

# Electronic Floor Cleaner

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## Abstract

Households of today are becoming smarter and more automated. Home automation delivers convenience and creates more time for people. Domestic robots are entering the homes and people's daily lives, but it is yet a relatively new and immature market. However, a growth is predicted and the adoption of domestic robots is evolving. Several robotic vacuum cleaners are available on the market but only few ones implement wet cleaning of floors. The purpose of this project is to design and implement a floor cleaner with Autonomous and Manual via Phone Application. This is designed to make cleaning process become easier rather than by using manual vacuum. The main objective of this project is to design and implement a vacuum cleaner prototype by using ARM controller, Bluetooth module, Ultrasonic Sensor, DC motor.

**Key Words:** ARM controller, Bluetooth module, Ultrasonic Sensor, DC motor

## 1. INTRODUCTION

Automatic floor cleaner is a system that enables cleaning of the floor with the help of highly stabilized and rapidly functionalized electronic control system. While designing the system we must broadly understand that how the domestic service robots can be used for cleaning purpose and secondly, we must consider that how the robot fits into our home[1].

In this project, floor cleaning machine is proposed. This is capable of cleaning floor effectively in wet cleaning tasks. The purpose of this project is to clean the floors in colleges, hospitals, auditoriums, malls and workshops. Cleaning of floor is very important for our health and this floor cleaning machine reduces the effort required for cleaning. Hence this project is very useful in our day to day life. It is very simple in construction and easy to operate, anybody can operate this machine easily. This floor cleaning machine consists of moisture cotton mop, swiping brushes, for reducing the cleaning time.

## 1.1 LITERATURE SURVEY

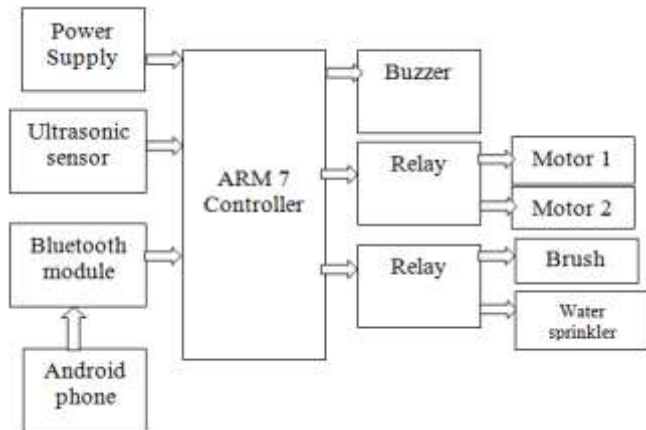
In reference[1] T.B.ASAFA, T.M.AFONJA, E.A.OLANIYAN, H.O.ALADE "Development of a vacuum cleaner robot",(2018). In this paper a vacuum cleaner has a disk-shape, sucks dirt via a retractable dustbin on top of which a cooling fan is mounted. The suction fan helps create vacuum that attracts dirt to the dustbin. The robot navigates with a front caster wheel and two rear wheels, and detects obstacles using the ultrasonic sensors. It is powered by 28.8 V DC battery, and works continuously for two hours when the embedded battery is fully charged.

In reference [2] MANYAJAIN, PANKAJ SINGH RAWAT, "Automatic Floor Cleaner" (2017). In this paper this project is used for domestic and industrial purpose to clean the surface automatically. When it is turned on, it sucks in the dust by moving all around the surface (floor or any other area) as it passes over it. In the modern era, the automatic floor cleaner is required. Thus, the cleaner is designed in such a way that it is capable of cleaning the area reducing the human effort just by starting the cleaning unit.

In reference [3] Dr. J. HAMEED HUSSIAN "Floor Cleaning Machine by Remote Control" (2017). In this paper module of automatic floor cleaning machine by micro controller is run to clean the floor and sweeps the dust away. In this the module a remote-controlled car has gear motor is attached at front axis in between the front wheels, this motor is attached with a cleaning brush at front, and the gear motor is connected to 12volts battery and the remote car is attached with 9volts battery. The remote car is controlled by the micro controller.

In reference [4] SANDEEP. J. MESHRAM ET AL "Design and Development of Tricycle Operated Street Cleaning Machine" (2016). In this paper he has developed the street cleaning machine by tricycle operated. In this research article he framed a model especially for rural area. He concluded that the cleaning is less effective in street. When testing of machine, that has cleaning is less effective where street is damaged.

## 2. Hardware design

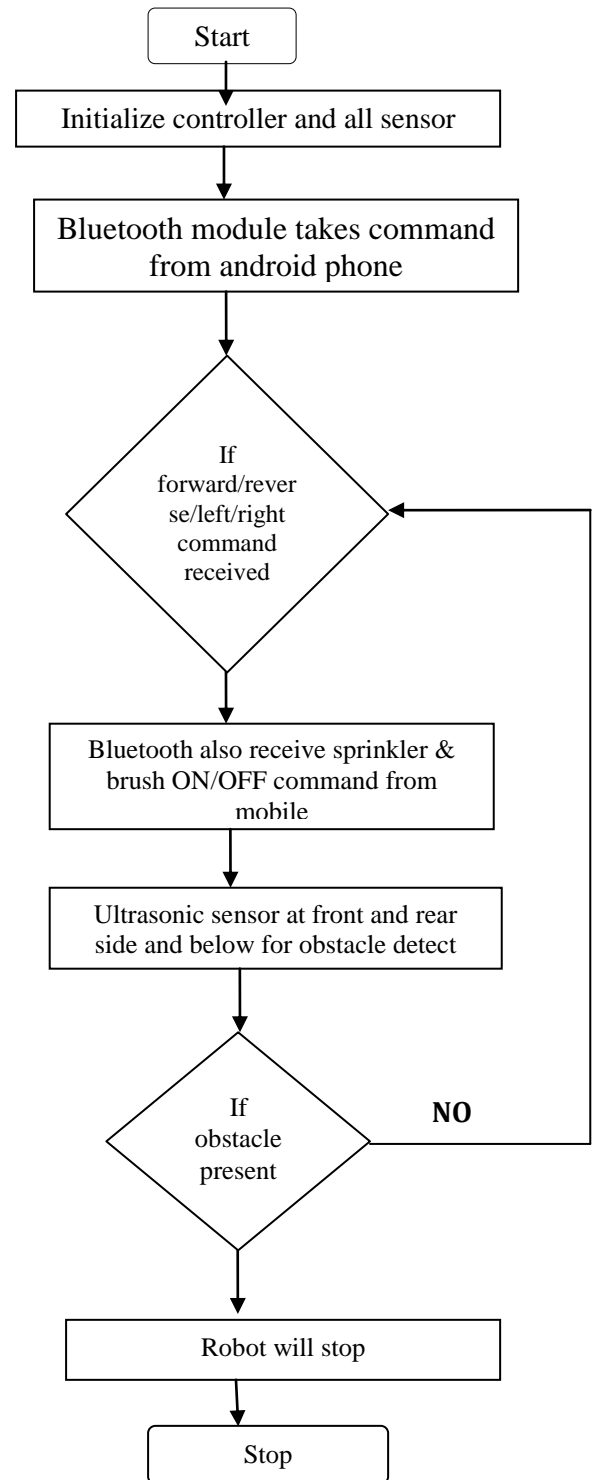


**Fig -1:** Block diagram of Electronic floor cleaner

### A. BLOCK DIAGRAM DESCRIPTION:

Fig.1 shows the block diagram of electronic floor cleaner. It consists of power supply, ultrasonic sensors, Bluetooth module, buzzer, relay. ARM Controller receives the commands from the Bluetooth module. User has to give commands through a mobile application. Through a mobile application, forward, reverse, left, right commands can be given. The cleaner starts its operation according to the commands it receives. The ultrasonic module automatically sends an 80 kHz pulse and detects whether there is a pulse signal back. If the signal back, through a high level, the time of high output IO duration is the time from sending ultrasonic to returning. If an obstacle is present, the ultrasonic sensor will stop the cleaner. For wet cleaning, water gets sprinkled and a brush is used for mopping. These brushes are controlled by using a relay.

## 2. Software design



**Fig -1:** Flowchart of Electronic floor cleaner

### 3. Advantages

1. Saving energy and time.
2. Reduces human effort.
3. It can be used in domestic and industrial cleaning.
4. Small size and low weight.
5. Easy to use.

### 4. Disadvantage

1. Noisy due to use of buzzer.

### 5. Application

Cleaning floor in hospital, colleges, malls.

### 6. Conclusion

This paper provide simple design of floor cleaner.Using components which are easily available in market. It has feature of mopping. It can work manually providing commands with using mobile phone via Bluetooth module. It can be used in domestic and industries where cleaning by human is toxic.

### Project photograph



### References

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