



# International Journal of Innovative Research in Computer and Communication Engineering

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## Smart Home Using Google Assistant

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**ABSTRACT:** Now a day's technology becomes ever more invasive, the design challenges in home automation are increasingly apparent. Seamless controlling home, monitoring and programming by the end user have yet to enter the mainstream. This could be legitimate to the challenge of developing a fully independent and extensible home system that can support devices and technologies of differing functionalities and protocols. This paper describes how to control and monitor home appliances using android application over internet. There are number of commercial home automation systems available in market. However, these are designed for limited use. Therefore, home appliances can individually be controlled both from within the home and remotely. This is very helpful to physically challenged people. In the proposed system we have worked on Getting the notification on our phone whenever anyone secretly enters into the room. The practical goal of this paper has been to create a virtual, but practically usable, android home automation system. The android mobile is used to send the commands to the Arduino to control all the home appliances. The main feature of this system is to control IOT based air quality monitoring by dust sensor.

### I. INTRODUCTION

A typical home automation system enables one to control household appliances from a centralized control unit. These appliances include lights, air conditioners, electronic doors and fans. Such appliances must be configured to be compatible with the other devices inclusive control unit for most commercially available home automation system. Various smart home systems have been developed where the control is through Bluetooth [1-3], internet [4-7], Android applications [8-11] and short message services (SMS) based . Bluetooth competence is good and most of current technology gadgets have built-in adaptor that will reduce the system's cost. However, the system limits the control to within Bluetooth range of the environment. This work demonstrates a system that can turn on and off the building's electrical appliances which control wirelessly from a Wi-Fi enable device such as mobile phone. Meanwhile, desktop PC acts as the server. Therefore, the installation cost and hardware cost is reduced as most users already own a mobile phone and desktop PC. Smart homes are equipped with technologically advanced systems for various pre-programmed function such as lighting, controlling and many other operations. The system is proposed to create a smart environment by switching on and off the target devices by Wireless-Fidelity (Wi-Fi). Home occupants might forget to switch off the devices when he/she left for work or anywhere else. Users also may not be aware of the conditions of devices at home which may lead to electrical hazards. Conventional switches at our home right now also introduces difficulties to elder and disable people as switches are places in different places while this group of people may not move freely. The system is designed to improve home comfort through automation domestic tasks by providing easier communication and higher security. The objective of this work is to increase the house safeness by providing monitoring system and improve the quality of domestic life by using the control button of the targeted devices. The scope of the work is to develop a monitoring system by using Raspberry Pi which acts as an interface between user and the devices. Live picture can be viewed by any web browser through pi-camera. The pi is a low cost microcomputer that is able to run on Linux and can give endless extension possibilities. The work concentrates on an automation system design through centralized control unit that will avoid electrical hazard problems. The system is design to achieve a simple and user friendly interface. Therefore, the system should not depend on manual initialization. The work require a very low energy consumption, whereby the Raspberry Pi operates with 5V power and the lamps only require less than 3V that eventually can save more electric power and easy to carry due to the compact design. The Raspberry Pi, has not consists any radio transmission which may require high power radiated that will harmful to human body.

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## II. MOTIVATION

- To enhance the standard of living
- This enables the end user hassle-free interaction with the appliances
- People have been building their own ideal home over the last years. Then, why is this still a “future” topic?

## III. OBJECTIVES

- In the proposed system we have worked on the giving the facility to control the devices through google assistant
- Monitoring the sensors data on your smart phone
- Getting the notification on our phone whenever anyone secretly enters into the room
- IOT based air quality monitoring by dust sensor

## IV. LITERATURE REVIEW

Many Authors designed home automation systems by using different technologies. By using GSM based home automation System we need to send message/make a call to control home appliances[14]. It has more time delay and complex system. By using Bluetooth home automation system also we can control all the home appliances. But the main disadvantage is Range[9,12]. Some authors designed home automation using Wi-Fi. But in those designs they implemented only ON/OFF functionalities. In our design we implemented ON/OFF functionality and all the home appliances are controlled by using android application, we also get notification on phone.

## V. PROPOSED SYSTEM

System Provide a more user-friendly interaction. Through this system various issue are solved like sending notification. We are providing the data monitoring system so you can control the sensors data very simple and provide interaction with google assistant.

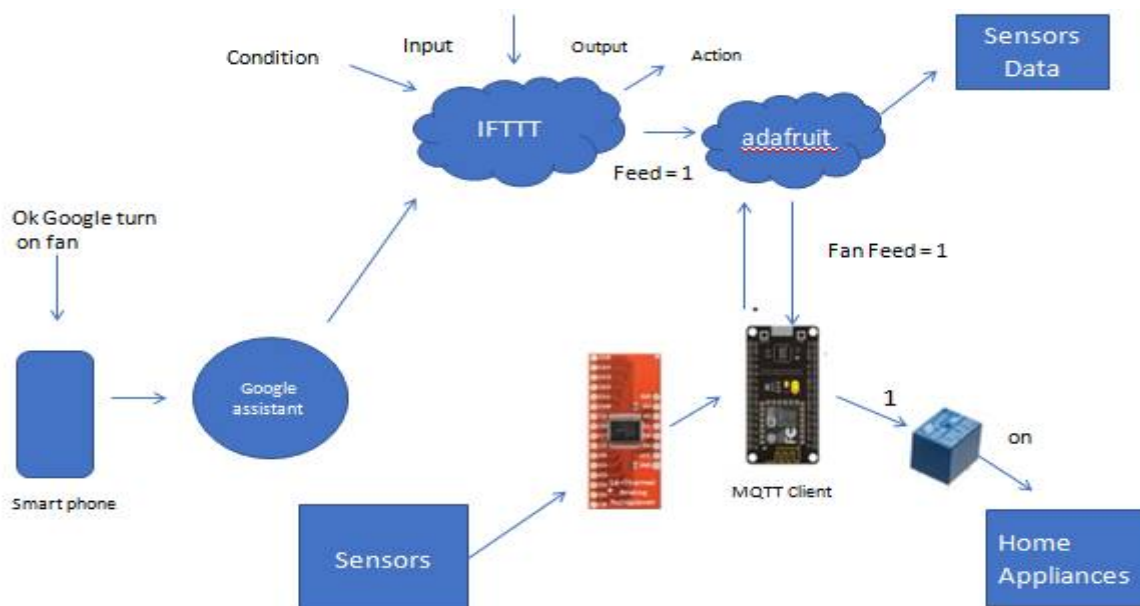


Fig 1. System Architecture



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## VI. PROJECT IMPLEMENTATION

### A. Android Applications:

Windows Mobile, Symbian, iOS and Android are several platforms that are used to develop smart phone application. In this work, we are using an Android platform as its main smart phone application platform, as it has a huge market and cost effective due to open source. Besides that, Android development application tools are free to download and provides flexibility to developers to extend or easily edit the source code. Android Software Development Kit (SDK) used a Java as its main language which provide tools and APIs to be used in developing the smart home application. The SDK provides a complete set of development tools such as debugger, libraries and a handset emulator. Eclipse is the officially supported integrated development environment (IDE) has been used on in conjunction with the Android Development Tools (ADT) Plug-in to develop the application[7-10]. The accessory mode of the developed Android application is a feature of Android OS since version 2.3.3 (API 10) AND Kit Kat 4.4.2 (API 19). The application screen consists of functions like light and fan controlling which user can select any function which he or she wish to control. The designed application for the smart home system provides following functionalities such as remote connection through Wi-Fi or mobile network to the raspberry pi and device control to the user. In the development of application, standard GET & POST request operations have been utilized to access the devices through application remotely. Besides that, the android application (client) continuously access the web server to update the interface and send HTTP requests to server each time the user want to access a specific function.

### B. Component Used:

#### Hardware Required:

- 5V relays
- 1n4007 Diaod
- BC547 transistors.
- 330ohm Resistors
- Multiplexer module
- Different sensors
- Ics
- 9v power adapter
- Multiple Sensor

### C. Arduino:

Arduino is an open-source electronics prototyping platform based on flexible, simple to use hardware and software[5]. It's proposed for artists, designers, hobbyists, and anyone interested in creating interactive objects or environments. In simple terms, the Arduino is a small computer system that can be programmed with instructions to interact with different forms of input and output. The current Arduino board model, the Mega, is small in size compared to the average human hand. It has many analog and digital IO pins. It operates with 5v power supply, which is connected from either USB port or External power supply. It can function between 5V – 20V.It has ATmega1280 micro controller. This microcontroller has many features. It has 128KB of flash memory, 4 KB of which are used for the Boot loader, 8 KB SRAM and 4 KB EEPROM.

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Fig 2. Arduino Kit

## D. Cultural and Benefit to the Society

The proposed home automation system also provides security and increase awareness by protecting your family and assets. Strategically placed Pi Camera will allow you to monitor anyone entering your property or condition of the devices such as lights, fan or any electrical devices from a central point. Besides that, the system integrates all of the home's systems via smart wiring or structured cabling package the safe installation of wiring system will avoid any electrical hazards such as short-circuit or fire. Besides that, the system also improves and enhances the human living style with the centralized controller. Users have ability to added measure of safety through the capability of controlling lights in home at particular certain distance farther from the target control devices. This will allow users to switch on or off light at the required times with minimum energy needed while at home. Minimum energy usage is not only a more sustainable approach, but it also leads to a substantial savings on power bills.

## VII. CONCLUSION

As the conclusion, this system can be described as very useful to everyone and especially for disabled and elderly people. The result from previous chapter also show that this system work well and achieve its objective. This system also had been developed with low cost in mind and user friendly interface to allow more users will able to implement the system in their home. This system can be improve by added more features such as gases sensor, motion sensor, temperature sensor and other function like push notification in mobile apps to alert user with changing of switching state and sensor reading. The project also can be further by adding support to iPhone (iOS) and Windows Mobile user as these smart phones uses other type of operating system. By covering these three types of mobile operating system, we can assume we can increase the compatibility of the system. Therefore, more users be able to use the system and be more beneficial to society.



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