

# Voice Controlled Automation using Raspberry-PI

Prof. Mayur Raut<sup>1</sup>, Shashikant<sup>2</sup>, Shivam Kumar Jha<sup>3</sup>, Mohit Nitin Sakhre<sup>4</sup>

<sup>1</sup>Professor E&TC Department, SIT, LONAVALA

<sup>2,3,4</sup>E&TC Department, SIT, LONAVALA

\*\*\*

**Abstract** - Frequent human interaction is the major reason for the rise in COVID-19 cases and hence there is a need for devices which can reduce human to human interaction. This paper is being developed mostly for medical purpose and also general purpose was considered. The official Raspberry Pi magazine, **Magpi**, has partnered with Google to release a hardware kit that allows users to integrate natural language voice commands through Google's Cloud Speech API as well as Google Assistant SDK. And hence using Raspberry pi we will be developing voice automation. It also detects the hand through IR SENSOR & Dispenses the sanitizer to the patient.

**Key Words:** Raspberry pi, IR Sensor, L293D, Servo Motor, Python

## 1.INTRODUCTION

The paper is based on the design and application of speech-to-text and text-to-speech conversion by google cloud console on Raspberry Pi (credit card sized single board computer) as the hardware. Overcoming the barrier between old people and modern days technology, it will give access to the people who cannot learn the computers and mobile. Also, it can be used as a personal assistance which stores the information and data regarding your work. Using Raspberry Pi we also have the access to camera module, which can be used as camcorder for real time analysis.

Language processing algorithms, voice recognition and voice synthesis are used by voice controllers to listen to specific voice commands and returning the relevant information or perform specific functions as specified by the user.

### 1.1. Hardware Requirements

- Raspberry Pi 3B+



Fig -1: Raspberry Pi 3B+

### Specifications

- ❖ CPU: Quad-core 64-bit ARM Cortex A53 clocked at 1.2 GHz
- ❖ GPU: 400MHz Video-Core IV multimedia
- ❖ Memory: 1GB LPDDR2-900 SDRAM
- ❖ Network: 10/100Mbps Ethernet and 802.11n Wireless LAN

- Motor Driver Circuit (L293D IC Board)



Fig -2: L293D

### Specifications

- ❖ L293D is a 16-pin IC which can control a set of two DC motors simultaneously in any direction.
- ❖ Speed and direction control
- IR Sensor

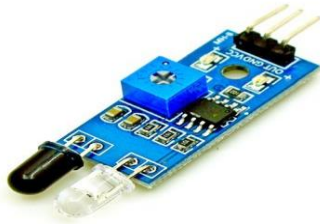


Fig -3: IR Sensor

**Specification**

- ❖ Operating Voltage: 3.0V – 5.0V
- ❖ Detection range: 2cm – 30cm (Adjustable using potentiometer)
- ❖ Current Consumption: at 3.3V: ~23 mA, at 5.0V: ~43 mA
- Servo Motor



Fig -4: Servo Motor

**Specifications**

- ❖ Rotates with great precision
- ❖ It can operate on both AC as well as DC
- ❖ It has motor coupled to a sensor for position feedback.
- USB Mic
- Speaker
- Hand Sanitizer container
- DC Motors
- Robotic Chassis
- Connecting Cable
- Robotic Wheel
- Battery Power

**1.2 Software Requirements**

- Raspbian Jessie: It is the official OS for Raspberry Pi. It is a full desktop operating system where you can perform lots of tasks just like any PC, as compared to Windows 10 IoT.
- Python Shell: Python Shell is also known as REPL (Read, Evaluate, Print, Loop), where these four operations are performed in order.
- Google Cloud Console: This will help us in performing basic storage management tasks with our data using a browser.
- Eagle for PCB Making

**2. DIAGRAMS**

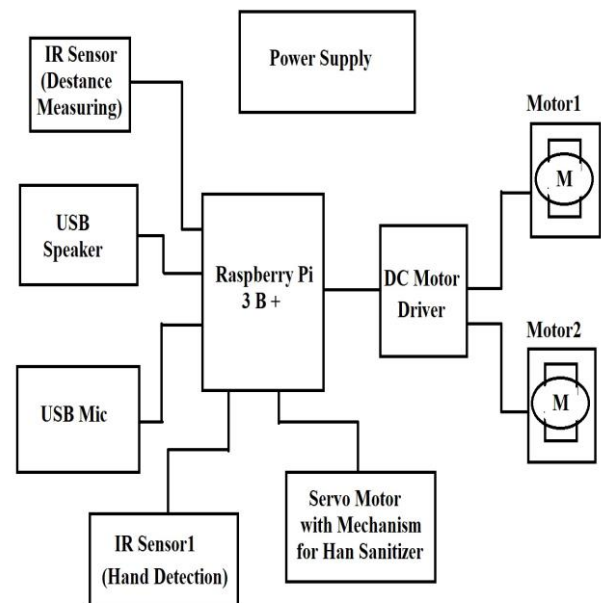


Fig -1: Block Diagram

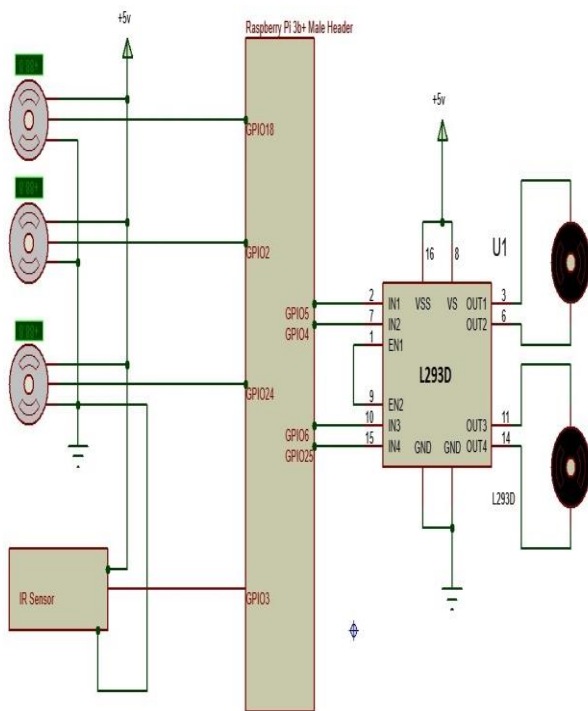


Fig -2: Circuit Diagram

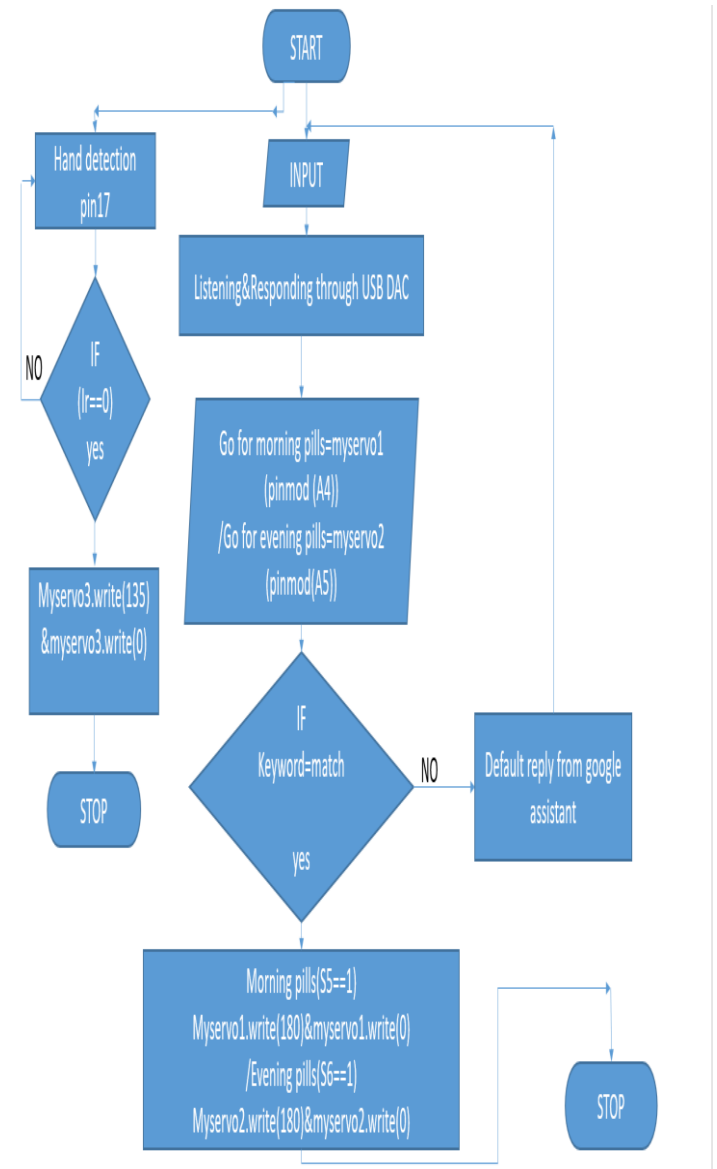


Fig -4: Flow Chart2

### FLOWCHART 1

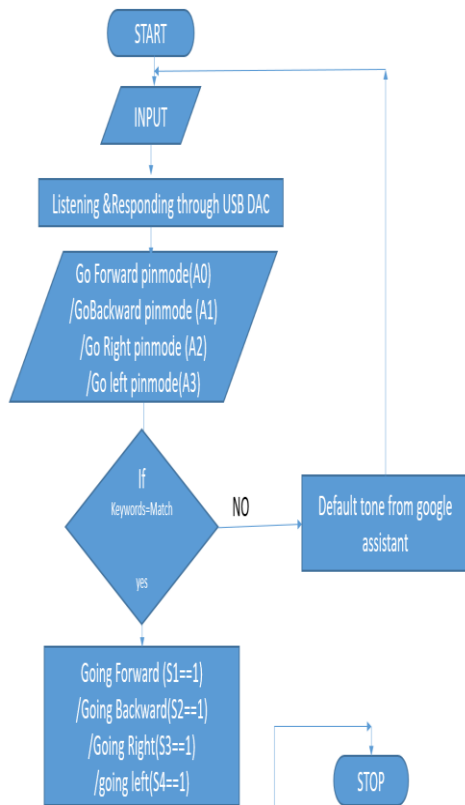


Fig -3: Flow Chart1

### 3. APPLICATIONS

- Automatic Hand Sanitizer
- Provide medicine to patient to avoid contact
- It can also be further used as commands and control of appliance and equipment. Useful in places where humans find it difficult to reach but human voice can reach like in fire situations, in highly toxic areas, etc.

### 4. FUTURE SCOPE

- Using a long-ranged module, for advancements in this research work, will result in connectivity with

the robot for long distances and as a result overcome its limitation.

- This project mainly concentrates on one of the most significant parameters of today's technology i.e., voice assistant where you can connect with the cloud console and stores information.
- Sleep and Wakeup schedules can be incorporated for power optimization.
- Best for handicapped patient who can rely on this assistant as there is very less chance of remembering medicines. The voice-controlled assistant will reply instantly by giving order.

## 5. CONCLUSIONS

This paper provides medical assistance to the patients in hospitals and also acts as general-purpose robot having information as well as entertainment.

## REFERENCES

- [1] Chunjie Chen, Xinyu Wu, Long Han, Yongsheng Ou, "Butler Robot,"-IEEE International Conference on Information and Automation, pp. 731-737, June 2011
- [2] Mr. Vedant Chikhale, Mr. Raviraj Gharat, Ms. Shamika Gogate, Mr. Roshan Amireddy "Voice Controlled Robotic System using Arduino Microcontroller" IJNTR Volume-3, Issue-4 pp. 92-94 April 2017
- [3] "VOICE CONTROLLED ROBOTIC VEHICLE" IRJET Volume: 04 Issue: 06 pp.191 June-2017
- [4] K. Kannan<sup>1</sup>, Dr. J. Selvakumar<sup>2</sup> "ARDUINO BASED VOICE CONTROLLED ROBOT" IRJET Volume: 02 Issue: 01 pp.49 Mar-2015.