Google Assistant based Device Control Over Internet

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***Abstract*— The main aim of this project is to implement Google assistance-based device control using IOT. The system is implemented using ordinary household appliances. Natural language voice commands are given to the Google Assistant and with the help of IFTTT (If This Then That) application and Blynk app the commands are decoded and then sent to the microcontroller, the microcontroller in turn controls the relays connected to it as required. We can operate the device connected to the respective relay ON or OFF as per our request to the Google Assistant. The microcontroller used is Node MCU (ESP8266) and the communication between the microcontroller and the application is established via Wi-Fi (Internet). The major components used in this project are Node MCU (ESP8266), Internet of Things (IOT), Google Assistant, Smart phone (android), relays and power supply. The Android device communicates with the microcontroller and sends the desired signal via the internet.**

***Index Terms*—IFTTT, Node MCU(ESP8266), Google assistance, Blynk app**

I. INTRODUCTION

Google assistance-based device control over internet is used to control devices using IOT. It is mainly used for home automation purpose. This project control devices by giving natural commands to the Google assistance and also operate the devices connected to the respective relay ON or OFF as per our request to the google assistance. It is highly efficient for aged and differently able persons. This project has proposed the idea of smart homes that can support a lot of home automation. Smart homes are huge system that includes multiple technologies and applications that can be used to provide security and control of the home easily. In this project we are giving natural voice commands to the google assistance and operate the devices.

The internet where the existing network of internet to the computer systems will connect to the real-world objects or things. Things may include any objects, home appliances, devices, vehicles, etc. and when these things connect to the internet in specific infrastructure via standard protocols then the whole system is said to be internet of things.

IOT uses three common Communication models. They are:

Device to Device Communication: Two Devices Communicate directly between one another through a wireless network like Bluetooth, ZigBee etc. without using an intermediate server.

Device to cloud Communication: The IOT device connects directly to an Internet cloud like an application service provider to exchange data and control message traffic. This approach frequently takes advantage of existing communications mechanisms like traditional wired Ethernet or Wi-Fi connections to establish a connection between the device and the IP network, which ultimately connects to the cloud service.

Device to Gateway Model: There is application software operating on a local gateway device, which acts as an intermediary between the device and the cloud service and provides security and other functionality such as data or protocol translation. iv. Back End data sharing Model The back-end data-sharing model refers to communication architecture that enables users to export and analyse smart object data from a cloud service in combination with data from other sources.

II. LITERATURE SURVEY

[1] Sandeep Chintha [1] In this paper home automation is done through IoT, Adafruit IO a cloud-based server, IFTTT used for creating simple

conditional statements, and Node MCU which controls the relay connected to it.

[2] Manish Prakash [2] In this paper, the Blynk application is used as a tool to communicate with the microcontroller and sends a signal via the Internet. This system consists of hardware component ULN 2803 IC is used as a relay driver. It is a High voltage, high current Transistor Array IC used with Microcontrollers where we need to drive high power loads.

[3] Era Johri et.al [3] In this paper, the system is connected to a PC. The user sends commands through an Android application whose signal is given to the PC via Wi-Fi. PC has the sever program deployed on it. The server is configured to handle both hardware and software modules. The microcontroller interacts with the server. There are additional features added such as GUI and alert messages via SMS.

[4] Mudassir M et.al [4] In this paper in addition to IoT, IFTTT, Node MCU, and Adafruit they involved the use of the Blynk application for remotely controlling the appliances.

[5] Md Sarwar Kamal in (2017) ―Efficient low-cost supervisory system for Internet of Things enabled smart home. ‖ This paper proposes an efficient low-cost supervisory system for smart home automation that can be managed using IoT. The proposed system is based on Apriority algorithm and will help to monitor and control all the home appliances and electronic devices through a supervisory system in a most efficient and reliable manner. Both the consumers and the suppliers will get the opportunity to manage the power distribution by monitoring the electricity consumption.

III.EXPERIMENTAL METHODOLOGY

The block diagram consists of Node MCU ESP 8266, relays, led, light, fan, power supply. NODE MCU ESP 8266 consists of 17(GPIO) pins in that 3 are multiplexer pins. We are giving power supply as input to the microcontroller. Relays are connected to the NODE MCU, and relays acts as switch i.e., ON or OFF condition. Through relays we are giving fan and light and relay is not required for led because it requires less voltage compared to light and fan. We get output by giving voice commands through the google assistant and the commands are decoded and send through micro controller. The proposed system eliminates the complication of wiring in case of wired automation. Considerable amount of power supply is also possible. Operating range is more than the Bluetooth. The existing system does not allow remote monitoring and controlling of appliances. But whereas in the proposed system the system using the Wi-Fi based home automation system it allows to monitor and control the appliances. The home automation of the existing system in 1990‘s, the people in every home has electronic devices which are controlled manually but in our proposed system.

IV.MODELLING ANALYSIS

Micro controller ESP8266-1ESP-12E is a miniature Wi-Fi module present in the market and is used for establishing a wireless network connection. Micro controller or processor. The core of ESP-12E is ESP8266EX, which is a high integration wireless SoC (System on Chip). It features ability to embed Wi-Fi capabilities to systems or to function as a standalone application. It is a low-cost solution for developing IoT applications.

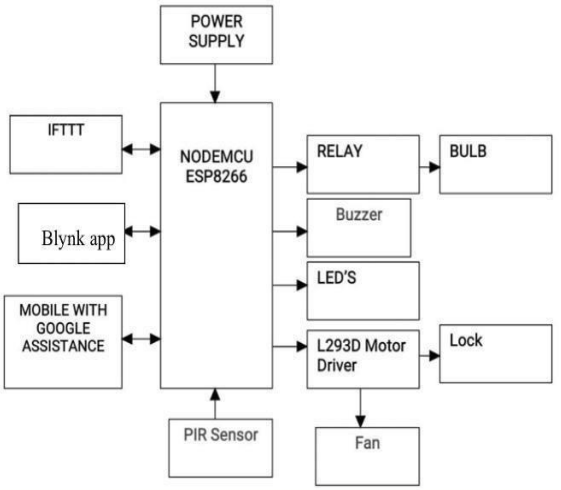

Fig: Hardware Block diagram of Project

As the operating voltage range of ESP8266 is 3V to 3.6V, the board comes with a LDO voltage regulator to keep the voltage steady at 3.3V. It can reliably supply up to 600mA, which should be more than enough when ESP8266 pulls as much as 80mA during RF transmissions. The output of the regulator is also broken out to one of the sides of the board and labelled as 3V3. This pin can be used to supply power to external components.

Switches& LED Indicator: The ESP8266 Node MCU features two buttons. One marked as RST located on the top left corner is the Reset button, used of course to reset the ESP8266 chip. The other FLASH button on the bottom left corner is the download button used while upgrading firmware. The board also has a LED indicator which is user programmable and is connected to the D0 pin of the board. Node MCU Pinout: The Node MCU has total 30 pins broken out to the pin headers on both sides. These pins can be assigned to all sorts of peripheral duties. We will make groups of pins with similar functionalities as shown in the table below: Pins Function Power Pins VIN pin supplies the by 5V voltage source.

Finally, we have to program the controller in order to receive the information coming to it from Speak by using Arduino IDE.

V.RESULT & DISCUSSION

This project has proposed the idea of smart homes that can support a lot of home automation systems technology has great impact in everyone ‘s everyday life. This survey describes various methodologies used in home automation system to control and access the home appliances remotely through Internet services anywhere anytime. Several unlock issues related to privacy and security needs to be focused for future Internet of Things. Securing data, data management and privacy of every user plays a key role in the challenges of Internet of Things. Smart homes are huge system that can includes multiple technologies and applications that can be used to provide security and control of home easily.

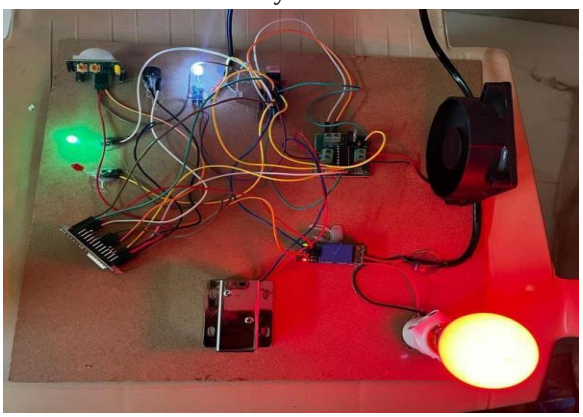

Fig1: Green LED turns on when there is a valid access

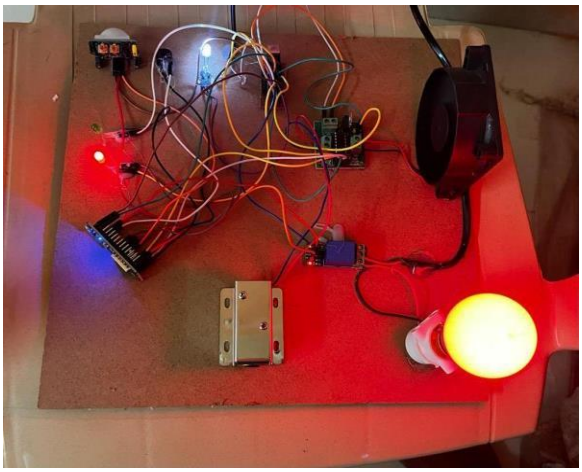

Fig2: PIR sensor sense movement red LED and buzzer turns on

VI. CONCLUSION

This project has proposed the idea of smart homes that can support a lot of home automations systems’ IOT technology has great impact in everyone’s everyday Life. This survey describes various methodologies used in home automation systems to control home appliances remotely through internet services anywhere anytime. Several unlock issue related to privacy and security needs to be focused for future internet of things. Securing data, data management and privacy of every user plays a key role in the challenges of internet of things. Smart homes are huge system that can includes multiple technologies and applications that can be used to provide security and control of home easily.

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