A REVIEW PAPER ON SERVING BOT USING VOICE COMMAND

[1]Mrs. Rasika Chafle , [2]Mrs. Madhuri Ninawe, [3] Ms. Tanushri Burde, [4] Mr. Vinay Mahule,
[5]Ms. Pooja Sonule, [6]Mr. Jitendra Sharma, [7]Ms.Preeti Patil,
[1,2] Asst. Professor, [3,4,5,6,7]Student
[1,2,3,4,5,6,7] Department Of Electronics & Telecommunication Engineering
[1,2,3,4,5,6,7] Suryodaya College Of Engineering & Technology, Nagpur, India.

ABSTRACT

Now a day, the use of robot is increasing because of its ability to carry out every work more effectively and efficiently than man can do. So, one of such application of robot would be serving robot. In this paper we have tried to demonstrate a prototype at autonomous serving robot which will take a command by voice and direct you. This paper aims to prefer a automated robot to our institution for easy delivery of necessary thing from one department to other and also to guide the visitors.

Keyword: IR sensor, VR module, Line following robot

1. INTRODUCTION

Serving robot is autonomous that means it automatically follows a line which is pre-defined Generally, it follows a black line on a white surface or a white line on a black surface. Reading the pre-defined line by IR sensor array which has installed on the front-down side of the robot and sends those reading to the Arduino. The ATMega microcontroller which is built in on Arduino analyses those reading and do the particular operations. The steering mechanism used in this robot is or was quite simple.

Three wheels are used, two wheels are on the front part connected with the motors and one independent wheel on the back-middle part of the robot.
Robot as the name suggested here, it is an automated guided vehicle, which follows a visual line embedded on the floor or ceiling. Typically, the line of sight is the path the line follower robot takes and it will be a black one on a white surface but another path (white line on a black surface) is also possible. Some advanced line follower robots use invisible magnetic fields as their path.

2. LITERATURE SURVEY

There are many areas of research that could be done for a serving robot.

I. 14 April 2020

The paper by Tushit Gupta, Rohit Tripathi, Manoj K. Shukla and Shailendra Mishra, Department of Electronics and Communication Engineering, published by Research Trends on 14 April 2020, describes techniques for automating existing systems in libraries that include operations such as search, Find, select and place the book from the shelves, which will help the reader to find the book in less time and quite efficiently.
This robotic system consists of a robot that uses a LAN network with static IP to access the robot from anywhere on the premises. The robot is able to pick up the book and place it on the library counter with the help of a robotic arm.

II. By ITI-Cuttack

This article describes the work of ITI-Cuttack which formed an innovation team that developed robots in their laboratory in collaboration with SAK Robotics Lab. The two robots that have been developed are a serving robot named CO-BOT which can walk on wheel and has humanoid structure. It has hand-like structures that can hold a tray and carry food, water and medicines to and from patients.
The second, named Nigga-bot, is a tele-attendance robot that can be used for monitoring and tele-consultation by doctors who can remotely interact with the patient via live video streaming.

III. In 2017

J. Chandramohan, R. Nagarajan, K. Satishkumar, N. Ajithkumar, PA Gopinath and S. Ranjitkumar has worked with ESP8266 Wi-Fi module. He has worked with Arduino UNO and ESP8266 Wi-Fi module to control home appliance remotely. User can control it without internet but using voice commands. Attached to the robot is a voice recognition system. There is a difference between recognizing speech and speech. It depends on what kind of module to recognize and what algorithm will be applied to the robot to recognize the voice, it may not differentiate the users.

3. PROPOSED WORK

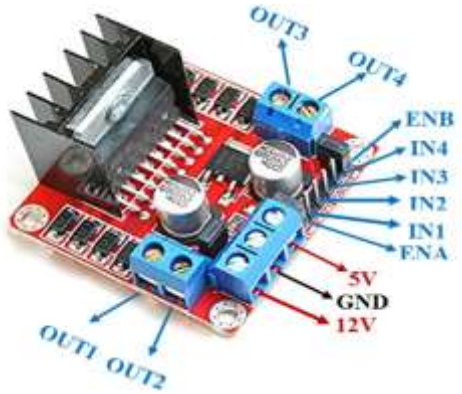
In this paper we have tried to demonstrate a prototype of Autonomous Serving Robot which will take the command by voice and direct you. The implementation is done with available resources to reduce the cost of project.

HARDWEAR :

a) Arduino Uno:

Raspberry Pi does not provide ADC (Analog Digital Converter) on its chip. This limits the Raspberry Pi if you want to use a non digital sensor. So, we are using Arduino to control every moment.

b) L298N (Motor Driver)



The L298N Motor Driver Module is a high powered motor driver module used to drive DC motors. The L298N module can control 2 DC motors with directional and speed controls. Maximum motor supply is 46 volts.

c) IR Module

The sensor consists of two diodes, one diode sends out infrared light and the other diode receives the light reflected from the surface. When infrared rays fall on a white surface, they are reflected back and when infrared light.

When it falls on the black surface, the light is absorbed by the black surface and no rays are reflected back, so the photodiode does not receive any light. This sensor measures the amount of reflected light and sends the value to the Arduino. There is a potentio-meter on the sensor, so that we can adjust the sensitivity of the sensor.

d) Voice Recognition Module

The Voice Recognition Module is a compact and easy-to-control speaking recognition board. Voice Recognition Module is a speaker-dependent voice recognition module. It supports 80 voice commands in total. Any sound can be directed as a voice command. This board has 2 control methods: serial port (full function), common input pin (part of function).

e) 12 V DC Gear motor

Geared DC motor is in fact an ordinary dc motor with metal speed reduction gears combined on purpose to scale down its rotation per minute (RPM) rate.

f) 12 V Battery supply

Rechargeable batteries are lead-lead dioxide systems. The dilute sulfuric acid is absorbed by the electrolyte separators and plates and thus becomes stable. The battery is completely sealed and they are maintenance free, leak proof. They are usable in any situation.

4. WORKING

The robot we are designing can move to four designated rooms and a base camp. We are adding many features to our robot such as, alarm system which can indicate when the robot reached the destination, obstacle sensor for accident avoidance and emergency system which activates the alarm and gives moving control to the remote device, So that the user can control the robot with the remote control to put it back in the line map.

We have used Arduino to control all activities. By using the voice recognition module, we used voice command system from which the task can be guided directly through human speech voice.

5. Advantages

a. This robot is able to follow a line
b. It is capable of taking turns of various degrees
c. Robot movement is automatic
d. Insensitive to environment factor like noise and lightning

6. Application

a. Industrial automated equipment carriers.
b. Automated cars.
c. Our guides in museums and other similar application

7. FUTURE SCOPE

This robot further can be used for surveillance and tele-consultation by doctor who can interact remotely with patient through live steaming.

This robot also can be used guiding and security surveillance.

This robot also can be implement at restaurants to serve food in hygienic way.

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