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Home Automation using Internet of Things (IOT)

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***Abstract:** As we are stepping in to 21st century mankind is leaning towards comfort. Automation is the key to comfort for any of the field .As we know automobile sector and industrial manufacturing sector had already achieved excellence in automation. As far as Home Automation is concerned there is still need of advancement in home automation. If we compare India with developed countries like US and China we can find the difference in installation cost, awareness and scope for the same.*
***Keywords:** Internet of things (IOT), Automation, Relays, Wi-Fi module, Arduino.*

I. INTRODUCTION

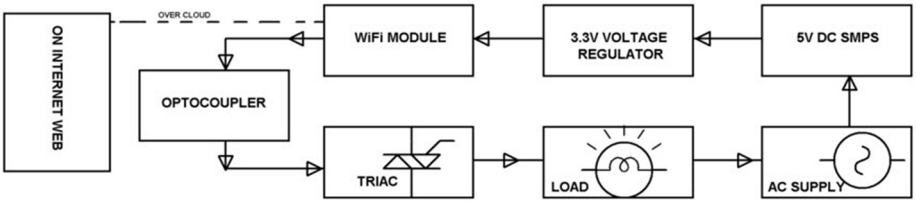
IOT is a concept where each device is added to an IP address and via that IP address anyone makes the device recognisable on internet. [IOT] is having a potential to change the living standard of people, making life more comfortable and secured. People prefer more of automatic system rather than manual system.

A home automation system is a technological solution that enables the massive of electronic, electrical and technology based task within home. It uses the combination of hardware and software technologies that enables control and management over appliances and devices with in a home.

In this project we have used fire sensor, LPG sensor, protection of home appliances using circuit. All these sensors and circuits are directly controlled by using Wi-Fi module with mobile phone or laptop.

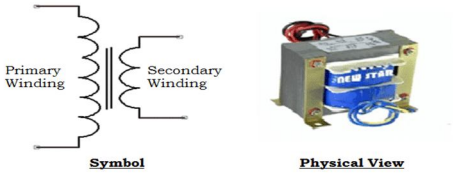
A. Circuit Module

An AC supply of 220 volt is fed to a step down transformer which Step down the AC voltage to meet the demand required by the components. In the next step rectifier is used to convert AC supply in to DC supply. The filter LC circuit is used to obtain a pure DC supply. The dc voltage output that is given by LC circuit further goes to the Fire sensor and LPG sensor, buzzer, Wi-Fi Module and relays and a direct supply of 220 volt AC goes to switches and relays combinely. Mobile is connected by [IOT] through Wi-Fi module. Further all the electrical appliances are connected with the mobile phone through [IOT] then we can operate all the electrical devices. If any LPG leakage in the home then we will get a notification on our mobile phone. This same process of protection will apply on the Fire sensor. If we wish to switch off or switch on light or other appliances we can do it by just clicking on our mobile phone.



B. Hardware Components

1) Transformer: Here we have used a step down transformer to step down the AC voltage supply to 12 volts.



2) Power Supply Circuit: It is converting the output of the step down transformer of 12 volt AC supply in to 12 volt DC supply . This circuit consist of rectifier and LC circuit.

3) LPG Sensor: It is one kind of a device which is used to sense the presence of hazardous LPG leakage at home.

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4) *Fire Sensor:* A flame detector is a sensor designed to detect and respond to the presence of flame or fire .



5) *Buzzer:* As soon as fire & LPG sensor detect any nuisance than this activate the buzzer sound.
6) *Inbuilt Arduino Wi-Fi Module:* Arduino node MCU is used in this project. Node MCU is an open source [IOT] programme refers to Lua based firm ware developed for ESP 8266 Wi-Fi SOC by esprefssi system.



7) *Relay Module:* 4-channel relay control board module with optocoupler, 4 way relay module for arduino. The basic function of any relay is to switch off or on load according to the instructions given.



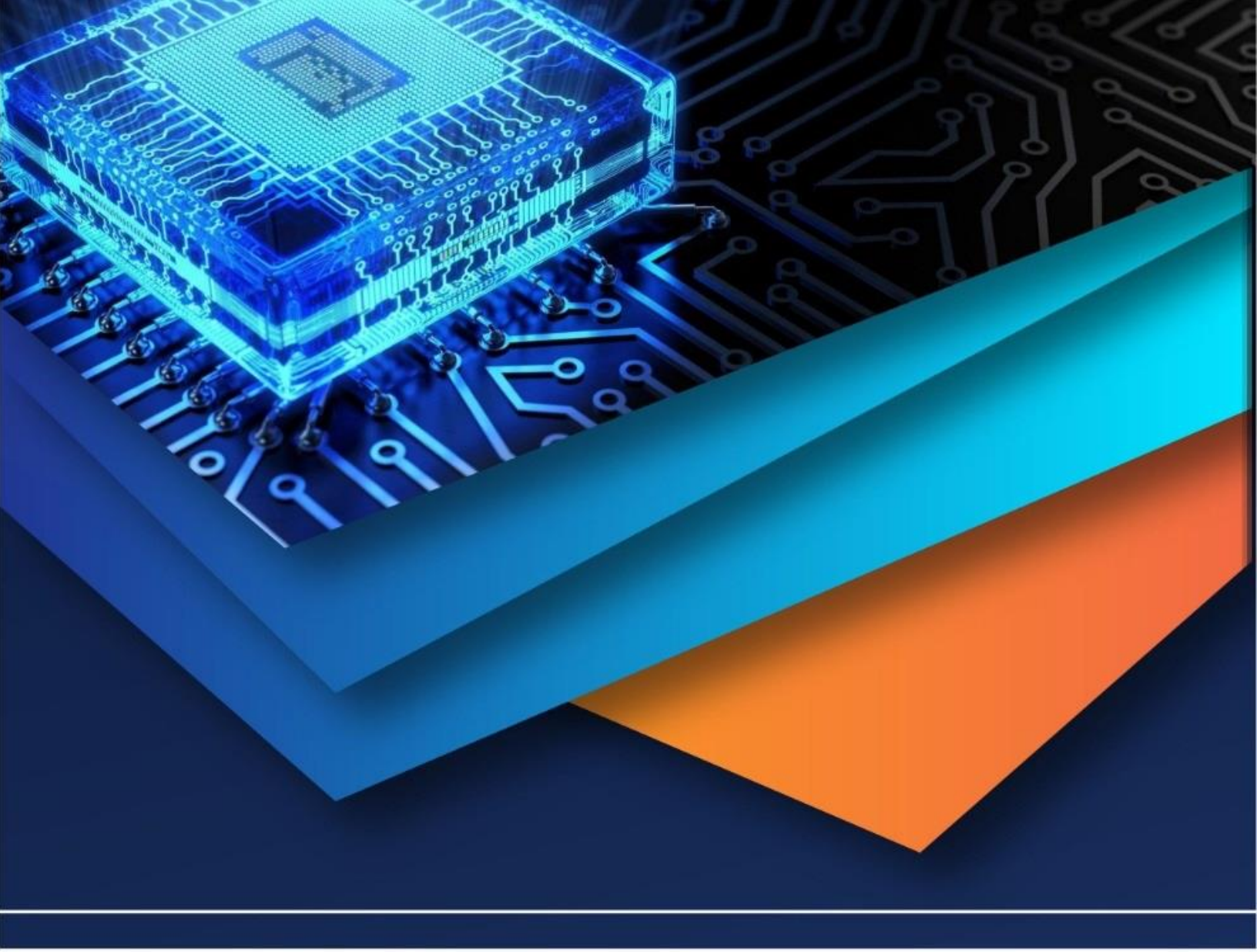
II. CONCLUSION

The objective of this project is home automation using IOT as is achieved successfully using internet source (mobile). It is reliable and scalable home automation system with cost effective components and are easy to implement. All the home appliances can be connected to our mobile phone or laptops and we can operate the electrical appliances through our mobile phone as per our requirement. It will make human life easy and comfortable especially for disabled persons. Also we can operate home appliances when we are not at home. It is possible to operate home appliances from any part of the globe.

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