Future Home-Advanced Technology

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Abstract: **In the Era of Technology we are working to reduce the human effort with the help of doing things automated so why can't we do the automation in our sweet homes where we spend a lot of time when we were kids. Here the term automation comes and we are doing the automation in our home than it is the home automation. Generally, Home automation works for automation of Lights. But in this we do some more things automated and try to automate more basic things. Home automation works with the most emerging technology nowadays which is IOT. IOT stands for Internet of Things where we can automate our homes with the help of some devices and hardware. Devices like Bluetooth, Wi-Fi, etcetera and Hardware like ATMEGA 328P Microcontroller, resisters, capacitors, LED's, etcetera are some helping hands for the automation of the house.**

An android App is also helpful for the connectivity with the different devices and for making the home intelligent we may use the Artificial Intelligence.

Keywords: **Artificial Intelligence, Home Automation, Internet of Things.**

1. Introduction

A Smart home is the home which controls with the help of an android app, using a website, or/and with the help of your voice. The general Goal of automated-home [1] is to use the networking technology to integrate the devices and electrical appliances so that the basic services found in the home can be controlled with these mediators.

The fundamentals for making this smart home is to make ease of things with the numerous benefits. It is impossible for someone to predict that IoT would come into existence in a very short period. IoT is one of the promising technologies used to control objects connected to internet through IP address. In Real Time Application [2] such as smart home, smart cities, smart grids and intelligent transportation, it is widely used. It has also expanded its features into medical fields such as instruments and many more. Smart home is one in which various electronic and electric appliances are wired up to a central computer control system so that they can either be switched on and off at certain times. Cloud computing is a rapidly growing technology where're sources such as storage devices, platform and applications are shared over the internet. Cloud services can be provided and delivered remotely by vendors such as Amazon or Microsoft as "public clouds" [4], or the resources are designed, installed, monitored and controlled internally as "private clouds" [7]. Cloud data retrieval is an important service to be considered as certain specific data files the users are interested

during a given session must be retrieved in an efficient way and quickly. In this project we are connecting the various sensors and devices to Raspberry Pi which is connected with IFTTT [3] and the devices are operable as per the voice commands is given through the Google assistant.

A. IFTTT

IFTTT stands for IF THIS THEN THAT.

It was established in 2010 with the slogan "put the internet to work for you".

It helps in connecting two channels together seamlessly.

IFTTT is a free platform that helps you do more with all your apps and devices as shown in fig. 1.

It also provides the services (services are apps and devices we use in everyday).

It basically works on concept of RECIPE which include a TRIGGER and ACTION.

Now TRIGGER is connected to THIS part of RECIPE and ACTION is connected to THAT.

TRIGGER work is to give signal to IFTTT when to run the RECIPE

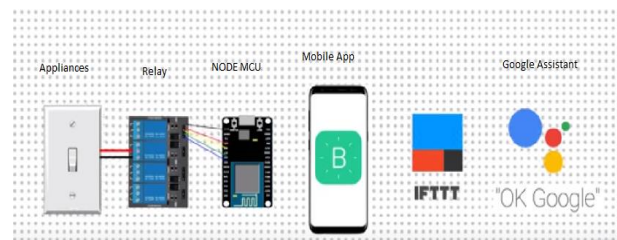ACTION work on what work is to be done.

Fig. 1. Working of IFTTT

B. IR(Infrared) [6]

An infrared sensor is an electronic device that emits in order to sense some things or aspects which in in surroundings as shown in fig. 2. Infrared sensors can be active or passive and they can be split into two main types:

- Thermal infrared sensors – use infrared energy as heat. Their photo sensitivity is independent of the wavelength being detected. Thermal detectors do not require cooling but do have slow response times and low detection capabilities.
- Quantum infrared sensors – provide higher detection performance and faster response speed. Their photo sensitivity is dependent on wavelength. Quantum detectors have to be cooled in order to obtain accurate measurements
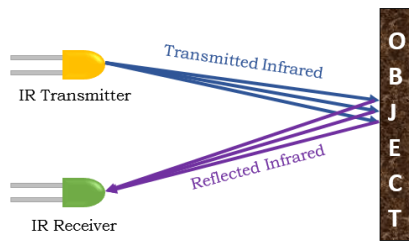
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447

Fig. 2. Working of IR sensor

2. Motivation

During the past few years, internet was known as a big mass that we can acquire data from. Embedding mobile transceivers to everyday items and gadgets enabled new forms of bi-directional communication between people with other people, and people with things. That paradigm, known as Internet of Things, which was first introduced in 1998 by Kevin Ashton, has received recently more attention in the academia and industry, and this would add a new dimension to the world of Information and communication technology.

While that paradigm is growing and have high positive impact on many aspects of our lives, challenging issues arise, that should be considered and addressed. The central issues are guaranteeing security and privacy of users and their data. Another issue is fully achieving smartness of interconnected devices by enabling their interaction. Exchanging data and autonomous behavior is the key to achieving the latter.

IoT has different definitions from different perspectives, however, they all revolve around "things" generally, collecting, exchanging and communicating data with each other's and with people through the "internet". IoT helps in decision making and au- to mating almost everything around us. The smarter life IoT vision promises in the near future through various applications, made smart Home Automation actually possible, starting from basically monitoring different parts of home, to actually controlling them. Integration of IoT and Home Automation, made it possible to monitor and control homes from different parts of the world. Some examples of applications to this are:

1. Smart Homes
2. Smart Wearable.
3. Connected Cars.
4. Smart Cities.

And many more.

3. Aim and Objective

This Paper addresses an IoT [5] application based approach in the field of home automation. Common use-cases include measuring the home conditions, basic things which we can automate, our daily use appliances and devices, and many more. Here the focus is to maximize the use of home automation technique with the help of IOT and minimize the use of human efforts and may help in maximizing the security of the homes.

A user has the following features for this home.

1. Dual mode smart home automation.
2. IR based doorbells.
3. IR based Parking Gate.
4. Laser Based Security.
5. Laser Connected Central Gate.
6. Water Level controller of Overhead Tank.
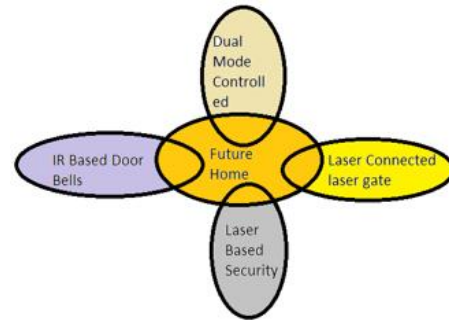7. Automated Evening Lights.

Some are shown in fig. 3.

Fig. 3. Features of future home

A. Multi-Mode Smart Home [10] Automation

In this Feature we have a special feature or we can say that we have an advanced version of the home automation in which we can control the electrical appliances with the help of three modes as shown in fig. 4.
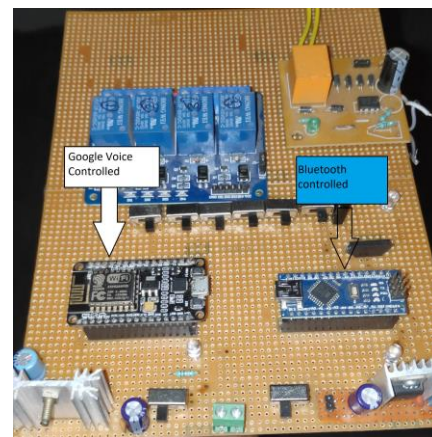

Fig. 4. Multi-mode smart home automation

1. Voice Control.
2. Bluetooth Control.
3. IR Remote Control.

In the Voice Control we are going to control the electrical appliances with the help of the dedicated voice commands with the help of an assistant which is widely use in the smart phones i.e. Google Assistant.

We use the esp8266 WI-FI module for the connection for the connectivity of the Google Assistant.

In the Bluetooth Control if the Wi-Fi module is not working or the internet connectivity if not there so with the help of an Android App we can control all the electrical appliances with the help of Bluetooth Module HC-05.

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448

This will be done with simply changing the mode of connectivity with the device.

In the Remote Control If there is no Smart Phones is present at that point and we want to control the electrical appliances than we Control the appliances with the help of any IR remote.

Note: We can configure any Remote with its HEX value for the controlling of the electrical appliances.

B. IR based doorbell

Sometimes people comes to your house and knock the door for calling the respective person and if he/she ask why don't you ring the bell than the answer from the person who knocks the door is unable to find the button or knocking the door is an easy task for them.

So for these type of people we introduce a door bell through which we don't have to knock the door or ring the bell, the bell will automatically ring if a person is in front of the door as shown in fig. 5.
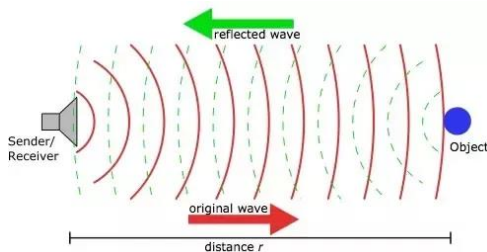

Fig. 5. IR based doorbell

C. IR Based parking gate

When a Car is in front of parking gate than someone has to open the parking gate manually by exiting from the car and this whole process takes time and some efforts so we introduce a system which automatically sensed the car in front of the parking gate and sensed with opening the gate with having some delay.
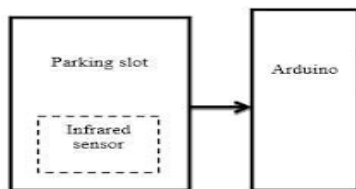

Fig. 6. IR based doorbell
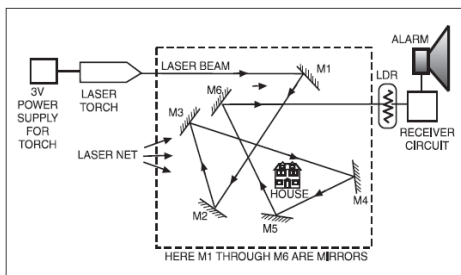
D. IR based security

Fig. 7. IR Based Security

The main problem is when some person is try to enter into the house in night and we do not get information of that person. That's why we made this gate it is basically used in night. The functioning of this is that when some person is come into the contact of laser light of the gate the security alarm will ring automatically. If the person is house member then we have to manually turn off the alarm and then the person can enter into the house as shown in fig. 7.

E. Laser connected central gate

This type of gate provide security as well as reduce the human effort. We made this gate because it will provide the security to the house member by recognizing the authorize or unauthorized person. The functioning of this is that when some person come in contact of laser light if he is authorize with the help of camera than he will breech the laser light and gate will open automatically. If he is unauthorized then the alarm will ring and the house member are also alert. This whole thing will have done with the help of LDR [8] sensors.

F. Water level controller of Overhead Tanks [9]

In your home you do have an overhead water tanks which may waste the water when it overflows so we design a device which prevents the overflow of water or prevent from being waste.

In this we have a three level which controls the wastage of water.

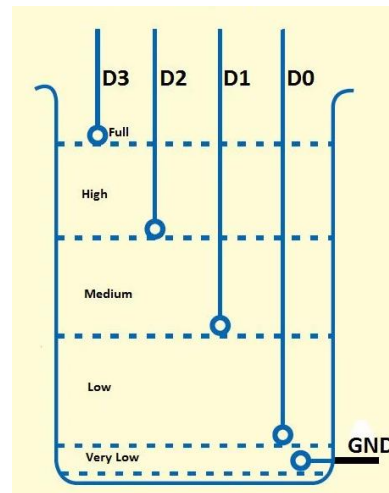- Lower level
- Middle level
- Top level

Fig. 8. Three level of water tank

When the water touches to the lower level than the motor will automatically start and when the it touches to the middle level than the water is ready to be filled and when it touches to the top level than the condition is that the circuit is completed and the motor will automatically turned off.

Resistors resist the flow of electricity. Photo resistors differ from other resistors in that they change when light shines on them. When light shines on a CDs cell, it decreases the

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449

resistance. The night light has a detector circuit which automatically turns on the light when the resistance reaches a certain level.

G. Automated evening light

In the evening we want to Turn On light manually with time so that is doesn't happen dark in the evening in the home so we want to automate that light.

Resistors resist the flow of electricity. Photo resistors differ from other resistors in that they change when light shines on them. When light shines on a CDs cell, it decreases the resistance. The night light has a detector circuit which automatically turns on the light when the resistance reaches a certain level.
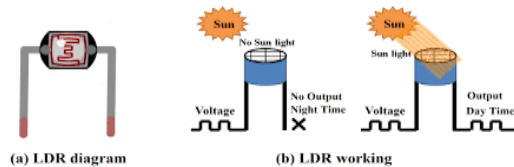

Fig. 9. LDR working

4. Conclusion

This paper presented an overview on advanced technology for future homes.

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