

## IOT BASED HOME AUTOMATION

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### ABSTRACT

Electrical and Electronic gadgets plays a vital role in day to day life. Some of such equipment are AC, fan, TV etc., In this busy world, some times people may forget to turn OFF devices and in some cases that itself will lead to some accidents. Once the entered password is matched with the predefined password, then all the devices will be turned OFF and the security system will be turned ON. In this paper, we have used a Microcontroller, Temperature sensor, a motor, Smoke sensor, GSM and buzzer. When the temperature value goes high, the system will alert the owner by sending an alert message through GSM (Global System for Mobile Communication) and the buzzer will beep. When fire accident occurs in the home, the smoke sensor detects and alerts the owner by SMS alert and Alarm alert.

Keywords: Global system for mobile communication(GSM), Internet of Things (IOT).

### I. INTRODUCTION

Home automation or domotics is building automation for a home, called a smart home or smart house. It involves the control and automation of lighting, heating (such as smart thermostats), ventilation, air conditioning (HVAC), and security (such as smart locks), as well as home appliances such as washer/dryers, ovens or refrigerators/freezers. Wi-Fi is often used for remote monitoring and control. Home devices, when remotely monitored and controlled via the Internet, are an important constituent of the Internet of Things. Modern systems generally consist of switches and sensors connected to a central hub sometimes called a "gateway" from which the system is controlled with a user interface that is interacted either with a wall-mounted terminal, mobile phone software, tablet computer or a web interface, often but not always via Internet cloud services. While there are many competing vendors, there are very few worldwide accepted industry standards and the smart home space is heavily fragmented. Manufacturers often prevent independent implementations by withholding documentation and by litigation.

The home automation market was worth US\$5.77 billion in 2013, predicted to reach a market value of US\$12.81 billion by the year 2020.

### II. LITERATURE SURVEY

Early home automation began with labour-saving machines. Self-contained electric or gas powered home appliances became viable in the 1900s with the introduction of electric power distribution and led to the introduction of washing machines (1904), water heaters (1889), refrigerators, sewing machines, dishwashers, and clothes dryers.

In 1975, the first general purpose home automation network technology, X10, was developed. It is a communication protocol for electronic devices. It primarily uses electric power transmission wiring for signalling and control, where the signals involve brief radio frequency bursts of digital data, and remains the most widely available. By 1978, X10

products included a 16 channel command console, a lamp module, and an appliance module. Soon after came the wall switch module and the first X10 timer. By 2012, in the United States, according to ABI Research, 1.5 million home automation systems were installed. There are three generations of home automation:

- First generation: wireless technology with proxy server, e.g. Zigbee automation;
- Second generation: artificial intelligence controls electrical devices, e.g. Amazon Echo;
- Third generation: robot buddy who interacts with humans, e.g. Robot Rovio, Roomba.

### III. EXISTING SYSTEM

With the increase in consumption of energy and population, there is a grave need to conserve energy in every way possible. The inability to access and control the appliances from remote locations is one of the major reasons for energy loss. This system can make use of GSM communication for monitoring and controlling. When the PIR sensor goes high, the system will alert the owner by sending an alert message through GSM (Global System for Mobile Communication) . Automation will be done by sending the SMS by using the GSM module.

### IV. PROPOSED SYSTEM

Internet of Things (IoT) conceptualizes the idea of remotely connecting and monitoring real world objects (things) through the Internet. When it comes to our house, this concept can be aptly incorporated to make it smarter, safer and automated. This IoT project focuses on building a smart wireless home security system which sends alerts to the owner by using Internet in case of any trespass. The microcontroller used in the current prototype is ARM LPC812, Wi-Fi shield making use of which all the electrical appliances inside the home can be controlled and managed.

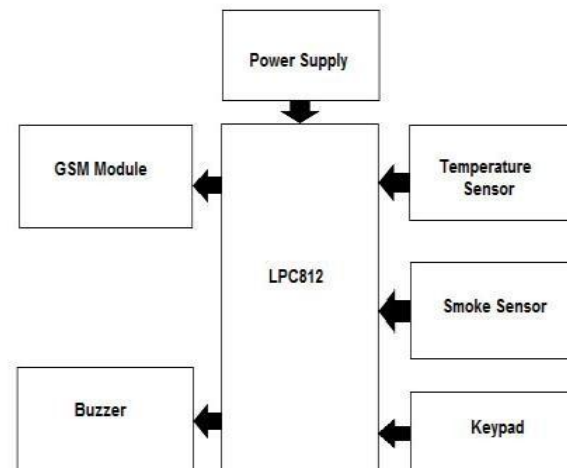


Fig1: Block Diagram of Home Automation

## **MICROCONTROLLER**

(or MCU for *microcontroller unit*) is a small computer on a single integrated circuit. In modern terminology, it is similar to, but less sophisticated than, a system on a chip or SoC; an SoC may include a microcontroller as one of its components. A microcontroller contains one or more CPUs (processor cores) along with memory and programmable input/output peripherals.

## **WIFI MODULE**

The ESP8266 WiFi Module is a self contained SOC with integrated TCP/IP protocol stack that can give any microcontroller access to your WiFi network. The ESP8266 is capable of either hosting an application or offloading all Wi-Fi networking functions from another application processor.

## **TEMPERATURE SENSOR**

A temperature sensor is a device, typically, a thermocouple or RTD, that provides for temperature measurement through an electrical signal. A thermocouple (T/C) is made from two dissimilar metals that generate electrical voltage in direct proportion to changes in temperature.

## **SMOKE SENSOR**

A smoke sensor is a device that senses smoke, typically as an indicator of fire. Commercial security devices issue a signal to a fire alarm control panel as part of a fire alarm system, while household smoke detectors, also known as smoke alarms, generally issue a local audible or visual alarm from the detector itself.

## **ADVANTAGES & DISADVANTADES**

Security systems allow you to view your home no matter where you are. You can have cameras installed, motion detectors, locks, etc, and you will be notified immediately if something is out of the ordinary. Almost all smart home products can be installed without much hassle, many of them don't even require you to bring someone into your home.

For getting home automation, you will likely have to spent a larger sum than you would have if you had purchased non-smart products.

A smart home will be extremely reliant on your internet connection. If your connection drops you'll be left with a lot of smart products that won't work. Additionally, wireless signals can possibly be interrupted by other electronics in your home and cause some of your smart products to function slowly or not at all.

## **V. APPLICATIONS**

It is used for security purpose. This helps to control lighting system of your home and also used to protect your home from accidents like gas leakage, fire etc.

## **VI. CONCLUSION**

This paper presents a low-cost and flexible solution to the smart home. The appliances of the home can be controlled by the keypad present in the main system. Warning will be send to your phone if there is fire, gas leakage and if someone tries to enter into your home without your permission.

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