# Voice Controlled Machineries in Agricultural Field Using Raspberry Pi

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**Abstract -** *Voice Controlled Machineries using Raspberry Pi 3 is the project which will be very useful for farmers. It is the idea which corresponds to the automation and technology. The main goal of this project is to make life easier. Smart phone devices are very common among everyone due to its user friendly interface and portability features. In this project we aim to control agricultural machineries by android voice commands using Wi-Fi as communication protocol between Raspberry Pi 3 and Android device. This system will allow certain people to live a life with less dependence on workers who require for farming. Speech recognition technology is a key technology which will provide a novel way of human interaction with machine or tools. Raspberry Pi 3 becomes a better option for automation in agriculture via internet due to its feature of inbuilt Wi-Fi.*
*Key Words*: **Android, Raspberry Pi 3, Relay module, Voice, Wi-Fi.**

## 1. INTRODUCTION

In day to day life automation can play a major role. Automation makes thing simple. IoT is a network of devices such as electrical appliances for connectivity which enables these devices to connect and exchange data. This project gives a flexible way to control devices. In this project we are working on an android application where a user will give voice commands for controlling devices such as "On the Motor" and "Off the Motor" which will be connected to raspberry pi 3 and according to it the required process will work via cloud ThingSpeak.

In this paper[1], The main attraction of any automated system is reducing human labor, efforts, time and errors due to human negligence. A Raspberry Pi 3 is a credit card-sized computer which can be used for developing various applications. This project is totally based on Internet of Things (IoT).

In this paper[2], A Voice Command System essentially means a system that processes voice as an input, decodes or understands the meaning of that input processes it and generates an appropriate voice as an output.

## 2. LITERATURE SURVEY

**Table -1**: Literature Survey Overview

| Sr. No. | Title | Technology used | Remark |
|---|---|---|---|
| 1. | Voice Based Home Automation System Using Raspberry Pi | Google Voice, Speech API's, Raspberry Pi | Android devices are used to give input as a voice command to Raspberry Pi. |
| 2. | An Intelligent Virtual Assistant Using Raspberry Pi | Raspberry Pi | Speech to text conversion, query processing, Text to speech conversion. |
| 3. | Raspberry Pi Based Voice Controlled Home Automation System | Voice recognition | Raspberry Pi 3 is used to control the illumination of light based on the input given from the microphone |
| 4. | Controlled Wheel Chair System | Arduino UNO Micro-controller, HC-05 Bluetooth Module | Arduino UNO and Bluetooth Device is used to make connection between the wheelchair and android phone . |
| 5. | Voice Controlled Home Automation Using Raspberry Pi 3 | software used Google Voice and Speech API's. | The voice command from user is captured by the microphone. The system is more user friendly and increase the automation |

In this paper[3], Raspberry Pi 3 enables people of all ages to explore computing, learn programming languages like Python and can be used for many tasks that a computer does, like games, browsing internet, word processing, spreadsheets.

In this paper[4], It gives idea about a wheelchair which can be controlled only by using the android application and user's voice also. In this paper, Ardiuno kit (Atmega 328) is used as controller to control the movement of wheelchair based on the human voice as an input.

In this paper[5], shown the design and features of a Voice Control Home Automation System. It is internet based, hence wireless and low cost. This system has main feature for smart speech detection, which would decode user's voice into appropriate commands. The system increases the automation.

## 3. SYSTEM ARCHITECTURE

Architecture of system gives overall idea of the project and how system components are connected to each other and perform there role of work in this project. Raspberry pi 3 is main technology used in this project. A 5v power supply is provided and passed through regulator so that it can be converted to 3.3v and provided to raspberry pi 3. The input given as voice command to android device which is connected to raspberry pi 3 and the output from raspberry pi 3 is given to relay switch. Relay switch is connected to motor which does the main function of switching on/off.
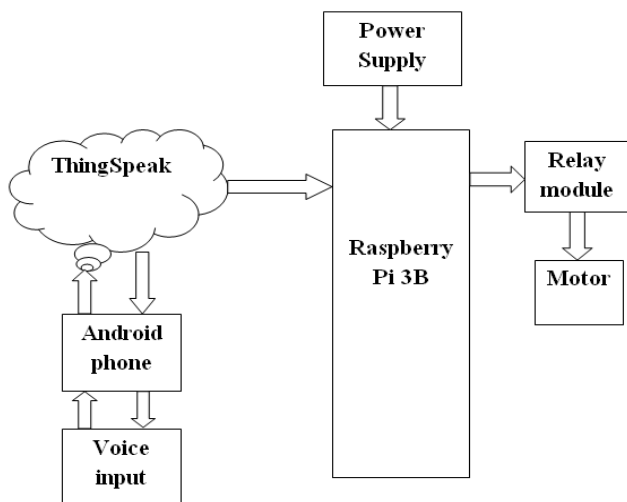


**Fig -1**: System Architecture

## 4. Expected Result:

1.When voice command is given as "On the motor", then the data in the field becomes 1.

2.When voice command is given as "Off the motor", then the data in the field becomes 0.
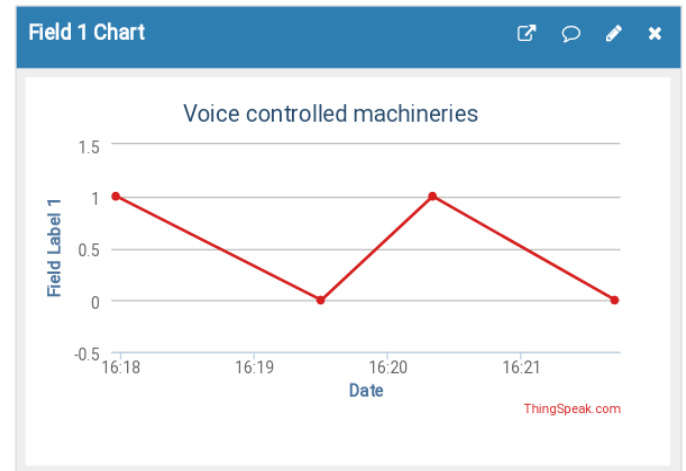


**Chart -1**: Expected Result

## 5. TECHNOLOGY USED

The technologies used can be specified as:

A) Raspberry Pi 3: The main technology is Raspberry Pi 3 it is a mini sized computer in which main programming of automation is done using the python language on an open source operating system Windows.

B) ThingSpeak: It is an open-source application of Internet of Things and API to store and retrieve data from things using the internet. This automation can be used majorly not only in agriculture but home, offices and hospitals also user can register and authenticate himself/herself in android device and after login can give the input commands and operate the devices. It also provides security from third party users. Python is used as the main programming language provided by Raspberry Pi 3. This system requires micro SD card with an OS (Raspbian) for Raspberry Pi. Using this we can say a regular farm is converted to smart farm.

## 6. CONCLUSIONS

In this proposed system Raspberry Pi 3 based system is used for voice controlled machineries, which introduces innovative idea for automation in agriculture industry to help farmers. Also it reduces manpower which is also a major concern because of less availability of workers in rural area.

## 7. FUTURE SCOPE

The future scope of this project:

Robotics is playing a vital role in agricultural production and management. There is a need for autonomous and time saving technology in agriculture to have efficient management of farm.

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