# IoT Based Voice Controlled Multitasking System for Home

**G. Bhaskar Phani Ram, C. Mounika**

*Abstract: Internet of Things is a rising innovation that makes our world more astute. In recent years, there has been immense development in the realm of insightful gadgets for home mechanization. Such contraptions are planned so as to facilitate communication among individuals and everyday home obligations. This paper exhibits a voice-controlled smart home with multi-functions using ESP32 as the wireless choice. Voice control (using human voice to control any load like light, fan, ac, geyser, motor etc.). The voice-commands are recognized by a dedicated hardware module and the recognized data is sent to database using ESP32. On the accepting unit, raspberry pi peruses the information from the database and deciphers the directions verbally expressed by the client and controls the family unit apparatuses.*

*Index terms: Rasberrypi3, Esp32, MQ-32 Sensor, PIR Sensor, Flame sensor, GSM, GPS, Firebase, Relay, voice module..*

## I. INTRODUCTION

Automation assumes a key job in human life. Home Automation enables us to control gadgets, for example, light, entryway, fan, cooling, and so forth. It likewise gives security to the home and a crisis framework to initiate. Home computerization isn't just about lessening human exertion; it's additionally about vitality effectiveness and time investment funds. The fundamental objective of mechanization and home security is to help individuals with incapacities and the old will's identity ready to control gadgets and caution.

A voice-initiated remote sense home framework for the older and debilitated has been presented. The idea of the control of gadgets utilizing the human voice is intriguing. The proposed framework has two principle parts:

(a) Voice acknowledgment framework

(b) Remote framework. This gadget control framework utilizes a voice-initiated Android application. By expanding the utilization of (PCs), the Internet, cell phones and remote innovation, it encourages remote access and control of gadgets by the client.

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## II. LITERATURE SURVEY

The author "Mohamed S. Musbah" adopts client and server mode and is designed to control home appliances using voice recognition technology. The system consisting of 3 main different components

1. Front End client gadget: this can be any cell phone, for example, a workstation or cell phone, with a decent receiver and discourse acknowledgment work. The gadget utilized in these Windows 7 PCs that contains the incorporated Windows 7 Speech Recantation programming.
2. Home Server: this can be any workstation or PC with a WiFi connector and a Windows working framework.
3. End user device: consisting Of two sections, Arduino Uno to process approaching requests and individual gadgets.

The gadget considered in this article is a DC fan and LEDs. The front-end gadget contains predominantly two voice directions, specifically to begin tuning in to the home server by means of a specially appointed remote association. The host server, thusly, perceives the association and gets directions from the front while opening an association with the microcontroller and afterward transmits the order. Presently Arduino uno actualizes the directions that are offered by the objective gadget.
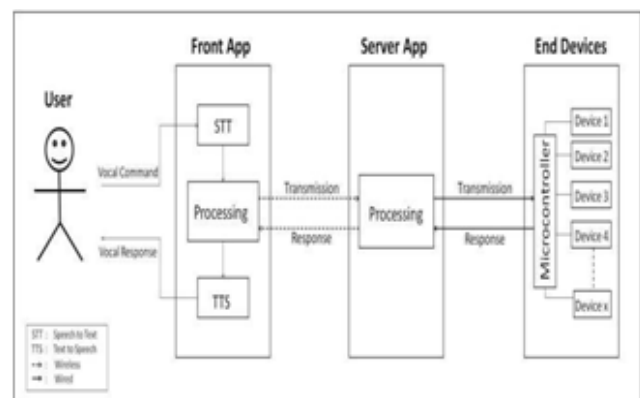


**Fig. 1.** *Block Diagram of existing system*

## III. PROPOSED SYSTEM

The main purpose of this paper is to make a perfect system for elderly people at home and visually able people. Generally, The examination into home mechanization has concentrated on some needs, for example, applications that offer extravagance and savvy prerequisites, and so forth our framework is a computerized framework that can acknowledge to direct commands and process them.

The system provides us facility to turnoff any device ON/OFF.

## IV. METHODOLOGY AND IMPLEMENTATION
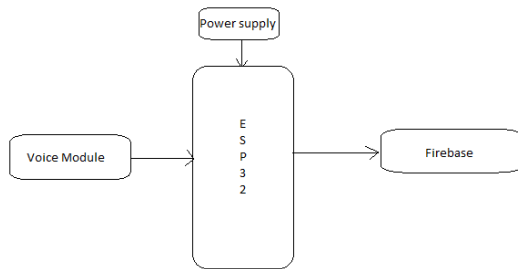
### A. Hardware Architecture:



**Fig. 2. Block Diagram of Transmitter**

The transmitter section of this project is shown in the above diagram. It is having a voice module, power supply module, and ESP32.
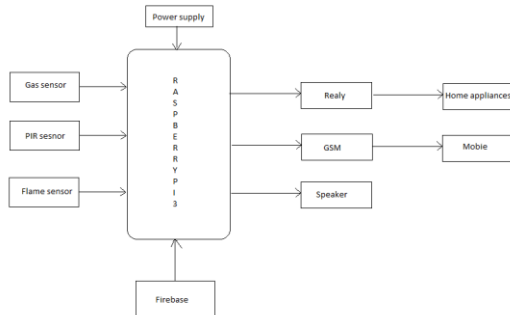


**Fig. 3. Block Diagram of Receiver**

Above block, diagrams describe the Wireless voice-controlled smart Home system. ESP32 Module will take voice from the person then Tx to the Raspberry pi3 module, Module will controlled Home appliances based on the voice commands which are coming from ESP32 module. We can control Fan, lights, and doors using voice commands and we can give an SMS alert when any fire or gas leakages will happen. And Through speaker alert will intimated.

### B. Algorithm and flowchart

**Step 1:** Power Supply to the Raspberry Pi3 and ESP32 boar.

**Step 2**: Initialization of GPIO Port for PI, sensors and Hardware

   **Step 3:** Read the sensor data from Raspberry pi.

   **Step 4:** Display the sensor measured data.

**Step 5:** from ESP32 Read the Voice commands then transmit to Raspberry pi3.

**Step 6**: Control home appliances like lights and Fan using these commands.

**Step 7:** gives a SMS Alert when any sensor value reaches greater than the threshold value.

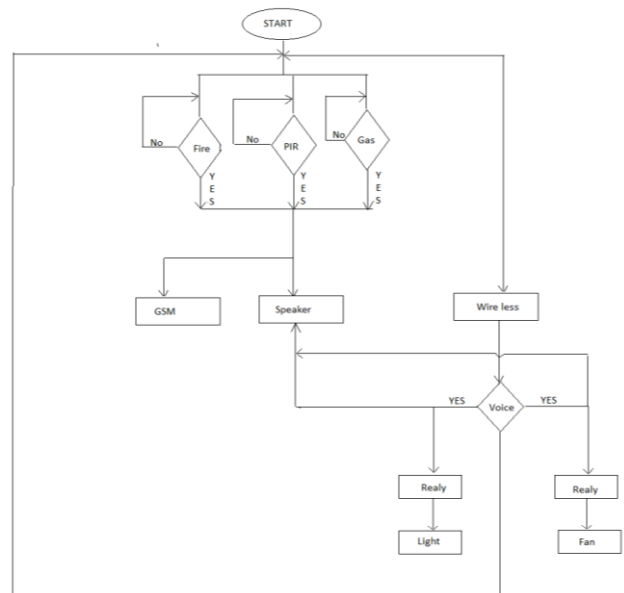   **Step 8:** until system stop by the user this process repeats.

**Flow Chart**



**Fig. 4. Flowchart**

*Software requirements*
- Raspbian operating system
- Languages – python, Arduino crypt

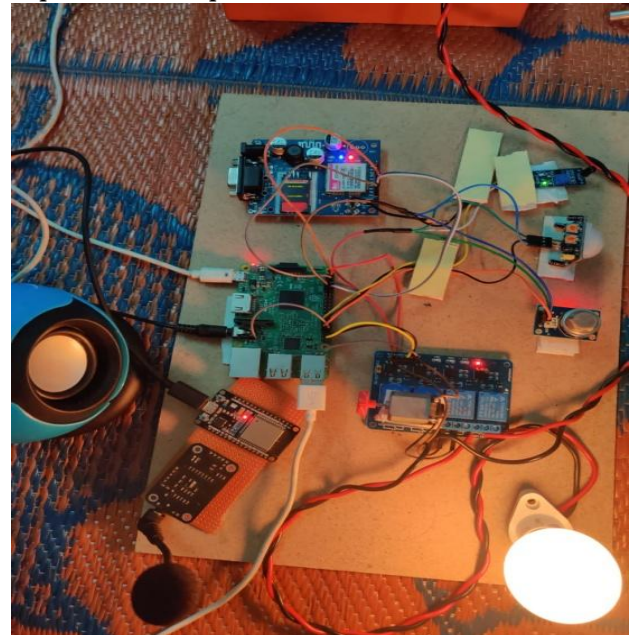## V. RESULT AND DISCUSSION

*Experimental setup:*



**Fig. 5. Hardware setup**

The above showed photo is the experimental setup of this project each and every component used is tested separately. This is the final setup of this project.
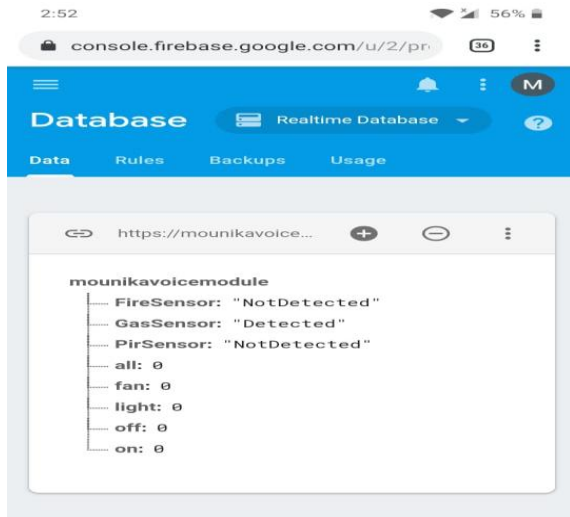
**Fig. 6.** *Firebase Project creation*
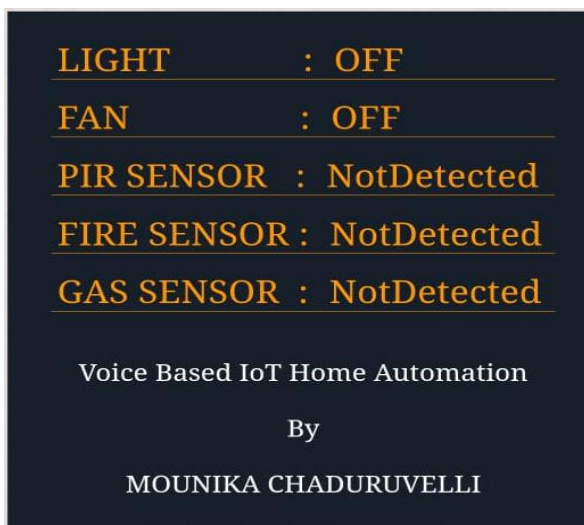


**Fig. 9. Fire sensor status in Firebase**



**Fig. 7.** *Sensor status in firebase*
*When no sensor data detected*



**Fig. 10.** *PIR sensor status in Firebase*



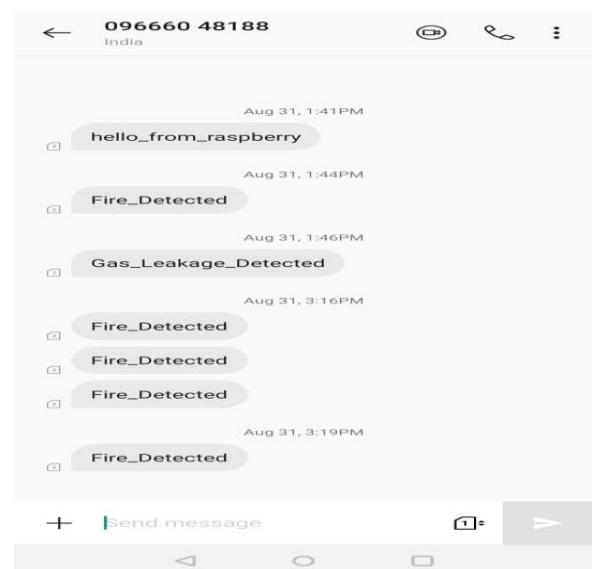**Fig. 8.** *when Gas sensor detected in firebase*



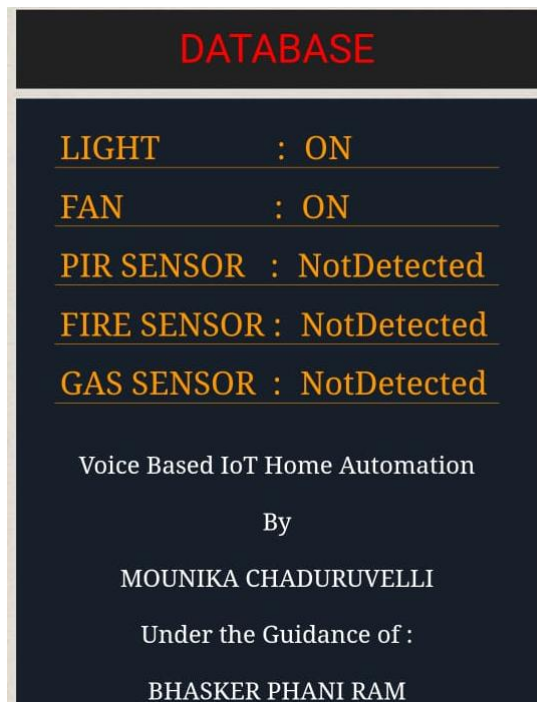**Fig. 11.** *SMS alert when status changes in firebase*

**Fig. 12.** *Using Voice commands Light and fan Enabling*

## VI. CONCLUSION

This paper proposes a Raspberry pi based wireless voice controlled home automation system for elderly people and physically disabled persons. This system consists of a wireless technology with ESP32 which will send the commands to the receiver side using the IoT. A wireless Voice recognition module V3 is used for the voice-recognition. The remaining parts of the system focus on the multifunction's that the system capable of.The multiple functions of the system includes turning ON/OFF the lights, Fan, AC, etc. If there is any smoke detection, gas leakage is present then the system will warn the people and it will send the message through the GSM. The entire system will be implemented based on the smart home technology for future generations. Including some the minor things to this system it will become more efficient.

## VII. FUTURE SCOPE

The above system is effective enough for the users but there is no ending for the technology so our idea of future scope includes as follows: Adding the confirmation commands to the voice recognition module. If we replace the voice command with the sensors for lights, fans, it will be more efficient and easy to operate. We can also add automatic water sprinkling system in case of fire accident in the houses when the sensor detects the fire. For the security purpose we can develop the fingerprint sensor to access the home. With these improvements to this system it will become 100% smart home management system.

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