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# IOT Based Voice Controlling Lab Using RPI

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**ABSTRACT:** Voice Based Lab Computerization Framework utilizing Raspberry Pi is the task which will be exceptionally helpful for advanced age individuals and debilitated individuals, essentially for one's who can't perform fundamental exercises productively. It is the thought which compares to the new time of mechanization and innovation. The primary point of the Lab computerization framework is to make life more straightforward. Cell phones are extremely normal among everybody because of its easy to understand connection point and compactness highlights. In this venture we mean to control electrical Lab machines by voice orders involving Wi-Fi as correspondence convention between Raspberry Pi and electronic gadget. Raspberry Pi 3 improves as a possibility for Lab Robotization. IOT means internet of things is an technology that allows us to control hardware devices through the web or internet. Here we propose to use IOT in order to control Lab appliances, This system uses to demonstrate as Lab lighting and a fan. Our user friendly interface allows a user to easily control these Lab appliances through the internet. If you can't turn on and off the light and fan with the help of your voice, then in that case you will control the web command with the help of mobile

**KEYWORDS:** Raspberry Pi, Lab Automation, Web, Voice.

## I. INTRODUCTION

IoT plays a fundamental capability in the life and way of life of every individual before long. IoT makes the assignment of human more straightforward

furthermore, more advantageous. Surrounding us can be constrained by a tick, and the control is under human hands. Only a single tick can complete an enormous number of measures. Remote access and control of each and every contraption in Lab, for example, light, fan, refrigerator, television, Cooling Framework is conceivable from cell phone, versatile or PC. This decreases energy use significantly and works on inside wellbeing and gives a superior climate in which to live. Lab Robotization is quite possibly of the greatest developing area which can change the manner in which individuals live. The voice controlled Lab robotization framework helps with the activity of electrical gear using voice orders.

The Lab will turn out to be increasingly more self controlled and mechanized because of the solace it gives, particularly when utilized in a confidential Lab. With progression of Computerization innovation, life is getting more straightforward also, more straightforward in all angles. In this day and age there are heaps of web clients has made it as a piece of life. Likewise IOT is the most recent and arising web innovation that can share data and complete assignments while you are occupied with other exercises. Web of Things is an idea where every gadget is appoint to an IP address and through that IP address anybody makes that gadget recognizable on web. IOT is having the potential to change the way of life of people groups. In day the present life, individuals incline toward a greater amount of programmed frameworks as opposed to any manual frameworks. Remote Lab security and Lab computerization are the double parts of this task. The

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right now assembled model of the framework sends alarms to the proprietor over voice calls utilizing the Web assuming any kind of human development is detected close the entry of his Lab and raises an alert alternatively upon the client's carefulness. Then again if that's what the proprietor distinguishes the individual going into his Lab isn't an interloper however an startling visitor of his then as opposed to setting off the security alert, the client/proprietor can make game plans.

## II. RELATED WORK

Reference paper [1], The Lab Robotization Framework is finished by Arduino Uno microcontroller and for the network to cell phone HC-05 Bluetooth module is utilized. Another technology which is in this undertaking is normal language handling which assists with controlling gadgets. Voice controlled Lab Computerization Framework impacts the force of Arduino to give a full voice-controlled mechanization framework. With the assistance of NLP and the different equipment in cell phone, it sends voice to be utilized for controlling electrical gadgets.

Reference paper [2], Robotization Framework in light of ATmega328P by Arduino Uno. Different Sensors are utilized like Temperature Sensor (LM35), LPG Sensor (MQ5) which detects any spillages of LPG gases and Dampness Sensor (DHT11) which detects moistness additionally weather conditions detecting is conceivable. Bluetooth module is utilized for network HC-05 module. The voice control framework can be carried out with exactness in voice acknowledgment and better pitching examination. More gadgets can be reproduced and clock could be set for programmed activity.

Reference paper [3], Lab Robotization is finished by voice acknowledgment contribution to the raspberry pi. Voice order is given by the mic and a webcam is utilized as an information. The client could set a specific watchword which is provided with the proper order for yield. The man-made intelligence present in the equipment will considerably request that the client talk the order after the catchphrase and will execute the order with sound affirmation.

Reference paper [4], Lab Robotization is finished by the raspberry pi by correspondence convention zigbee and Worldwide Framework for Portable Correspondence (GSM). Zigbee contains too low data transmission and GSM as relatively high transfer speed. It is relying upon Fringe Connection point Regulator (PIC) which 8 cycle microcontroller.

Reference paper [5], Lab Mechanization framework is constrained by Arduino with the principal rationale of giving a simpler life to deadened individuals. It utilizes Voice Acknowledgment module V3 and receiver. The distinguished voice order does framework to switch the transfer and steer engine because of which raise lifts the bed or carry back bed to bring down height point, switch on out the lights and sound the ringer when debilitated individual need assistance.

## III. SYSTEM ARCHITECTURE

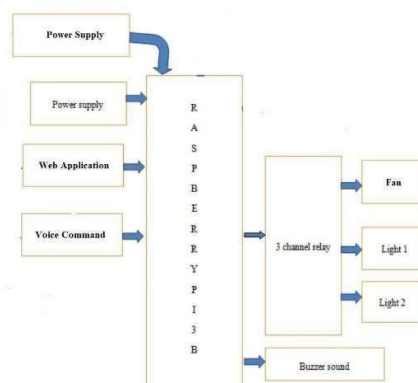


Fig: - System Architecture

The proposed system includes a voice-controlled system that will enable users to control basic level Lab automation. The system includes a Raspberry Pi whose GPIO pins will be used to transfer signals to a controller based on voice commands filtered by the Raspberry Pi's module.

The system architecture gives overall flow of the project and how system components are connected to each other and perform their role of work in this project. Raspberry pi 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. The voice command is given as input

Relay switch is connected to electronic device which does the main function of switching on/off.



#### IV. OBJECTIVES

To control light automatic via Remote to replace with it  
To useful for handling equipments  
To device handle all voice based command for ON/OFF

#### V. ADVANTAGES

Managing all of your lab devices from one place.  
Maximizing lab security  
Remote control of lab functions.  
Improved appliance functionality.  
Lab management insights.

#### VI. CONCLUSION

In this paper we covers most important feature, in which it could provide the complete smart Lab environment. The voice-controlled Lab automation using Raspberry Pi is projected for the easy use and control of electronic devices by old age and disabled people. This project provides a basic system of Lab automation which can be easily implemented and used effectively. This system allow user to take decisions and to regulate the Lab appliances with the help of an web based application , thus making one's life comfortable.

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