VOICE OPERATED SERVICE ROBOT

Bhargave Shubhangi Sanjay[1], Patil Aditi Sunil[2], Walve Pallavi Rajaram[3] , Dr.Ahire Dnyaneshwar D[4]

[1] *Student, Department of Electronics & Telecommunication Engineering, Savitribai Phule Pune University, India.*

[2] *Student, Department of Electronics & Telecommunication Engineering, Savitribai Phule Pune University, India.*

[3] *Student, Department of Electronics & Telecommunication Engineering, Savitribai Phule Pune University, India.*

[4] *Professor, Department of Electronics & Telecommunication Engineering, Savitribai Phule Pune University,India.*

ABSTRACT

Now-a-days Robots are very helpful in areas where there is a high risk of intrusion looking for current COVID situation this system is very useful from decontaminating hospitals and public spaces to delivery services. Robots are a game changer in pandemics to help human life, we build this system. This robotic system controlled by voice command received by android device. In this project by giving the voice command through mobile we can control the direction like left, right, back, front, start, stop. The google assistant is used to give the command to the control the direction of the robot. In this project raspberry-pi is connected to google assistant. We will also use the voice recognition module to deal with the conversion of the voice input signal to its compatible text with the android app. When instruction receivers Android drives the car to move the robot in otherside. The Arduino system is designed to move the car through the driver's circuit according to the instructions sent by the android device. We have chosen this as our project as robotics has become a big part of our daily lives. It plays a key role in the current situation and will be very helpful in the future.

Keyword: *Arduino Uno, Android application, Voice recognition module, Motor driver, GSM module, Robot.*

1.INTRODUCTION

Robotics technology can play an important role not only in helping patients but also in keeping doctors and health workers safe. With the new threat to humanity and society introduced by COVID-19, drastic measures are needed. One such measure is the use of robots in the fight against this deadly virus, which can lead to serious illness and even death. With such a high level of infection, like other technologies, the robot plays a key role in the fight against diseases such as COVID-19. Based on these technologies, the proposed solution for robot control is using a google assistant based system, as well as proximity to the problem without using a PC as a processing and conditioning unit. The google assistant based control system utilizes emerging technology. Using a google assistant, a control system is proposed that will act as an embedded system that can control electrical and other local devices using built-in input and output. Remote system allows the user to successfully control the robot with a set phone by sending commands in the form of Voice messages and receiving device status. The main idea of the project is to send the voice command and process it continuously as it is required to perform many tasks. The type of work to be done depends on the type of voice message sent. The principle on which the project is based is simple. The project is

divided into 2 phases, one google assistant and an Android system, the second phase includes a microcontroller, and motors.

1.1 Speech Recognition by Wireless Robot

It is an on-chip analog front end large scale integrated with voice analysis, speech recognition, and voice control system control processes. A voice recognition process that enables a natural and user-friendly interface to use a voice recognition module. It retrieves and analyzes ohm human voice features delivered to a machine or computer with a microphone. HM2007 is a single CMOS voice recognition module. It is an on-chip analog front end large - scale circuit integrated with voice analysis, speech control processes. It's a simple integrated control; to speak the notice board. They are speaker-based modules and support up to 80 voice commands. In this presented system, the voice recognition system is used as the optical connector to use the system. First of all, we have to provide voice commands with android smart phone that will only be with us. These commands are processes on smart phones s / w and depending on the signals are then sent to a Bluetooth wireless modem connected to the Raspberry Pi board. A small model with a robot is made. You are using the Raspberry Pi as the main hardware to use this model which works for the main user voice input. A word is used such as to insert text into text using speech depending on the text engine. The resulting text is used to process questions and retrieve relevant information. When data is downloaded, it is then converted into speech using the speech switch and the result is given to the user. In addition, some additional modules have also been used that apply to the concept of keyword matching.

1.2 Voice Activated Programmable Multipurpose Robot

Controlling machinery and the environment through speech makes human life easier and more comfortable. This project is an easy implementation of this method. The robot is controlled by voice commands. The voice command is taken through a microphone, processed on a computer and sent to a robot and finally, a robot he did it right. Speech is the most widely used way of communicating with people. We were born with the ability to speak and learn easily when we were a child and specially to communicate verbally for the rest of our lives. With the advancement of communication technology in the last days, speech is beginning to become an important interface in many systems. Instead of using a variety of mixed connectors, talking is easier to communicate with computers. applied to the concept of keyword matching.

2. SOFTWARE AND HARDWARE COMPONENT DESCRIPTION

2.1 RASPBERRY PI

The Raspberry Pi is a series of single-board credit cards compiled by the Raspberry Pi Foundation. It includes a Broadcom system on a chip containing ARM-compatible CPU and on-chip Graphics Processing Unit GPU and memory distances from 256 MB to 1GB RAM. Voice recognition software is installed on the Raspberry Pi 3 running online support. The Raspberry Pi 3 has built up Wi-Fi and fits well with the system, as internet access comes easily from the entrance5 or even the hotspot. Voice recognition software is installed on the Raspberry Pi 3 running online support. The Raspberry Pi 3 has built up Wi-Fi and fits well with the system, as internet access comes easily from the entrance5 or even the hotspot.

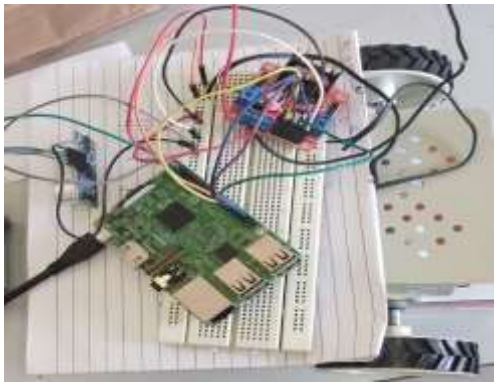

Fig-1: Raspberry pi connection with L298N

2.2 GOOGLE ASSISTANT

Google Assistant Google Voice Assistant. Provides voice command, voice search, and voice-enabled device controls, allowing you to complete multiple tasks after saying "OK Google" or "Hey Google" wake-up calls. You can ask for anything like, time, general information, etc. by simply giving a voice command.

2.3 ULTRASONIC SENSOR

The contact method between Arduino and the ultrasonic sensor HCSR04 measures the distance between the target and the actual sensor location and this can be achieved by calculating the time interval between the transmission of wave and reception of wave of the ultrasonic sensor. This module contains 4 terminal VCC, GND, trigger and eco. HC-SR04 sensor from ultrasonic. This economic sensor provides performance of 2cm to 400cm with contact accuracy up to 3mm accuracy. Each HC-SR04 module includes an ultrasonic transmitter, receiver and control circuit.

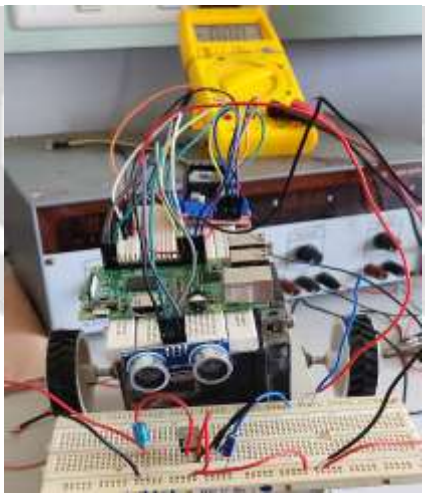

Fig-2: Ultrasonic Sensor Testing

3. ADVANTAGES

- Robots are small in size, so the space required for them is minimal.
- We can access the robot from a distance of meter as we use Wi-Fi to communicate between the robot and the server PC.
- Voice commands are transmitted and received through a wireless connection.
- Speech-enabled robots are hands-free and allow for faster data entry performance.
- The robot can understand the meaning of natural language commands.
- The cost of the program is low.

3.1 APPLICATION

- The robot is useful in places where humans find difficult to reach but humans voice reaches. E.g. In the hospital during pandemic situation, in fire situation, in highly toxic area.
- It is the one of the important stage of Humanoid Robot.
- Used in wide variety of areas such as military, home security, rescue missions, industries, medical assistance etc.
- It used in homes and for daily needs.
- It supports people with disability, executing preset commands.

4. CONCLUSIONS

This paper has briefly reviewed various robots. A number of areas where voice control robots will be useful such as hospitals, factories, mines where there is a risk to human health. Speech recognition system has a high level of visibility in a low-noise environment. This speech control program, in simple terms, demonstrates the power of using speech recognition techniques in a control app. We have the idea to design and develop a voice-driven robot that will do a different job. The method is proven in real-time performance.

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