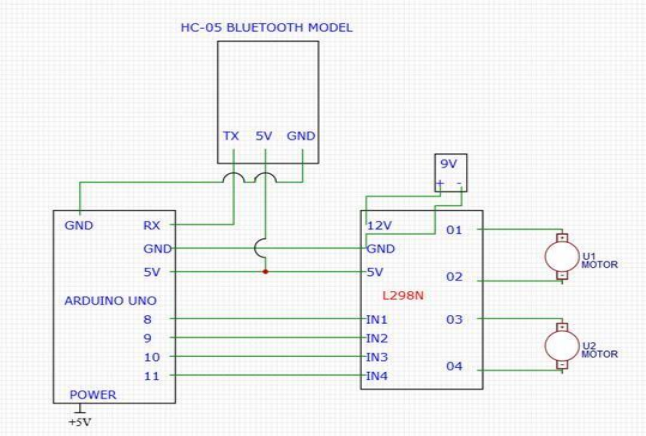
Assistant Professor, Department of Electrical Engineering, P.R.Pote Patil College of Engineering &Management, Amravati, Maharashtra, India

Degree Student, Department of Electrical Engineering, P. R. Pote Patil College of Engineering &Management, Amravati, Maharashtra, India

ABSTRACT: The pick and cleaning robot is being implemented to ease the process of sorting, the process ofmoving heavy materials, etc. Usually, the transfer process he heavy materials is carried out, using manpower and if the transfer process is repeated for a period of time, it can cause injuries to the operator. By using the particular robot the operator will no longer have to bend and lift up heavy loads thus preventing injuries and increasing the efficiency of the work. Further depending upon the controlling action provided to the servo motor it lifts the object and locates the same at the required destination. The room cleaning robot moves around the room avoiding obstacles, picking up dust, and wiping the floor.

INTRODUCTION

The moving Pick and cleaning robot is used in a very wide variety of material transfer and cleaning in the industry aswell as domestic applications basically the machine takes a product from one spot to the manufacturing process and places it into another location. The moving pick and cleaning robot moves around the room avoiding obstacles, picking up dust with help of the robot arm, and wiping the floor. The typical pick and cleaning application required a high amount of repetitive motion. The robot can eliminate the human operation of a hazardous task such as chemical spraying or heavy lifting. Pick and cleaning robots have a high return on investment when consistently shaped parts or containers are handled. Unlike human operation robots also have the ability to work for an extended time In this Highly developing Society time and manpower are critical Constrains for the completion of tasks on large scales. Automation is playing Important role to save human efforts in most of the regular and Frequently Carried work. one of the major and most commonly performed work is pickingand Cleaning jobs from source to destination It can save costs in long term and help to save problemsand tasks. The purpose of roller here is to stick small dust particles to itself. It will not be needed everytime the robot is moving so I decided to make a simple mechanism which can lift it up or down via a servo motor. In some places such as bus stations, temple halls, byres the floors are not regularly cleaned due to non-availability of machines. There is no machine in the markets which can be used on smooth as well as rough surface floors. Considering weight criteria, machine assembly, handling the machine is very flexible. This machine is affordable to all because of its uses and cost.



❖ Aduino :

- The board has 14 Digital pins , 6 analog Pins an programmable with the **Arduino IDE** (integrated Development Arduino is an open-source prototyping tool that uses simple hardwareand software. Here it gives input and output signals based on the sensors connected to it.
- Environment) via a type B USB cable
- **Specification –**

  Microcontroller Microchip AT mega 328 POperating Voltage : 5 volts

  Input Voltage – 7 to 20 voltsDigital I/P Pins – 14

❖ Gripper Arm :

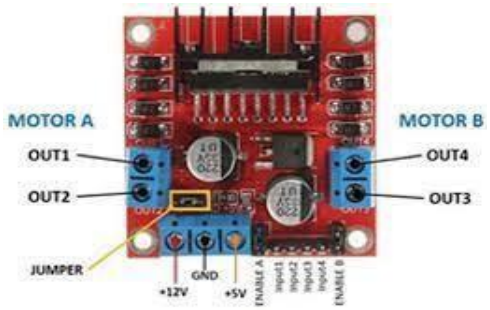
- The gripper a module is a state of the art robotic arm which can be used in various 'pick andplace kind of robots. It works on DC motor (9 to 12V DC).
- Change in rotation direction of the DC Motor, .generates Jaw Open & Close Action.
- The DC motor can be easily controlled the help of any microcontroller along “with the L293DMotor Driver module”.

❖ Motor :

This is very commonly used in robotics. DC motors can rotate in both directions depending upon thepolarity of the current through the motor. These motors have free running torque &ideally zero current.

- These motors have a high speed which can be reduced with the help of gears.
- **Specification –**
  RPM: 100.
  Operating Voltage: 12V DC
  Gearbox: Attached Plastic (spur)GearboxShaft diameter: 6mm with internal hole Torque: 2 kg-cm
  No-load current = 60 mA(Max)Load current = 300 mA(Max).

❖ Motor Driver –



- This will convert the minimum current signals to higher current signals so that it can help themotor to work accordingly.
- L293D is a typical motor Driver or motor driver IC which allows DC motors to drive an either direction L293D is a 16-pin IC which can control a 2 DC motor with a single L293dIC chip
- Due to size it is very much used in robotic applications for controlling DC motor
- Specification –
  Supply voltage range is 4.5 v to 36 v.600-mA output current capability
  Can drive DC geared Motor, bipolar stepper Motor.

❖ Blutooth Modula –

- HC – 05 modal is an easy to use Bluetooth SPP (serial port Protocol) Modula , designed fortransparent wireless serial connection setup .
  Specification -Input voltage 1.8 to 3.6 V. with integrated antenna

❖ **Battery-**

- Lead Acid batteries have changed little since the 1880's although improvements in materialsand manufacturing
- methods continue to bring improvements in energy density, life and reliability. All lead acidbatteries consist of flat
- lead plates immersed in a pool of electrolyte. Regular water addition is required for most typesof lead acid batteries
- although low-maintenance types come with excess electrolyte calculated to compensate forwater loss during a normal
- lifetime.
- Lead acid batteries used in the RV and Marine Industries usually consist of two 6-volt batteriesin series, or a single 12-
- volt battery.

ADVANTAGE

- Time saving as it is operated by a remote.
- Controlling all device from one place.
- Eco-friendly and produces less noise pollution.
- Very effective for household needs.

DISADVANTAGE

- It is operated on dc source
- It can be quite expensive

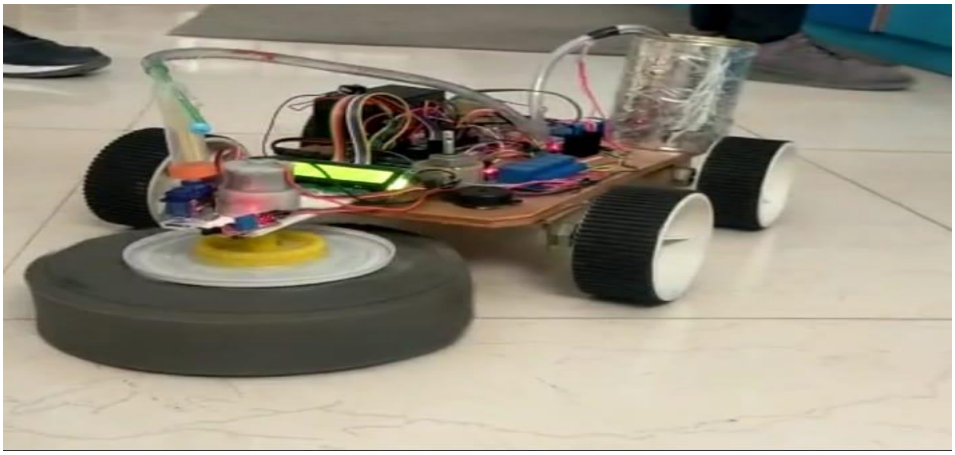
CONCLUSIONS

- This setup of hardware with a combination of software gives better accuracy reduces the workload. Manpower is minimized.
- It have Low cost. It is a Time-Consuming Device Making a small machine brings flexibility to do work.

IMPLEMENTATION & FUTURE SCOPE

- Can be used to interact with the household objects and observing ther resultwith the help of a camera system.
- Can be used for accurate holding and inspection applications in the industries.
- Military Operation
- Fire fighting Operation Undersea
- Robots Garbage Collection and Waste Disposal Operation Bottle Filling Plant.

ACTUAL PHOTO -



REFERENCE

- R.M. Haralick, L.G. Shapiro, Computer and Robot Vision, vol. I, Addison Wesley, 1992.
- F. Wörgötter Cognitive agents a procedural perspective relying on the predictability of objection complexes, OACs, Robotics and Autonomous Systems 57 (2009) 410-419.
- BATRONIX Solution
- M. Kristan, J. Pers, M. Perse, and S. Kovacic. "Towards fast and efficient methods for tracking players in sports" in Proceedings of the ECCV Workshop on Computer Vision BasedAnalysis in Sport Environments, May 2006, pp. 1425.
- B.L.Thereza Electrical Machines (9th Edition) Dhanpat Rai & Sons (2005).
  M. Lopes and J. Santos-Victor "Visual learning by imitation with motor representations"IEEE Transactions on Systems, Man, and Cybernetics PartB: Cybernetics, vol. 35, no. 3,2005