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## **Interaction IOT- Based Speech - Controlled Home Automation System**

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### **ABSTRACT**

Globally, the use of modern technology for home automation along side its benefits continues to grow. Although several home automation systems have been implemented, there is still a huge need for efficient approach to assist home owners to perform smart home automation that will ensure convenience, good control, safety and savings for them. This paper presents the development of an interactive Internet of Things (IoT) based Speech-Controlled Home Automation system using Google Assistant, which is an interactive home automation, or commonly known as smart house system.

Keywords-- Internet of Things (IoT)

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### **Introduction**

As the uses of technology in different human endeavors continue to be applauded because their contribution to improved efficiency, the acceptability of home automation continues to increase. With technology being so enhanced and smart services being of popular use, people have become more comfortable and their expectations have changed. Lately, humans became more interested in the use of technology using touch of one button or even using speech via their smart phone or smart devices to ensure convenience, good control, safety and savings. This can however be connected to the fact that we live in an era dominated by modern technology, more precisely hardware automation. Automation is known as the technology by which a process or procedure is performed with minimal human assistance, while home automation in its simplest definition is a building automation for a home. The system can be used to control most of the home electronics with examples such as the lighting, room temperature (heating ventilation and air conditioning), entertainment systems and security features such as access control and alarm systems. Although the electricity usage cost in the homes can be reduced by turning off the home appliances manually when not used, safety, convenience and ease of control might sometimes be difficult for people such as the elders.

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## **II. Literature Survey**

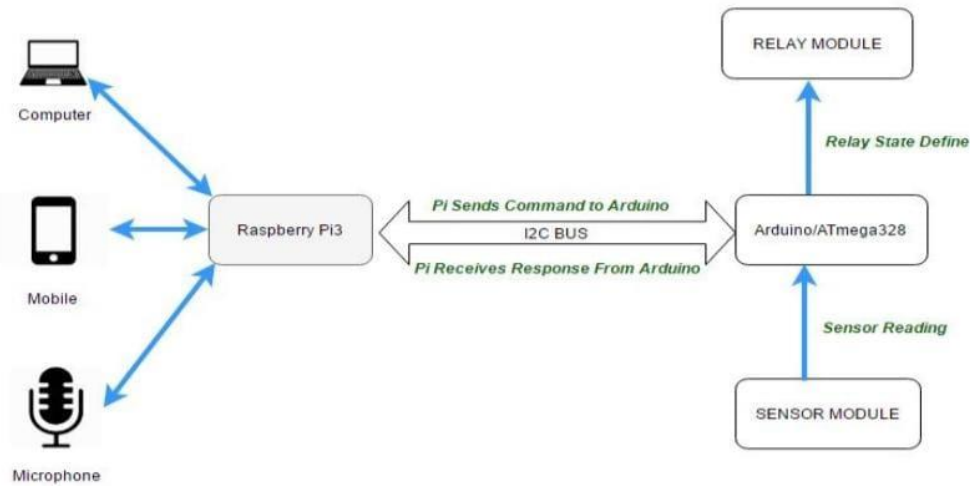
Authors: Dheeraj Kumar, Swati Singh and Neha Singh

In this paper, a very low cost cell phone based, reliable and flexible home automation system is implemented. Appliances are connected to the microcontroller where a Bluetooth module is also implemented. The communication between the cell phone and microcontroller is wireless. Bluetooth technology is used widely across the globe because of its secure and reliable data transmission technique Bluetooth uses a short- range ratio to transmit data over a speed of up to 2.4GHz. Project's main focus is to control home appliances using Bluetooth. An AVR ATMEGA8 microcontroller is used for handling the process which is of 28 pin architecture. The Advantage of using Bluetooth is that it is fast, reliable, cheap, easy to use & handle and has low energy consumption rate.

### **Disadvantages:**

- If the phone doesn't have Bluetooth the user cannot access the network.
- The Bluetooth has small range of coverage area so it makes the user bounded and cannot be used outside the coverage area.

### III. Block Diagram



**Fig 1: Block Diagram**

simple block diagram of the system. The diagram depicts basic connection and data flow across the system. In my system the Arduino which contains a microcontroller (ATmega328) hosts the relay module which has 10 channels and the sensor module. The sensor module contains three different sensors to sense the environment of the home those are Temperature sensor, Ambient light sensor and flame sensor. The microcontroller drives and controls these components, like switching the state of relay and reading the values from the sensors. Now the Arduino is connected to the Raspberry Pi3 a SCC via I2C bus.

### IV. Advantages

- Lighting control.
- Lawn/Gardening management.
- Smart Home Appliances.
- Improved Home safety and security.

### V. Applications

- Homes
- Hospitals
- Hotals
- Restorents

### VI. Conclusion

An interactive Internet of Things (IoT) based Speech Controlled Home Automation system using Google Assistant, has been implemented in this paper. The proposed system enabled users to control their home electrical appliances remotely with voice-based speech recognition through a mobile devices using a Google infrastructure known as Google Assistant. The proposed home automation system for the home electrical appliances such as lighting, heating, air conditioning and security provides financial savings, safety, convenience and ease of control. Experimental studies conducted on the proposed voice controlled home automation system using different scenarios such as noisy versus quiet environments, empty versus fully furnished room, distance and room sizes achieved the maximum performance of 100% accuracy rates in some of the investigated scenarios. In the future, the use of commands based on South Africa native languages shall be investigated for voice controlled home automation.

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