DEVELOPMENT OF IOT BASED ROBOT FOR HOSPITAL FLOOR CLEANING

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ABSTRACT: The progressions made in innovation of mechanical technology have made existence of humankind especially simpler and agreeable. Clinics of today are getting more brilliant and more robotized. Homegrown robots are entering the homes and individuals' everyday lives, yet it is yet a generally new and juvenile market. Be that as it may, a development is anticipated and the appropriation of homegrown robots is advancing. A few mechanical vacuum cleaners are accessible available yet just couple of ones execute wet cleaning of floors. This robot makes floor cleaning measure simple and quick using a remote mechanical cleaning framework. This remote framework comprises of a transmitter application that sudden spikes in demand for an android portable application which permits the robot to follow orders given by the client through the transmitter app [1]. Floor Cleaner Robot is intended to cause cleaning interaction to become simpler as opposed to by utilizing manual. The fundamental goal of this venture is to plan and actualize a story cleaning robot (which are utilized in emergency clinics) model by utilizing NodeMCU

KEYWORDS: mechanical technology, transmitter app, NodeMCU

I. INTRODUCTION

Cleaning is Important work inexact each spot. At times this is simple and once in a while troublesome. At times we allocated individuals for reason for cleaning and pay cash and once in a while cleaning is needed in regions where presence of living being hazardous so we can't relegate living being in each spot. A few spots are so that have a huge floor territory in that place for cleaning reason we need more than one individual so we required some method to repay these issues. In headway of science a robot come in light however it works by a faculty. To keep away from this limit of faculty we require more innovations. Computerization is an extraordinary arrangement of this issue. So, we make a self-governing floor cleaning robot that worked by web of things and Arduino programming. Families of today are getting more astute and furthermore more mechanized. Home robotization conveys accommodation and makes more opportunity for individuals. Homegrown robots are entering the homes and individuals' everyday lives, yet it is yet a moderately new and juvenile market. Be that as it may, a development is anticipated and reception of homegrown robots is advancing. A few mechanical vacuum cleaners are accessible on market yet just couple of ones actualize wet cleaning of floors. Reason for this undertaking is plan and actualize a Vacuum Robot Autonomous and Manual by means of Phone Application. Vacuum Cleaner Robot is intended to cause cleaning cycle to become simpler as opposed to by utilizing manual vacuum. The primary target of this undertaking is to plan and execute a vacuum robot model by utilizing NodeMCU, engine driver and to accomplish the objective of this venture. Vacuum Robot will have a few measures that are easy to use.

II. RELATED WORK

A programmed floor cleaner robot has brushes connected to its sides to gather the residue. this robot utilizes ultrasonic sensors to maintain a strategic distance from snags and alter its course and it has an attractions unit that sucks in the residue while moving around the room uninhibitedly. in any case, the disadvantage of this robot is that it can't spotless the wet floor

III. EXISTING METHOD

A robot vacuum cleaner is a self-governing automated vacuum cleaner which incorporates self-drive mode and cleans the floor self-rulingly without human control. This robot vacuum cleaner comprises of turning brushes, wiping, UV sanitization and surveillance cameras for cleaning reason. This vacuum cleaner had a few disadvantages like crashing into impediments and halted at a more limited separation from dividers and different items. It couldn't reach to all corners and edges of the room and left those regions messy [3].

A programmed floor cleaner robot has brushes connected to its sides to gather the residue. This robot utilizes ultrasonic sensors to stay away from deterrents and alter its course and it has a pull unit that sucks in the residue while moving around the room uninhibitedly. In any case, the downside of this robot is that it can't perfect the wet floor [4].

IV. PROPOSED SYSTEM

The robot begins by initiating a straightforward switch. It all the while begins cleaning and wiping the floor. It follows per set way beginning from one finish of the room lastly finishes the whole room cleaning. In the wake of arriving at the opposite finish of the room, robot alters its course and follows the way opposite to the past way. Robot changes the way in the event that it experiences a hindrance. It can likewise be constrained by cell phone utilizing a WI-FI

V. BLOCK DIAGRAM

The self-sufficient cleaner robot comprises of low force devouring electronic segments and it can work at exceptionally low force. Electronic parts are the regulator board NodeMCU, voltage controller IC and engine driver circuit. filtration framework which works under the guideline of constrained vortex stream same as in the event of radiating siphon. Radiating power will be made and a wide range of flotsam and jetsam will be sucked in through pipe. The benefit of utilizing this robot will saves time, it will be a lot of valuable for individuals with versatility issues to clean the house with no troubles. It is a straightforward and minimal effort robot [5].
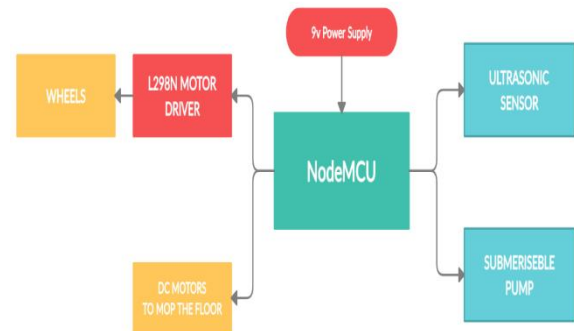

Fig. 5.1 Block Diagram

Basically, robotic cleaners are distinguished on their cleaning expertise like floor mopping, dry vacuum cleaning etc. Centrifugal force will be created and all types of debris will be sucked in through pipe. The advantage of using this robot will saves time, it will be very much useful for people with mobility issues to clean the house without any difficulties. It is a simple and low-cost robot. Floor cleaning robot is developed to make floor cleaning process easier. This can be used in power plant like nuclear power plants because in that places the harmful radiations are placed and cause serious health problems. To avoiding this, we can send a robot to perform the whole operation. In colleges and other places where large floor area is present, we can use floor cleaning robot to clean that areas. In industries we required cleaning in large areas as well as small areas and both areas can be clean without need of personnel. By this we can save money and time. The Android app is generally developed using JAVA language. The app controlling this vacuum robot can be built without having the knowledge in java language. It is called as "Floor cleaning Robot" developed by MIT App Inventor. Shown below is a diagram which shows the interface of the app. In this way, some functional requirements that would improve the robot performance were not taking into account due either to their inherent complexity or to their mechanical implications. These robots operate semi- or fully autonomously to perform services useful to the well-being of humans and equipment. With the aim of keeping our robot as simple as possible, while able to perform the initial goals, i.e., an autonomous vacuum cleaner robot able to randomly navigate

through a room or a house with the minimum human assistance, the following specifications were found
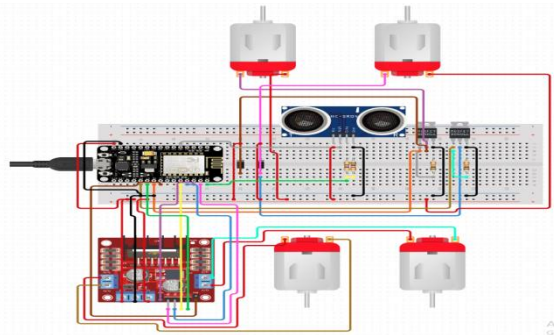

Fig. 5.2 Circuital Setup

VI. EXPERIMENTAL RESULTS

A hardware prototype has been developed with the idea of making floor cleaning process easy, fast and comfortable, android mobile application for giving commands. The testing of the robot showed that it can achieve almost all the functionalities which were planned to implement originally.

CLEAR can be used in autonomous and manual modes as per user's will. During its autonomous mode, this robot can be scheduled with a proper date and time. When that time comes this product automatically starts and cleans the whole room and counter check pattern[6]. When this robot completes the whole path it automatically cleans itself in the station from where it started cleaning.

Moreover, manual mode is to save the energy of the robot and to clean the particular place. Customers are provided with the user friendly interface to operate the robot without any difficulty.

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Fig. 6. 1. Experimental Output

VII. RESULT AND DISCUSSION

Floor cleaning robot is developed to make floor cleaning process easier. This can be used in power plant like nuclear power plants because in that places the harmful radiations are placed and cause serious health problems. To avoiding this, we can send a robot to perform the whole operation. In colleges and other places where large floor area is present, we can use floor cleaning robot to clean that areas. In industries we required cleaning in large areas as well as small areas and both areas can be clean without need of personnel. By this we can save money and time.

VIII. CONCLUSION

There are so many cleaning and wiping robots present in the market however just some of them are moderate and monetary. There are exceptionally less robots that incorporate both cleaning and wiping. With this work, we attempted to diminish the expense of the robot and make it more viable with the Indian Users and the Industries. To additional improve the route execution of the robot, input sensors, for example, optical encoders can be incorporated. Cleaner brushes can be added to vacuum cleaning system to expand the proficiency of residue gathering. Lithium polymer batteries can be utilized to decrease the heaviness of the robot which can additionally prompt the decrease of force utilization.

REFERENCES

[1] Uman Khalid , Muhammad Faizan Baloch , Haseeb Haider , Muhammad Usman Sardar , Muhammad Faisal Khan, Abdul Basit Zia1 and Tahseen Amin Khan Qasuria Faculty of Electronic Engineering, Ghulam Ishaq Khan "Smart Floor Cleaning Robot (CLEAR)" Institute of Engineering Sciences and Technology, Pakistan Hamdard Institute of Engineering & Technology, Hamdard University, Karachi, Pakistan 2015.

[2]   Manreet Kaur, Preeti Abrol "Design and Development of Floor Cleaner Robot (Automatic and Manual) "International Journal of Computer Applications (0975 – 8887) Volume 97– No.19, July 2014.

[3]   J Frolizzi C.Disalvo. Service robots in the domestic environment: A study of Roomba vacuum in the home". In int. conference on human robot interaction HRI, PAGE 258- 265 March 2006.

[4]   Manya Jain, Pankaj Singh Rawat "Automatic Floor Cleaner" International Research Journal of Engineering and Technology (IRJET) Volume: 04 Issue: 04 | Apr -2017 eISSN: 2395 -0056 p-ISSN: 2395-0072.

[5]   Xueshan Gao, Kejie Li, Yan Wang, Guangliang Men, Dawei zhou and Koki Kikuchi. A floor cleaner robot using Swedish wheels.In IEEE international conference on robotics and biomimetics December 15-18, 2007, Sanya, China.

[6]   Yong-Joo Oh and Y. Watanabe "Development of the small robot for home floor cleaning", Proceedings of the 41st SICE Annual Conference, 5-7 Aug, SICE 2002.

[7]   H.G.T. Milinda and B.G.D.A. Madhusanka "Mud and dirt separation method for floor cleaning robot", Moratuwa Engineering Research Conference (MERCon), 29-31 May 2017,Moratuwa, Sri Lanka.