"AUTOMATIC & MANUAL VACUUM CLEANING ROBOT"

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ABSTRACT

This project report is to design and implement a Vacuum Robot. Vacuum Robot is designed to make cleaning process become easier rather than by using manual vacuum. The idea is basically by having the sensor to detect any object and send the output to an Atmega16 that will control the Vacuum Robot movement. By using Vacuum Robot, user can just turn on the Vacuum Robot to clean without having to operate the Vacuum. The methodology and scope of the study are performed by doing literature reviews and research on various sensors, motor, ATMEGA16, and the programming of the Atmega16 microcontroller. Vacuum Robot will have several criteria that are efficient, organized and user-friendly, which meets human needs.

INTRODUCTION

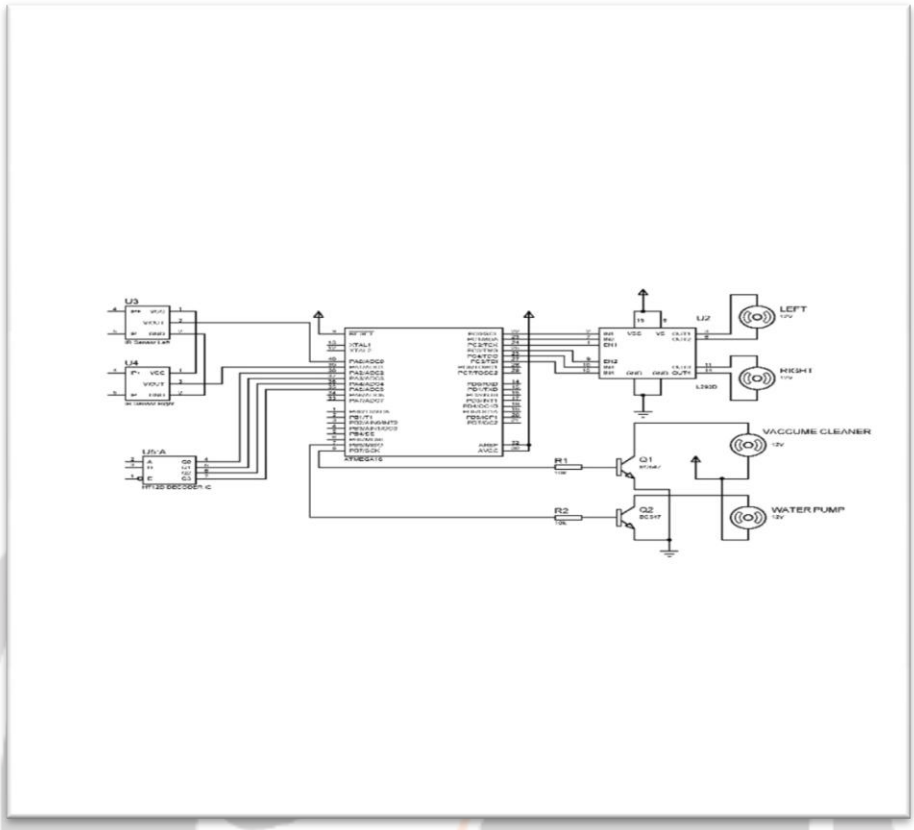
Robot is an electromechanical machine and used for various cleaning purposes in industrial and domestic applications. Robot appliances are entering in the consumer market, since the introduction of Robots. Thus, the idea of cleaning robot is not a new concept.

As the time pass on many improvements were made and more efficient appliances were developed, which is useful in cleaning our home. In the present situation, people live a very busy life. People in cities have long and irregular working schedules. For career oriented and working women it becomes challenging to handle the home and office work together. Further, the elderly who live by themselves or in old age homes and do not have the strength or ability to clean, automatic vacuum cleaner can be good option for them.

Robotic vacuum cleaners available in the market are expensive and inefficient in terms of many parameters say cleaning time and cleanness. So even today there exist a large scope of improvisation in existing model of automatic vacuum cleaner that will work and cleans on its own without human control/intervention.

In today's commercial and domestic world, automation plays an important role and robots are good example of it. Robots are intelligent machines

CIRCUIT DIAGRAM:



WORKING

RF Module (Transmitter & Receiver):- This RF module comprises of an RF Transmitter and an RF Receiver. The transmitter/receiver (TX/Rx) pair operates at a frequency of 434 MHz an RF transmitter receives serial data and transmits it wirelessly through RF through its antenna connected at pin4.The transmitted data is received by an RF receiver operating at the same frequency as that of the transmitter.

Transmitter module:-

- Working voltage: 3-12V
- Dimension: 22mm*33m
- Working current: 10-15 mA
- Working Mode: AM
- Transport speed: 4 kbps
- Transmit frequency: 433Mhz
- Transmit Power: 10 mW
- External Antenna: 25 cm normal cores or single core wire

Receiver module:

- Receive sensitivity: -95dbm
- Working voltage: 5 V
- Dimension: 37 mm*16 mm
- Receive frequency: 433 MHz

- External Antenna: 18-25 cm
- Transport Speed: 4 kbps
- Working Temperature:-10 C to 70 C
- Working Current: 0.5 to 0.8 Ma

APPLICATION

1. Robotic vacuum cleaner is developed to make cleaning process easier is especially for working people.
2. This robotic vacuum cleaner is designed for specific area such as under beds.
3. Robots are widely use in modern industrial manufacturing, in households, in entertainment, and in the security sector.
4. It can be used in industrial cleaning where in it reduces human contact to harmful chemicals and industrial waste.

FUTURE SCOPE

- Now we are working to make the robot smart enough to detect all objects in any position of room.
- In the future we hope to make the robot smarter such that when the robot cleans any room it will save the room information about obstacle and its locations and if the user want to clean a room it just will restore information and will clean faster the area.
- We hope to make the robot to clean tables such that it can detects edges and it will clean the tables without falling down

CONCLUSION

- Robots are an important component in Intelligent Environment.
    - Provide physical service
    - Automate device
- Robot systems in these environments need particular capabilities.
    - Autonomous control system
    - Simple and learning capabilities
    - Robots have to maintain safety during operation.
- While a number of techniques to address these requirements exist, no functional, satisfactory solutions have yet been developed.
- The Product developed is definitely a very important product in robotics and floor cleaning area. Also the algorithm implemented is not very effective.
- There is definitely current scope for improvement and optimization till the most effective product is being developed. Definitely it has very huge potential. Also we can use 1 vacuum pump instead two so that it will be cost effective and very energy saving product with less vibration and much control over the robot. The robot having 33*30*8 cm in dimension is very compact in nature and can go beneath any furniture and bed. This is also very

handy in portability. The scrubber of the robot now consists of small plastic fibres. But it can be further improved so that the surface area of the scrubber will come 90% in contact with the floor.

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