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# Smart Home Security with Automation Using IOT

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**Abstract**

The internet of things (IoT) is fast becoming a disruptive technology business opportunity, with standardsemerging primarily for wireless communication between devices and gadgets in day to day human life, in general referred to as things . this project aims at controlling home appliances and building a smart wireless home security system usingWI-FI, Bluetooth, GSM, etc. These existing methods have drawbacks as they work in short range. To overcome these drawbacks, we are going to implement this project. **"**IOT based smart security and smart home automation''. The project focuses on controlling lights and fans referred as home automationand providing smart security by sending an captured image through an E-mail to the owner using internet when an object is detected .by using "NodeMCU''module we are going to implement this project.

***Keyword:*** *IOT, Home Automation, sensors, LED ,WI-FI, smartphones*

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## 1. Introduction

Aload controlled by computer systems hasmany advantages compared withmanualcontrolled loads. Nowadays there are many programs and applications help to controlthings better using codes in artificial intelligence projects. In order to save energy andmake loads monitored easily, this projectsuggests smart home project based on IoTtechnology. ThissmarthomeisanInternetofThings(IoT).This IOT based smart security and smart home automation systems are trying to achieve comfort combined with simplicity. Wireless Home security and Home automation are the dual aspects of this project. The currently built prototype of the system sends alerts to the owner over E-mail using the Internet if any sort of human movement is sensed near the entrance of his house .On the other hand if the owner identifies that the person entering his house is not an intruder but an unexpected guest of his then 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 favorite T.V. channel for an example. Thus using the same set of sensors the dual problems of home security and home automation can be solved on a complementary basis. One of the main advantage of this IOT is even though Wi-Fi is not available .

## 2. Literature Survey

Smart homes based on IoT technology are becoming more and more popular. Mainmoto of IoT is to connect hardware world to internet. Then, Web of Things (IoT)emerged to easily connect sensors to the web, get the data and exchange data on the webthat has been produced by the devices. We have gone thoroughly through number ofjournals,researchandconferencepapersandprojectreportstothoroughlyunderstandtheconcept of IoT technology. Similarly, we have researched various IoT based projects thathave been designed and developed in the past. Some of the proposed and existing smarthomesplatformsareas follows.
Home automation systems using smartphone, Arduino board and Bluetooth technology are secured and low cost. A Bluetooth based home automation system proposed by R.Piyare and M.Tazil [2].A voice recognition-based home automation system proposed and implemented by a researcher [3].

## 3. Future Scope of Project

Day by day, the field of automation is blooming and these systems are having greatimpactonhumanbeings.Theprojectwhichistobeimplementedisahomeautomationusing EasyIOTWebserveranddWIFIandhasverygoodfuturedevelopment
Inthecurrentsystemwebserverisinstalledonawindows PCsothehomeappliancescanbe controlled using only by using the device on which webserver is installed. This can befurtherdevelopedinstallingwebserveroncloud.
Advantageofinstallingwebserveronthecloudisthathomecanbecontrolledbyusingany device which has WIFI 802.1 and a web browser. By visiting the IP address of thecloudthecontrol
This is one big advantage of IOT In this project, the use of a camera connected to the microcontroller might help the user in taking decision whether to welcome the guest after receiving the captured picture of the guest or intruder, If the user identifies he is an unknown person then the user can further forward the same photograph to the police station by explaining his situation. This project can also be implemented by using Raspberry.

### 1.3 Objectives of project

- Thegoalofthisprojectistodevelopahomeautomationsystemthatgivestheusercompletecontroloverallremotelycontrollableaspectsofhisorherhome
- TheautomationsystemwillhavetheabilitytobecontrolledfromacentralhostPC, the Internet, and also remotely accessed via a Pocket PC with a WindowsMobilebasedapplication.
- And the main motive of this project is to update it with security feature so people can get benefit of that things .it will really good like home automation with smart security people can survilliance by the camera as per security feature.

### Problem Definition& Problem Statement

Today people are looking at ways and means to better their life-style using the latesttechnologies that are available. Any new facility for home appliance that promises toenhance their life-style is grabbed by the consumers. The more such facilities andappliances are added, it becomes inevitable to have easy and convenient methods andmeans to control and operate these appliances. Conventional wall switches are located indifferent parts of a house and thus necessitates manual operations like to switch on or offthese switches to control various appliances. It gets virtually impossible to keep track ofappliancesthatarerunningandalsotomonitortheirPerformances.AndAimistoBuildansystemwhichcontrolshomeappliances withlessefforts,likecontrolusingmobile,orvoicebasedcontrolled.

### Overview of Home Automation System and security

### Overview

- Ahuge industrial facilities or governmental institutions have much oflamps.Employeessometimesforgettoturnthemoffintheendoftheday thisresearch suggest a solution that can save energy by letting the security tocontrollightingoffthebuildingwithhissmarthomebyblynkapplication.

The lamps can be controlled by switches distributed in the building andblynk application .

## 4. Proposed Work

### Methodology

The proposed system is an automation system which works on the input given by the user. These input commands from the user are in the form of voice commands. The system also has 2 sensors connected to it – DHT11 Temperature sensor and PIR Motion sensor. The voice commands are defined and processed in a C# programming code. If commands are independent of the use of any sensor, the respective output is reflected to the user in the form of speech output The DHT11 Temperature sensor senses the temperature of the room and returns a value to a variable in the Arduino IDE. When the user gives a voice command to retrieve the temperature, the flow of control is redirected from the C# code to the Arduino IDE from where the value of temperature is received in the C# code and reflected to the user in the form of voice output.The PIR Motion Sensor senses the motion around it and controls the respective light it has been connected to shown in Fig 1 and 2. This system works on multiple functionalities. Each one has its own details and specifics that need to be carefully checked before completing and using this project. The main functions and their specifics for this system are listed below: B. Voice Operation This is one of the most important operation/working function of

this project. This system takes input from the user in the form of voice commands and does the necessary processing and gives an output accordingly. The proposed system is implemented using Node MCU by overcoming all the drawbacks of previous existing methods In this project all the sensors are connected to the Node MCU board and the results can be seen in Smart phone. For every second it shows new value. If any gas leakage happens the value of air purity sensor shows the high value at that time we can turn on the fan to send the gas out. The camera module is connected to the Arduino UNO board because in Node MCU board we have only one analog pin For camera module we will use more analog pins, so we are connecting camera module to Arduino UNO. When IR sensor detects the motion, the camera module will be turned on. The captured images will be stored in folder of our PC and , it sends Captured images to the user email.

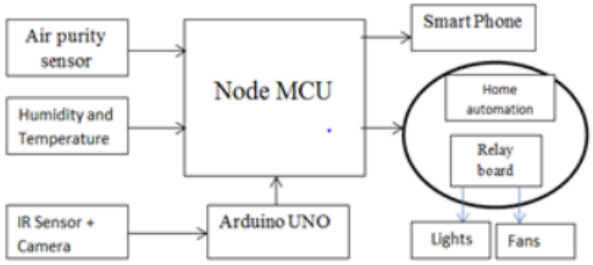
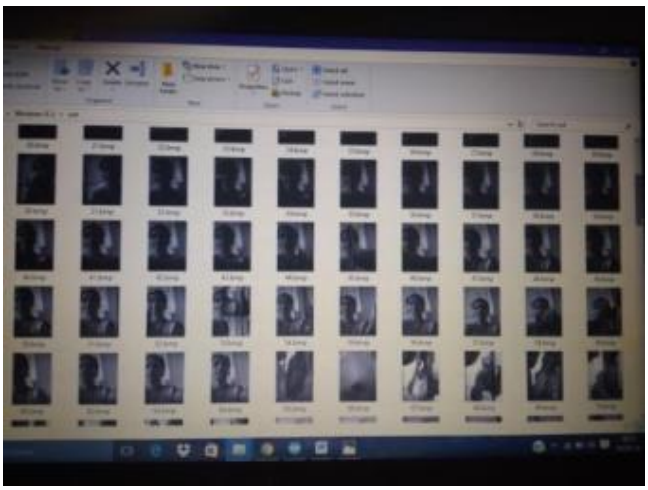



**Fig:1** block diagram

## 5. Result

The results that have been obtained from the above set up can be seen in blink app that has been shown below.

The captured image of OV7670 camera shall be stored in one folder of our PC and it sends the captured image to the user mail.

## 6. CONCLUSION

The final system created is capable of recognizing the voice commands and gives an appropriate response to the user. The form page created displays the input command as well as the response. IO commands like light on and light off work perfectly The PIR motion sensor senses motion and controls the light properly. The DHT11 sensor retrieves perfect temperature data of the room and this data is sent to respond back to the user via voice response. Internet of things based home automation system can only work in the presence of internet. The rapid growth of IoT devices brings concerns and benefits. Even though Wi-Fi is not available we can go to 3G or 4G services. This is one big advantage of IOT In this project, the use of a camera connected to the microcontroller might help the user in taking decision whether to welcome the guest afterreceiving the captured picture of the guest or intruder, If the user identifies he is an unknown person then the user can further forward the same photograph to the police station by explaining his situation. This project can also be implemented by using Raspberry.

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