# HOME AUTOMATION

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**Abstract-** With advancement of Automation technology, life is getting simpler and easier in all aspects. In today's world Automatic systems are being preferred over manual system. With the rapid increase in the number of users of internet over the past decade has made Internet a part and parcel of life, and IOT is the latest and emerging internet technology. Web of things is a developing organization of ordinary item from modern machine to customer merchandise that can share data and complete assignments while you are occupied with different exercises. Remote Home Automation system(WHAS) utilizing IOT is a framework that utilizes PCs or cell phones to control fundamental home capacities and highlights consequently through web from anyplace all throughout the planet, a mechanized home is in some cases called a shrewd home. With regards to our home, this idea can be appropriately consolidated to make it more intelligent, more secure and mechanized. 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 and raises an alarm optionally. Besides, the same can also be utilized for home automation by making use of the same set of sensors. The leverage obtained by preferring this system over the similar kinds of existing systems is that the alerts and the status sent by the wife connected microcontroller managed system can be received by the user on his phone from any distance irrespective of whether his mobile phone is connected to the internet. The microcontroller used in the current prototype is the TI-CC3200 Launch pad board which comes with an embedded micro-controller.

*Index Terms:-* IOT, Bluetooth. TI-CC3200 Launch pad board

# I.    INTRODUCTION

Wireless technologies are becoming more popular around the world and the on sumers appreciate this wireless lifestyle. Where the system was based on a dedicated on network, software and hardware. There is the system was cost effective and most reliable for home friendly.There is an increasing demand for smart homes, where appliances react automatically to changing environmental conditions and can be easily controlled through one common device.

Many existing, grounded home mechanization frameworks depend on wired correspondence. This doesn't represent an issue until the framework is arranged well ahead of time and introduced during the actual development of the structure. In any case, for previously existing structures the execution cost goes extremely high. Interestingly, Wireless frameworks can be of extraordinary assistance for robotization frameworks. With the progression of remote advancements. Remote Home security and Home computerization are the double parts of this undertaking. The right now assembled model of the framework sends cautions to the proprietor over voice calls utilizing the Internet if such a human development is detected close to the passage of his home and raises an alert alternatively upon the client's attentiveness. The arrangement for sending ready messages to concerned security work force in the event of basic circumstance is additionally incorporated into the framework. Then again if the proprietor recognizes that the individual going into his home isn't an interloper yet a sudden visitor of his then as opposed to setting off the security caution,the user/owner can make arrangements such as opening the door, switching on various appliances inside the house, which are also connected and controlled by the micro-controller in the system to welcome his guest. The same can be done when the user himself enters the room and by virtue of the system he can make arrangements from his doorstep such that as soon as he enters his house he can make himself at full comfort without manually having to switch on the electrical appliances or his favourite T.V. channel for an

## 1.1 Advantages of Home automation systems:

Recent years, wireless systems like have become more and more common in home networking. Also in home and building automation systems, the use of wireless technologies gives several advantages that could not be achieved using a wired network only.

1) Reduced installation costs: First and foremost, installation costs are significantly reduced since no cabling In is necessary. Wired solutions require cabling, where material as well as the professional laying of cables (e.g. into walls) is expensive.

2) System scalability and easy extension: Deploying a wireless network is especially advantageous when, due to new or changed requirements, extension of the network is necessary. In contrast to wired installations, in which cabling extension is tedious. This makes wireless installations a seminal investment.

3) Aesthetical benefits: Apart from covering a larger area, this attribute helps to full aesthetical requirements as well. Examples include representative buildings with all-glass architecture and historical buildings where design or conservatory reasons do not allow laying of cables.

4) Integration of mobile devices: With wireless networks, associating mobile devices such as PDAs and Smart phones with the automation system becomes possible everywhere and at

any time, as a device's exact physical location is no longer crucial for a connection (as long as the device is in reach of the network).

### 1.2 Related Work

[1]This paper proposes a Home Automation system that employs the integration of multi-touch mobile devices, cloud networking, wireless communication, and power-line communication to provide the user with remote control of various lights and appliances within their home. This system uses a consolidation of a mobile phone application, handheld wireless remote, and PC based program to provide a means of user interface to the consumer.

[2] The main objective of this Paper is to design and implement a control and monitor system for smart house. Smart house system consists of many systems that controlled by LabVIEW software as the main controlling system in this paper. Also, the smart house system was supported by remote control system as a sub controlling system. The system also is connected to the internet to monitor and control the house equipment's from anywhere in the world using LabVIEW.

[3] The prime objective of this paper is to assist handicapped/old aged people. It gives basic idea of how to control various home appliances and provide a security using Android phone/tab. The design consists of Android phone with home automation application, Arduino Mega ADK. User can interact with the android phone and send control signal to the Arduino ADK which in turn will control other embedded devices/sensors.

[4] Human Beings emits thermal energy of wavelength around 9-10 micro-meter everyday. Pyro electric or Passive Infrared Sensor (PIR) is an electronic device which is designed to detect this IR wavelength when a human being is in its proximity. To have a wide range for detection a simple lens is used. Sensors may also be calibrated in such a way so as to ignore domestic pets by setting a higher sensitivity threshold, or by ensuring that the floor of the room remains out of focus.

## II. PROPOSED HOME AUTOMATION SYSTEM FUNCTIONS

### 2.1 The proposed home automation system

The capabilities to control the following components in users home and monitor the following alarms: Temperature and humidity, Motion detection, Fire and smoke detection, Light level
The proposed home automation system can control the following appliance: Lights on/off/dim, Fan on/off, On/off different appliance

### 2.2 Increase Energy Efficiency

Depending on how you use your smart-home technology, it's possible to make your space more energy-efficient. For example, you can have more precise control over the heating and

cooling of your home with a programmable smart thermostat that learns your schedule and temperature preferences, and then suggests the best energy efficient settings throughout the day. Lights and motorized shades can be programmed to switch to an evening mode as the sun sets, or lights can turn on and off automatically when you enter or leave the room, so you never have to worry about wasting energy.

## 2.3 Improved appliance functionality

Smart homes can also help you run your appliances better. A smart TV will help you find better apps and channels to locate your favorite programming. A smart oven will assist you with cooking your chicken to perfection -- without ever worrying about overcooking or undercooking it. An intelligently designed home theater and audio system can make managing your movie and music collection effortless when entertaining guests. Ultimately, connecting your appliances and other systems with automation technology will improve your appliance effectiveness and overall make your home life much more easier and enjoyable.
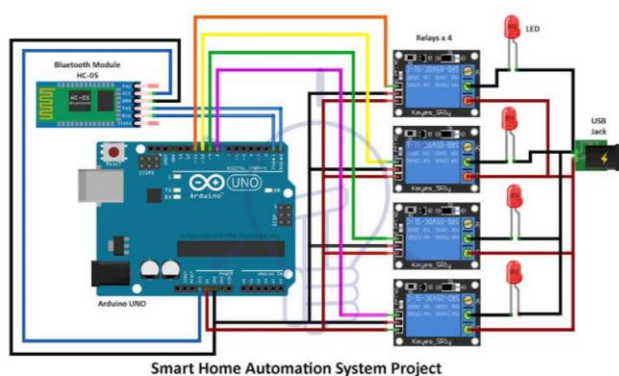
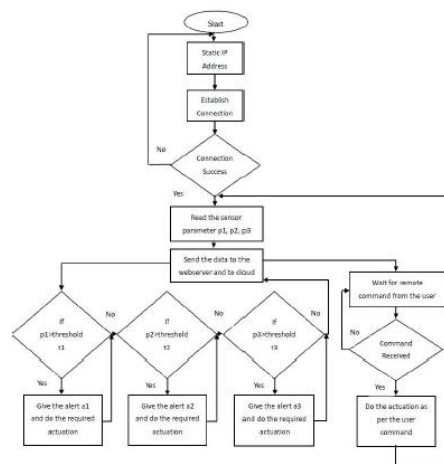## III.    SYSTEM BLOCK DIAGRAM



Fig.1- System Block Diagram

Figure 2 illustrates the sequence of activities in the WHAS.When the connection is established it will start reading the parameters of sensors like p1, p2, p3 etc. The threshold levels for the required sensors are set as t1, t2, t3 etc. The sensor data are sent to the web server and stored in the cloud. The data can be analyzed anywhere any time. If the sensor parameters are greater than the threshold level then the respective alarm a1, a2, a3 etc. will be raised and the required actuation is done for the controlling of the parameters.

## 3.1 Working:-

A model house is built for the home automation system and is as shown in the figure 3. At the door of the house a motion sensor is fixed to detect any movement near the door. Light 1 will turn on automatically when light sensor detects the darkness. A cooler/Fan will turn on when the room temperature exceeds the set threshold and in turn reduces the room temperature. The gas sensor MQ-6 is placed in the kitchen to detect any gas leakage, if any leakage is detected the alarm in the hall is raised. Relay is used to switch the electrical appliances like light, fan etc. The Intel Galileo is placed in store room or garage. The Intel Galileo is connected with WiFi card with the antennas for the connectivity with internet.

**3.2 Testing and discussion**

The implementation of both the hardware and software programming was done initially on a Vero board. To determine whether the different com pennants are working fine, all the components were tested using a digital multimetre to check that they conform to their datasheet. The test carried out includes a relay switching test, which is to ensure that the re-lay switches as expected and the desired signal went through the android application. Timing test was also done since the android application was developed to include a time picker which can activate or de-activate the electrical appliances connected to the system. To reduce power consumption and manage power effectively, an Observe, Learn and Adapt (OLA) algorithm through the use of machine learning tools as suggested by [18] can be adopted and the home automation sys- tem can also be switched into sleeping mode when not in use such that power consumption will be low as well as power supplied to a sensor or some sensors can be cut when it is not in use at a particular time, this can be done manually or automatically.

## IV.     CONCLUSION

The home automation using Internet of Things has been experimentally proven to work satisfactorily by connecting simple appliances to it and the appliances were successfully controlled distantly through web. The planned framework not just screens the sensor information, similar to temperature, gas, light, movement sensors, yet additionally impels an interaction as indicated by the necessity, for instance turning on the light when it gets dull. It likewise stores the sensor boundaries in the cloud in an ideal way. This will help the user to analyze the condition of various parameters in the home anytime anywhere.

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