

# Home Automation using IoT and Mobile Application

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**Abstract**— This paper can be explaining the idea of smart home using Internet of Things (IOT) and mobile application. Home automation can include all home appliances to be managed and controlled by using mobile application. These home automation is very flexible to use. And all peoples are more attracted towards the new technologies. Automatic systems are being preferred over manual system. Through our project we would like to show automatic control of a house as a result of which power is saved to some extent. Home automation is one of the most exciting developments in technology that has come along in decades. There are hundreds of products available today that allow us control over the devices automatically, either by remote control; or even by voice command. The app would be featuring the process of speech reorganization as well as the commands can be controlled the home appliances. It is having the capacity to control remotely. Today's world everything is exciting because of the new technologies. This paper is focuses on flexible, cost effective, and user-friendly wireless home automation system.

**Key words:** Internet of Things, IoT, Home Automation, Mobile Application, Arduino Board, Android, Mobile App

## I. INTRODUCTION

Internet of things(IOT) is expressed as the different computers. Those connected to the other systems such as physical devices, vehicles, home appliances and other items embedded with electronics, software sensors, actuators, and these devices are connected to exchange the data or information between from one system to another. These devices are uniquely identifiable through embedded systems. And also, able to inter operate within the internet infrastructure.

Internet of things provide and allows the all physical devices which we are in home, those can be automated and controlled remotely through mobile application. Creating opportunities for more direct integration of the physical world into computer-based system, these becomes the improved the efficiency, accuracy and economic benefit and moreover reduce the man power which means the human intervention.

Home automation using iot is one of the best technology improve our home and making economically improve country. This paper providing the information about home automation using iot and mobile application., Home automation can be defined as it is the removal of human interaction.

Home Automation is one of the most exciting development in technology that has come along so many years. There are hundreds of products are available today to control over the devices command.

Smart Home must have compliance with all the household standards and ease of use.

### A. Advantages:

If any gas leakage or power problem is Happening in the home that time nobody will be their it leads lot of problem, so avoiding this problem making the sensor in home if any fire is happening means immediately the message should go to the house owner.

If any unknown person is trying to come inside then automatically alarm should go to the person.

As I mention in the introduction that automatically it should control and operate remotely the lights and security like doors open and close.



Fig. 1.1: Home Automation System

## II. APPLICATIONS OF HOME AUTOMATION

Home automation led IOT-enabled connectivity are,

- Lighting control
- HVAC
- Lawn/Gardening management
- Smart Home Appliances
- Improved home safety and security
- Smart switches
- Smart locks
- Smart energy meters.

### A. Home Automation Components

These automation components help you to build a realistic model of what major components are involved in building a smart home. The major components can be broken into,

- IOT sensors
- IOT gateways
- IOT protocols
- IOT firmware
- IOT cloud and database
- IOT middleware

### B. Home Automation Sensors

There are probably thousands of such sensors out there that can be part of this list, for to make the home automation perfect and clean we are using the iot sensors as the must, based on the sensors we are making home automation, these are having capabilities.

- Temperature sensors

- Lux sensors
- Water level sensors
- Air composition sensors
- Video cameras for surveillance
- Voice/Sound sensors
- Pressure sensors
- Humidity sensors
- Accelerometers etc.
- These all are make help for the home automation.

### III. IMPLEMENTATION DETAILS

#### A. Home Automation Using IOT

The home automation using IOT can be deal with ethernet module is utilized for interfacing Arduino board from any piece of world. The Arduino ethernet based micro web-server. The Arduino micro controller acts as a main controller that hosts and performs the action which are necessary to be carried out.

The Arduino board is the master controller that has the Ethernet micro web server running consist of Arduino Ethernet Mega 2560 and Arduino ethernet shield with other has the nRF24I01+ radio module which can be helps to communicate the actions with the other sensors nodes within the home environment.

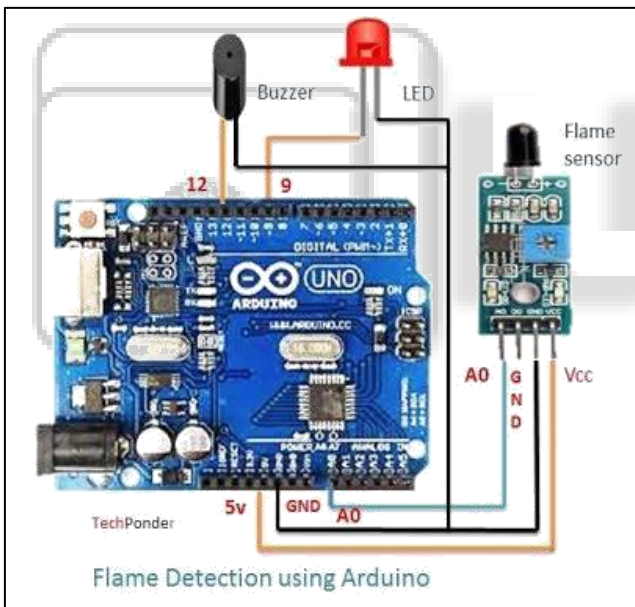


Fig. 3.1.1: Fire Detection Using Arduino Ethernet

Fig 3.1.1 shows the clear idea about how the notification can be get when the fire is detected in home. Through flame sensors it is automatically get notified using Arduino technology. And certain action has to be taken care. And also LED bulbs to be activated.

All the components sensors are directly interconnected to the main controller. Such that certain actions has to take place.

#### B. Home Automation using Android Application

Home automation using android application is can be helpful because todays world all are attracted to the android phones. Through the mobile application all appliances can be controlled. Like fan, switches, tv. etc.

Through the mobile application all appliances are to be managed remotely.

Using the android application from a remote location it is possible and mobiles having the IP address and connecting to that ethernet it is possible to get the notification to the mobile as an email. And more thing the controlling of the home appliances and the alert systems can be done using just voice/speech recognition which are audible notification.

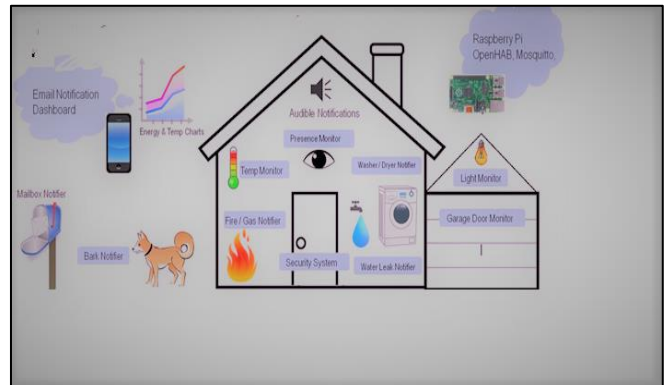


Fig. 3.2.1: Home automation using Android App

Fig 3.2.1 Explains the Home Automation Through Mobile Application, The Fire Can Be Detected Through the Temperature Sensor Then Notification Is Going to The Email Notify to The Mobile Application. And also, all home appliances can be controlled by using temperature sensor. All monitors are connected to the mobile application wireless through Wi-Fi. so we can access all application remotely. If fire happened in home automatically message/notification has to be go to the house owner mobile. i.e. which mobile IP address is connected.

### IV. PROPOSED METHODOLOGY

In this busy world all are attracted towards style, technology, smart work, mobile apps. And people don't have time so all using smart app to control the all home appliances as well as get notify by any critical situation which means for example gas blast.

The using of IOT of home automation using Arduino mega 2560 and the Arduino ethernet shield have been used to implement the smart home micro web-server.

In this proposed system mobile app is created such that we can easily controlling the home appliances with the help of speech recognition, temperature sensors. With the help of iot we can easily detect the fire because all IP address can be connected to the Arduino devices. The mobile app that can be created, contains all the commands to control the fans, ac, washing machine. This app is containing the all commands to controlling devices and also some notification menu will be available whenever any fire happens in home automatically notification can get. Therefor we can take certain actions.

### V. CONCLUSIONS

In this paper, Home automation system that can be controlled remotely upon user authentication is proposed and implementation is going to be take place. An android based home automation app communicated with the micro web-service. Any android device can be installed the application and we can access the app. With the low-cost investment we can make our home as fully automated and it is one of the best way to make improved society also.

With the help of Arduino also we can get the notification if any sensors temperature increased. It is one of the best way to improve our home.

If elders there in home they are not able to walk means they can access the all home appliances remotely such that it reduces the stress of old people.

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