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Home Automation Using IOT

Rohini Dattatray Sandugade[1], Jyoti waykule[2], Vaishnavi Kumbhar[3], Sakshi Ghejji[4]
[1,2,3,4]*Electronics Engineering, Sanjay Ghodawat University, Atigre, Maharashtra, India.*

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Abstract: *we can achieve home automation by simply connecting home appliance electrical devices to the internet or cloud storage. Due to tis the taskof appliances can be done easily and automatically using interned. Platform ofthe cloud computing will help us to connect the things surroundings everyone to make the easy task of accessing anything at any time and place in a user- friendly manner using custom defined portals. Hence, cloud act as a front end to access IOT. Here we have used the IOT for home automation to automatically control the appliances using the IOT board node MCU. The automation system will have ability to be controlled from a central host PC, theinternet, and also remotely accessed via a packet PC with a windows mobile based application. Here we used the mobile application of Remote XY mode. are no studies comparing Buprenorphine and Nalbuphine, we have selected thisstudy to evaluate the effect of intrathecal Bupivacaine with Buprenorphine compared with Nalbuphine for postoperative analgesia.*

Key Word: *It consists of various components like Node Mcu, 2 relay module, LDR(Light dependent resistor), power supply and smartphone having proper internet connectivity.*

I.INTRODUCTION

Home automation is most commonly used technology throughout the world for domestic i.e smart homeapplication. It make use of IOT(Internet of things) which can control the home appliances like fan, tub light, TV etc. A domestic automation system can monitor and/or manage home attributes adore lighting, climate, enjoyment systems, and appliances. It is very helpful for controlling the devices in smart way. Smart home technology refers to use the technologyin smart way and for doing the smart works i.e the tasks can be doe automatically. It is very helpful to control your home devices. In the context of IoT (Internet of Things) and M2M (Machine-to-Machine) communications, home automation systems can be controlled and monitored remotely through a network connection. In addition, IoT-enabled home automation systems can integrate with other smart home technologies, such as voice assistants like Alexa and Google Home, to provideadditional functionality and convenience.[10]

It specifically focuses on the development of an IOT based home automation system that is able to control various components via internet or be automatically programmed to operate from ambient conditions. In this project, we design the development of a firmware for smart control which can successfully be automated minimizing human interactionto preserve the integrity within whole electrical devices in the home. We used Node MCU, a popular open source IOT platform, to execute the process of automation. Different components of the system will use different transmission mode that will be implemented to communicate the control of the devices by the user through Node MCU to the actual appliance.

We are using a cloud server-based communication that would add to the practicality of the project by enabling unrestricted access of the appliances to the user irrespective of the distance factor. We provided a data transmission networkto create a stronger automation. The status of the appliance would be available, along with the control on an android platform.

II.MATERIALS AND METHODS

A. What is an IOT

The Internet of Things (IoT) is the ability to have devices communicates with one another via the internet or other networks, remotely tracking information to provide feedback to assist with decision making for commercial, industrial and residential purposes. This is commonly done using sensors connecting to a back-to-base system.

Some common day-to-day examples could be:

Temperatures in refrigeration or food heating units in the food and beverage industry.Assistance with the control of temperature and humidity levels.

Detection of gas and dust levels.

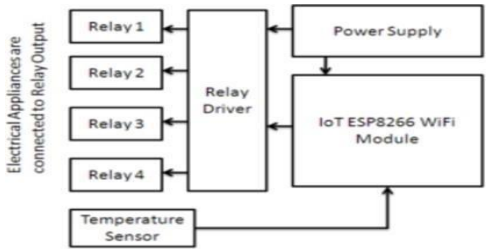
Monitoring of water levels and herd locations for agricultural purposes. Different applications in the automotive,

aviation and nautical sectors such as the sensing of tyre pressures for trucking fleets.

An IoT ecosystem consists of web-enabled smart devices that use embedded systems, such as processors, sensors and communication hardware, to collect, send and act on data they acquire from their environments. IoT devices share the sensor data they collect by connecting to an IoT gateway or other edge device where data is either sent to the cloud to be analyzed or analyzed locally. Sometimes, these devices communicate with other related devices and act on the information they get from one another. The devices do most of the work without human intervention, although people can interact with the devices -- for instance, to set them up, give them instructions or access the data.

These web-enabled devices' connectivity, networking, and communication protocols are heavily influenced by the particular IOT applications that have been implemented. IOT can also employ machine learning and artificial intelligence (AI) to help make data collection processes simpler and more dynamic. People who use the internet of things can live and work more intelligently and have total control over their life. IOT is crucial to business in addition to providing smart home automation devices. With the help of IOT, organizations can see in real time how their systems actually function, gaining insights into anything from equipment performance to supply chain and logistics activities.[1] IOT is one of the most crucial technologies of the modern world, and it will gain momentum as more companies see how linked gadgets can help them stay competitive.

B. General block diagram:



C. Components:

1. Node MCU
2. Relay module
3. LDR Module

D. Applications of Home Automation

IoT based home automation can revive the way people use technology. There is a considerable range of possibilities when we speak about applications of home automation.

- Controlled electrical fixtures such as lights and air conditioners
- Simplified garden or lawn management
- HVAC
- Controlled smart home appliances
- Enhanced safety and security at home
- Water and air quality control and monitoring
- Voice based home assistant supporting natural language
- Smart locks and switches

E. Advantages of Home Automation Using IoT

- Home security: by using the IOT the home activities can be easily handled automatically and with the security. Itis safer to use. We can control the security of your home with your phone. If anything goes wrong, you may receive notifications on your phone and you may probably operate you lights or locks through your phone.
- Energy efficiency and savings: Due to use of iot the saving of energy is been carried out as the automatic work canbe done i.e whenever the devise is not in use on if it is not needed then the device is automatically get turned off. or we can make it of through mobile since we are anywhere. We can increase the energy efficiency by controllingyour electrical fixtures through IoT. [9]
- Convenience: This parameter can be considered as one of the main advantages of using IOT for home automation.Due to IOT the control of the devices is in the hand of user i.e user can control as per his convenience and no on any another can make changes in it. For example, if you forgot to do any adjustment regarding it before leaving the hose then we can adjust or control it from the place where we are.

F. Disadvantages of Home Automation Using IoT

- Internet dependency: For working of the automated system a strong and reliable connection is required. The internet allows all smart devices to function in sync. So due to low or internet connectivity it may leads to the disturbance during the task is carried out. Thus, it is highly recommended to opt for 4G/5G speed of internet and good Wi-Fi services to avoid any inconvenience.
- Privacy concern: There are certain practices that users must abide by when it comes to smart homes. Although theinternet

is a safe data sharing space, there is still a chance of data breach. These incidents happen if the users shownegligence towards certain safety precautions. Protect Wi-Fi breaches with a strong password and make sure the connection is private. This applies to any smart device that provides access to automation. Furthermore, one mustevaluate these aspects and install smart technology from certified professionals only. These simple practices can safeguard end-users from data thefts.[3]

III.RESULT

We've included some of the results here, along with their individual working.

Fig.a) RemoteXY software

For starting the circuit, we use the RemoteXY mobile software. Which is Wi-Fi connected to the circuit the password ofWi-Fi is '12345678' that we type there, then circuit is connected to the Wi-Fi of mobile software (RemoteXY) .

Then the circuit is start to working.

Fig b)

We connect the circuit using Wi-Fi. After connection the window is shown like this fig b).There are 3 ON/OFF switches

1st switch is Auto, which work automatically

2nd & 3rd switch is manual which operate manually

2nd switch is used to manually control the relay channel DS13rd switch is used to manually control the relay channel DS2

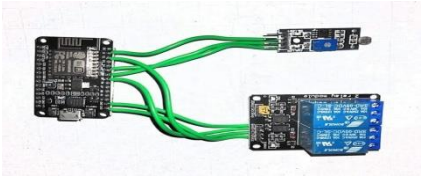


fig. c) connection diagram

The connection diagram is shown in fig.c) LDR & 2 relay module both are connected to the node mcu through the wires

Do pin of LDR is connected to the D1 pin of Node MCU , GND pin of LDR is connected to the GND of Node MCU, & VCC pin of LDR is connected to the 3U3 pin of Node MCU.

VCC pin of 2 relay module is connected to the 3U3 pin of Node MCU, In1 pin of 2 relay module is connected to the D5 pinof Node MCU, In2 pin of 2 relay module is connected to the D2 pin of Node MCU & GND pin of 2 relay module is connected to the GND pin of Node MCU

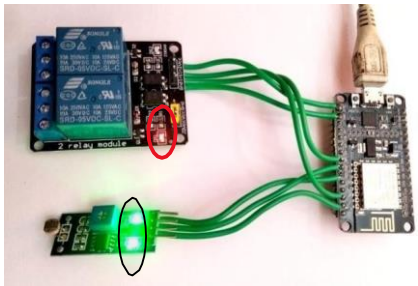


Fig. d) When supply is given circuit is in working state

When supply is given to the node mcu through the usb cable, the LDR is ON that we shown in black circle, & 2

relay module, 1 LED is ON that also we shown in red circle.

Fig. e) When switch 1 is ON

When switch 1 is ON, that we show in black box (Fig. e). LDR is in ON state, but the relay is in OFF state. This is the working of 1st switch. when we ON the switch it automatically of the 2relay module LED.

So, that the output device connected to the channel can be controlled by our choice. i.e we can connect or disconnect the supply to the output device which is connect to the 2 relay module channel.

This is manual mode operation which can be controlled as far the sensor detection. When the light is present then the LDRled will be on so that the channel led will be off that means the devices connected to the channel will not get supply, But assoon as the ldr detect that there is no light then the device is get connected to the supply and the device get turned on. Thisis automatic control mode.

Fig. f) when switch 2 is ON

When switch 2 is ON, that we show in black box (fig. F). The 2 relay module LED which is off in 1st switch that ON in the 2nd switch. This is the working of 2nd switch means, switch 2 is ON the 2 relay module's LED is on manually that we show in the red circle, But when the manual mode is off then the output devices connected Wil manually operated using the switch 2 and 3.

Here the switch 2nd is on that means the device connected to channel 1 is being connected to supply or disconnected fromsupply as per our choice manually. Here there is no any work of Ldr therefore the ldr led will be remain on only.

Fig. g) When switch 3 is ON

When switch 3 is on that we shown in the black box.(fig. g) the 2 relay module 2nd LED are on, that we show in red circle.Here the switch 3rd is on that means the device connected to channel 2 is being connected to supply or disconnected from supply as per our choice manually. Here there is no any work of Ldr therefore the ldr led will be remain on only.

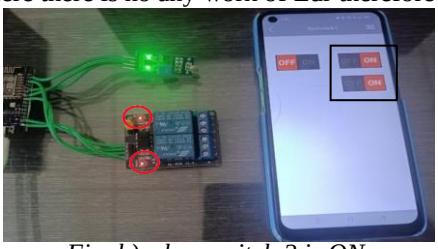


Fig. h) when switch 2 is ON

When both switches are ON, the 2 relay module both the LEDs are in ON state. Both the Channels devices will be connectedto the supply.

Fig. i) When all switches are off

When all switches are off, both the channel devices are disconnected from supply and also cannot be controlled manually.

IV. DISCUSSION

The future scope of this work is to use to make our home automation brighter with wireless sensor. It involves various kinds of sensors for switching every useful device when you enter your room like automatic AC switch on with proper regulation of temperature, opening/ closing doors by itself. With advancement in technology safety and security willbe major concern, so for safety measures wireless locker with proper alarm and fingerprints mechanism should be used.[1]

Clapping switch for on/off will be used and many more features can be included. It is possible to have a great control features. Home automation is just not limited to only switch on/off the devices by mobile application or any voice mode but with time the scenario is completely changing, wireless network of sensor is combining with home automation tounderstand human nature of living lifestyle so that Artificial Intelligence can better manage the home. sensor like humiditysensor , temperature sensor, smoke detector , motion sensor are implemented in home automation and sensor data are furtheranalysed to understand the use pattern and in favour of that deep learning is used for the intelligence device of data. The future will be completely boom with advanced sensor and artificial intelligence.

References

1. *kalaharijournals.com*
2. *Supriya, R.Charanya & S.J.Madhumith "A Review On Home Automation System Using IOT" 2020 International Conference on Emerging Trends in Information Technology and Engineering*
3. *www.99acres.com*
4. *"A step towards Home Automation using IOT'Harsh Kumar Singh1, Saurabh Verma2, Shashank Pal3, Kavita Pandey4 Department of Computer Science and Engineering Jaypee Institute of Information Technology A-10, Sector-62, Noida, Uttar Pradesh, India.*
5. *"Smart Home Automation System Using Internet of Things"Urvi Singh Electrical Engineering Department, Gautam Buddha University,Greater Noida*
6. *"Customization In Home Automation Using IoT" Thirunavukkarasu R RElectronics and Communication Engineering Sri Krishna College of technology (Affiliate to Anna University) Coimbatore, India.Mohan Kumar S Electronics and Communication Engineering Sri Krishna Collegeof technology (Affiliate to Anna University) Coimbatore, India.*
7. *"Energy Efficient Home Automation Using IoT"Ravi Kishore Kodali and Subbachary Yerroju Department of Electronics and Communication Engineering National Institute of Technology, Warangal Warangal, Telangana, India*
8. *"Mobile based Horne Automation using Internet of Things (IoT)"Kumar Mandula, Ramu Parupalli, CH.A.S.Murty, E.Magesh, Rutul LunagariyaCentre for Development of Advanced Computing(C-DAC) A Scientific Society under Ministry of Communications and InformationTechnology.*
9. *www.redappletech.com*
10. *www.geeksforgeeks.org*