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Voice Controlled Whiteboard Duster

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Abstract

Due to tremendous growth in technologies, the blackboards have been replaced with whiteboards. As whiteboards are large in size to clean the board manually it is a very time consuming and tedious process. In this paper we have implemented the duster in order to clean the board in the desired direction with the help of voice commands. In this we will be using Arduino UNO, Bluetooth Module, L293D Driver IC, Smart phone. For implementing the voice controlled whiteboard duster. Voice Controlled Duster is a huge replacement of duster which are operated manually.

Keywords— *Voice Control, Duster, Whiteboard, Arduino UNO, L293D IC.*

I. INTRODUCTION

Education is the main reason behind the evolution of technologies. Earlier various techniques were introduced for teaching purposes such as writing on sand, slates, blackboard and in recent times on whiteboard. During erasing the blackboard, the dust is formed. While erasing the blackboard it creates severe health problems so in order to avoid this problem whiteboard came into existence. In this project, the implementation of duster Speech Recognition technique has been used. When we say voice control the 1st term to be considered is Speech Recognition i.e., making the system to understand human voice [1]. Speech Recognition is a technology to identify the commands given by humans and convert them to machine readable format. Thus with this technology speech is converted to text and operations are performed according to it. With the help of the two basic functions which are voice recognition and Bluetooth communication the robot can be used for variable purposes and application commercially and domestically as mentioned above [5]. The user will be satisfied for using this kind of whiteboard cleaning machine. [7].

II. RELATED WORK

A. Automatic Duster Machine

In this project rather than operating the duster manually they have implemented in such a way that the duster can be operated with the help of switches. In this commands to erase the whiteboard are given by the user with the help of press button. This command will be then transmitted to the microcontroller which acts as encoder then it will pass this signal through L293D engine driving IC then the driving engine will do appropriate task to move the duster forward or reverse or top or down direction and then it will send the signal to the decoder. The selection of part is most important to start this project [2].

B. Design & Fabrication of Smart Board Cleaner

In this project it is possible to erase the board section wise or partially. The board is divided into 4 sections(A, B,C&D).In the A section when we press the button with the help of smartphone the signal will pass to Bluetooth controller and this signal is passed to motor A via Arduino UNO. Motor A rotation is controlled through relay. But for forward and backward motion of duster another motor is provided with rack and pinion mechanism. It is controlled by motor driver. The duster will move forward insert pressure till mid position and returns to the original position. This is similar for B & D section. In case, duster stocks between the working, extra 4 buttons are provided for forward motion and backward motion of upper duster and lower dusters [3].

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C. A Remote Controlled Motorized White Board Cleaner.

In this project, the overall designing of the Cleaner is based on Remote which is used to control the directions of the Cleaner. However, this idea was presented as an introduction to the automation of the teaching process which will reduce the efforts of the teacher while teaching. This cleaner itself cleans with the help of a remote control mechanism which was introduced by Ogirima

III. METHODOLOGY

In this project the movement of the duster is controlled with the help of voice commands given by the user. These voice commands are then given to the duster using a smartphone through an application called Bluetooth Voice Controller [4]. Then this voice command is then converted into the text and this text is transferred to a Bluetooth module which is connected to the Arduino Board. The Arduino receives the text from Bluetooth and stores them as a string. In this we will be giving only five commands to the Arduino (Right, Left, Up, Down). The D.C supply is given to the motor driver IC –L293D. The motor driver IC (L293D) is used to control the movement of the D.C motor to move the duster in the specific direction. The motor driver IC works on the H-Bridge principle. There are two pairs of complementary transistors shown in the figure below. When one turns on the other turns off and vice versa. In D.C motor when we apply potential difference it will rotate in one direction and if we reverse the polarity it will rotate in another direction. So the easiest way to do this is with the H bridge circuit. The commands which are given by the Arduino are then executed and then the duster moves in a specific direction and clean the board.

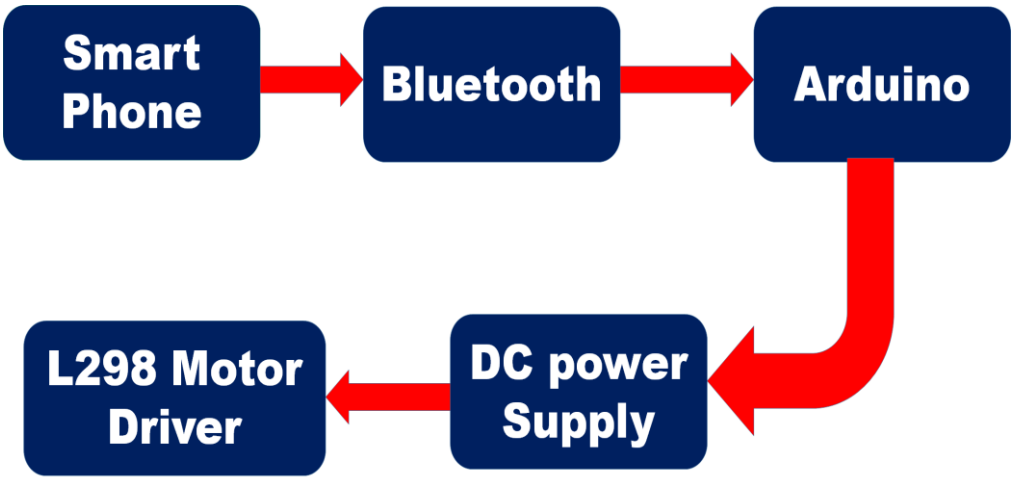

Fig.1. Block Diagram of Whiteboard Duster

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Fig. 2. Model of the Voice Controlled Whiteboard Duster

IV. CONCLUSIONS

1. The Duster will clean the entire whiteboard in the specified direction. It is more effective to clean the board rather than operating it manually. The Duster is suitable for large, medium and small situations.
2. The voice controlled duster has a simple structure, easy to operate, simple process, its control functions, high reliability, high degree of accuracy, can make products with high performance and low cost.

V. FUTURE SCOPE

1. The machine can operate with detection of ink in a whiteboard. Machine will know the location of Ink and according to it will clean it automatically.
2. Also the model can be developed for multifunctional devices.

REFERENCES

[1] K. Kannan, Dr. J. Selvakumar, paper on "ARDUINO BASED VOICE CONTROLLED ROBOT", IRJET Volume: 02 Issue: 01 |Mar-2015
[2] S. Joshibaamali, K. Geetha Priya, paper on "Automatic Duster Machine", IJETCSE, Volume 13, Issue 1-March 2015
[3] Mohan Umbarkar, Shanti Kattitharayil, Flavian Rozario, paper on "Design & Fabrication of Smart Board Cleaner", IRJET, Volume: 06 Issue: 04
[4] Mr. Vedant Chikhale, Mr. Raviraj Gharat, Ms. Shamika Gogate, Mr. Roshan Amireddy, paper on Voice Controlled Robotic System using Arduino Microcontroller, International Journal of New Technology and Research (IJNTR), ISSN: 2454-4116, Volume-3, Issue-4, April 2017, Pages 92-94
[5] 1YASIR ALI MEMON, 2 IMAADUDDIN MOTAN, 3MUHAMMAD ALI AKBAR, 4 SARMAD HAMEED, 5MOEZ UL HASAN, paper on Speech Recognition System for a Voice Controlled Robot with Real Time Obstacle Detection and Avoidance, International Journal Of Electrical, Electronics And Data Communication, ISSN: 2320-2084, Volume-4, Issue-9, Sep.-2016

ISSN: 2233-7857 IJFGCN

[6] Vineeth Teeda, K. Sujatha, Rakesh Mutukuru paper on “Robot Voice A Voice Controlled Robot using Arduino”, International Journal of Engineering and Advanced Technology (IJEAT), ISSN: 2249 – 8958, Volume-5, Issue-6, August 2016
[7] Nay yee Win war, Zaw Myo Tun "IR Controlled Automatic Whiteboard Cleaner Using Arduino", International Journal of Science, Engineering and Technology Research (IJSETR) Volume 8, Issue 6, June 2019, ISSN: 2278 -7798

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