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SMART VACUUM CLEANER ROBOT

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ABSTRACT

Many people work at different places and they don't have enough time to clean their houses. In the proposed paper an autonomous mode is done by the robot. Cleaning systems like vacuum cleaners are effective but still required the presence of a human being. This challenge gives an idea of developing a smart and advanced autonomous cleaning robot that provides cleanliness without human intervention. With advancements in technology, robots are getting more attention from researchers to make the life of mankind comfortable. The robot is designed to replace human efforts with automation and can be radical technologically and is made affordable.

Keywords: Raspberry Pi, Vacuum Cleaner, Motor Driver, Camera, Auto Detect.

I. INTRODUCTION

In this situation, human beans lead a busy life. People have irregular and heavy working times. In such a condition people will always find a solution for saving time and reducing workload. Robots are reliable means to bring objects, do settings, and clean areas. It is an embedded system-based project & is operate on automatic mode & it controls the instruction as automatic mode & it controls the instruction as mopping, gulping, pumping & movement of the robot the automatic mode is controlled by an obstacle sensor like an Infrared sensor, Ultrasonic Sensor the embedded system is controlled by Raspberry Pi 3 B model. L298N is a driver IC that helps to switch purpose & interfacing. A web camera that helps capture pictures and identify dust and obstacle while the robot is running and starting cleaning.

II. LITERATURE OF REVIEW

Floor cleaning robots may be a trending concept in these recent days. By reviewing different paperwork and techniques for using several cleaning robots, we've started acting on our design of a floor-cleaning robot which is predicated on the Raspberry Pi 3 model. The papers surveyed for the literature review are as follows:

[1] Anuj KP, Jitshida, Sarithamol & Thosneen p "smart floor cleaner controlled by Raspberry Pi & intelligent IOT" International Journal Innovative research in science, engineering & technology.

[2] Shripad malavadikar, Swapnil mungale, Tashika Johari & Harshad Lokhande, "Automatic cleaner Robot", International Engineering Research Journal (IERJ), volume 2issue 8pase 2617,2017ISSN 2395-1621

PROBLEM STATEMENT

Nowadays, people lead busy life. People in urban have abnormal and long working hours. In such a situation an individual will always find ways of saving time.

1. For career-oriented and dealing women it's hard to handle home together with job work.

2. Normally floor is cleaned with the utilization of dry mopped or wet mopped using the hand as a base tool. they need to be scrubbed hard on the surface.

3. The cleaning module includes cleaning varied surfaces like cement floors, and highly polished wooden or marble floors.

4. The rough surface areas like cement floors, are covered with heavy dust which consumes longer in cleaning.

SOLUTION STRATEGY

For time-saving purposes the House Cleaning Robot is important, which is an

1. Autonomous robot for floor cleaning application reduces time in existence. It does sweeping and mopping tasks at a time, it also detects obstacles, and has an automatic water sprayer.

2. Automated Floor Cleaners are designed for cleaning offices, homes also in collages. In one of the modest, his robot makes decisions on the premise of humans or various sensors which are employed in this robot.

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3. Manual work will be replaced by robot technology and lots of the related robot system applications are used.

III. METHODOLOGY

Battery-operated cleaning robot cleans and mops at the same time using a smartphone connection. Raspberry Pi 3 is the main controller used to control the cleaning robot. It is a Raspberry Pi 3 model based on Raspbian buster OS. Raspberry Pi 3 is open-source software in which hardware can be easily used. Raspberry Pi 3 is energized by 1a 2V, DC battery. Bluetooth electronics app controls cleaning robot with an android device. This app communicates using Bluetooth to an HC-05 Bluetooth module in the robot. An ultrasonic sensor is used for obstacle detection which transmits the ultrasonic waves from its sensor head and again receives the echo waves and sends its output signal to the Raspberry Pi 3 will stop the robot immediately and the buzzer will be actuated. The ultrasonic sensor is connected to the servomotor, which helps in the rotation of the ultrasonic sensor. The ultrasonic sensor measures the distance between the robot and the obstacle in front of it. If any obstacle is present in front of the robot, the IR sensor gives a signal to an ultrasonic sensor is used for which transmits the ultrasonic waves. The L298N driver circuit is used to drive the DC motors simultaneously in all directions. Raspberry Pi 3 sends the signal to the motor driver circuit that controls and drives the wheel.

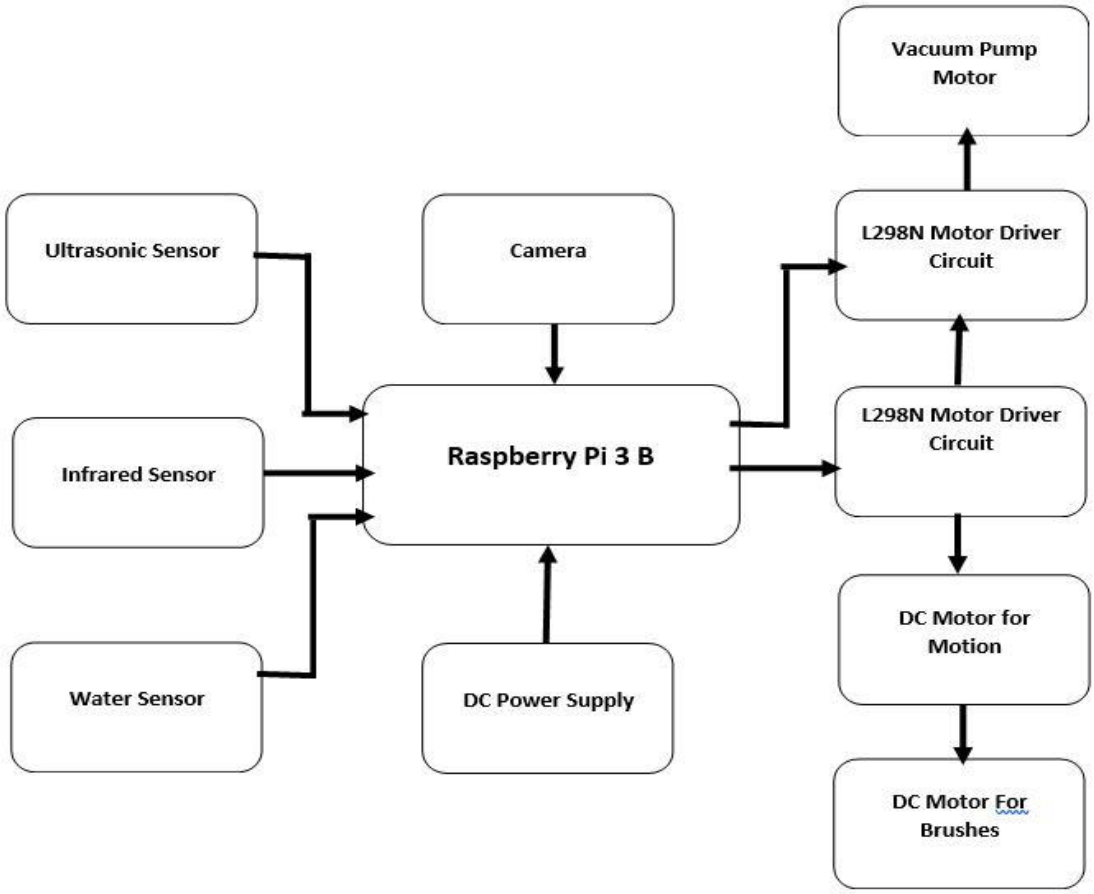

Fig. Block Diagram OF Smart Vacuum Cleaner

IV. APPLICATION AND SCOPE

The developed robot can be used in various areas. Mainly, the robot is intended to be used in closed spaces like offices, Homes, Factory floors, Classrooms, buildings, etc. It serves as an efficient solution for drive cleaning in surges spaces. The robot has a scope in wide and public spaces like airports, Railway stations, College campuses, etc. With a few modifications and further research into the system, this Autonomous robot Can be used in such wide applications.

V. CONCLUSION

This robot is designed with the motive of helping people to clean their homes daily. Therefore, we have developed this automatic robot that performs both cleaning dry as well as wet cleaning. It operates in an

autonomous mode have some additional features like scheduling for a specific time with an auto dirt mechanism. In cleaning process doesn't need a person to control it and reduces the burden on the operation of this system. This robot is very useful for handicapped people having issues with cleaning purposes. It is also used in industries for commercial purposes to save time.

VI. REFERENCE

[1] Anuj KP, Jitshida, Sarithamol & Thosneen p "smart floor cleaner controlled by Raspberry Pi & intelligent IOT" International Journal Innovative research in science, engineering & technology.

[2] Shripad malavadikar, Swapnil mungale, Tashika Johari & Harshad Lokhande, "Automatic cleaner Robot", International Engineering Research Journal (IERJ), volume 2issue 8pase 2617,2017ISSN 2395-162.