

# Smart Home Automation System with Security Using Iot

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## ABSTRACT

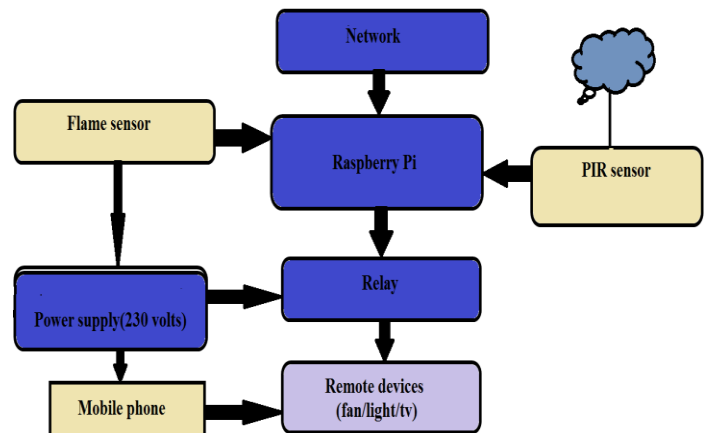
In recent years the growth of communication and advancements are more reliable in internet of things (IoT). In various applications, IoT- based services are used rapidly. Home automation is versatile with IoT. Thus home automation causes a significant change in people life that makes home appliances intelligent to operate. This motivated us to develop a web application to control the appliances from home or anywhere, and also by making use of PIR sensor to identify the presence of the human and intimate it to the user through a buzzer. Thus by preventing our home from an unauthorised person entry. In addition to it, we fix a flame sensor inside the home to detect and intimate to the user in case of any flame spreads inside the home.

Keywords- Internet Of Things, Raspberry Pi, PIR Sensor, Flame Sensor, Dual Tone Multiple Frequency, Programmable Interface Controller, Arduino BT, Graphical User Interface.

## I. INTRODUCTION

The internet of things is the interconnection between the various computer devices embedded in daily appliances and the internet, enabling them to communicate. This improves the quality of life of end users and improves efficiency and sustainability in daily activities. In the near future, many of the intelligent devices will communicate via IoT. IoT devices are part of the larger concept of home automation. Home automation by IoT is a modern technology that automatically modifies your home that carry out various task. Thus our proposed gives a better solution for it. Which can include controlling of home appliances such as fans, light, energy consumption through a web application. Long term benefits could include saving energy by automatically turning off lights and electronics by smartphones from anywhere in the world. Then by introducing PIR sensors to detect the presence of a human. These sensors are not only used for monitoring they are also used for the security purposes which provides a modern system that can warn you and your family through alarms in case of an unauthorized person entry into your home. And also with the help of the Flame sensor we can detect and intimate to the user through a buzzer sound in case of any flame starts to spread inside our home. This will make our home to be more secured and safe. In future the wireless automation as well as wearables are expected to create growth upgradations in automation technology.

## II. ARCHITECHTURE DIAGRAM



## III. RELATED WORKS

*Vishal pallagani [1] venkanna:* Secure PIC -based remotecontrol system for smart houses was presented in this paper. The central unit of this system is remote controller based on pic. This controller detects the ringing number, then decodes the DTMF signal and then checks the entered pin numbers. The controller gives the right to control the devices. When the pin numbers are entered correctly. It therefore has no effect on the telephone line. With pin-check system, non-authorized people can not connect to or use this system. In this application, secure, cheap and safe remote control system for intelligent houses has been presented.

*David marikyian [2] :* Technology is a never-ending process. This paper presents a low-cost, yet flexible and secure home automation system based on cell phones.

The design is based on a stand-alone hArduino BT board and relays connected to home appliances to the board's input / output ports. Cell phone communication with the Arduino BT board is wireless. The system is secured for access from any user or intruder. In order to access home appliances, users are expected to acquire pairing password for the Arduino BT and the cell phone. If the password is

paired then the home appliances are accessed by the cell phone. This provides protection against unauthorized users. This system can be used as a test for any appliances that requires on-off switching application without any internet.

**Vandarwerf [3] Guix:** This paper proposes a series of projects that conform to the knowledge acquired in embedded systems being exercised. Several components can be controlled by one computer in this project, but each requires its own microprocessor interface that is connected to a computer using a serial port, for example. This involves monitoring and controlling a system using a built-in microcontroller and a proposed computer. Home appliances are controlled via computer. When the system is disconnected each system becomes autonomous. This appliance control strategy is carried out via GUI interface.

**Alexandar [4] Malinowaskar :** In this project, we are proposing a mobile home automation system consisting of a mobile phone with java capabilities, a cellular modem, and a home server. Here home appliances are controlled by the home server, which operates through the cellular modem according to user commands received from the mobile phone. The home server is built on an SMS/ GPRS mobile cell module and microcontroller. In our proposed system to enable the user to control and monitor any home-related variables using any cell phone capable of java. The controller board resides at home and works as a home server that performs home appliances operating and monitoring tasks. The home server communicates through the cellular modem with the remote control. It is noted that the system proposed is not limited to home automation.

**Sabin adhilkikari [5] :** This project presents the overall design of low-cost, wireless home automation system (has). This system is designed to assist in meeting the needs of the elderly and disabled in the home. The switch mode and the voice mode are used to control the home appliances. WiFi is selected with the appropriate capacity. The home appliances are connected to raspberry pi's input/output ports along with the power strip and raspberry pi's status is passed on the android operating system can access the status of home appliances on any phone connected to a network. Thus the appliances are connected via applications.

#### IV. PROPOSED SYSTEM

The proposed system prototype is shown in fig[1.1]. The following section below will explain about the working modules and the implementation:

##### 4.1. System Design

Our proposed prototype consists of three modules of implementation, namely:

- Theft Man detection using PIR sensor module.
- - Flame detection module.
- - Controlling of home appliances through web application module.

**Theft Man Detection Using PIR Module:** In this module we use PIR (passive infrared sensor) sensor to detect the presence of a human. First we connect the PIR sensor to the raspberry pi and then fix it outside of the home. If any

moments are done particularly by human it sends an alert through a buzzer which is kept inside the home. Thus the module helps us in security by detecting any unauthorised person (theft man) enters into our home.

**Flame Detection Module:** This module is sensitive to flame and radiation. In which the detection can be done upto 100 m. Initially the flame sensor is fixed with the raspberry pi. Once the sensor detects any flame or light source of wavelength in the range of 760nm-1100nm it automatically make the buzzer on and intimate it to the user.

**Controlling Of Home Appliances Through Web Application Module:** In this module the user create an web app in order to control the home appliances. First the power supply is given to all the remote devices and connect the devices to the relay component. Once the connection is over with the help of the relay the control of all the devices is linked with the web app. If the user wants to turn on or off the devices he can access the devices through the web app by entering its particular IP address:



Fig 1.1 Proposed System Prototype

##### 4.2. Implementation Details

**Hardware:** In the hardware implementation of the system, we are using raspberry pi as a main component which is a credit card sized Pc supporting a current of 5v, which is coupled with the PIR (passive infrared sensor) and flame sensor in order to sense and detect the presence of a human and flame.

**Software:** The main software components of the implementation are as follows:

##### 4.2.1 MobaXterm

MobaXterm is an enhanced terminal for Windows with an X11 server, a Tabbed SSH client and several other network tools for remote computing (VNC, RDP, telnet, rlogin). MobaXterm brings all the essential Unix commands to Windows desktop, in a single portable exe file which works out of the box. Thus we need to install it and run the necessary code for the to invoke the raspberry pi and the other sensors.

#### V. CONCLUSION

It is very clear from the proposed system that IoT based home automation is progressively successful for end users. In this paper we have implemented an web app in order to help the users to control all the devices with the ease. Followed by the PIR sensor and flame sensor to

protect the home from an intruder to enter and also to keep the home safe from flame spreads.. Thus home automation create a significant change in people life and also helps to access to the device in the intelligent way.

#### REFERENCE

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