# Iot Based Smart Room Solutions

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*Abstract:"Smart Room Solutions" is a model to automize the department class room, staff room and laboratory. This project aims to monitor electric power consumption and thus prevents electric power wastage. This atomization raises the college infrastructural standards to meet the high global standards.*

*Index Terms: IoT, Flask, Sensors, Google Home Mini*

## I.INTRODUCTION

IoT is revolutionizing the world by connecting all physical objects in giant network and providing them with a capability to interact with each other .It is growing exponentially in the direction of automizing the whole world in all possible dimensions and going play a significant role in changing the living standards of human beings. IoT is shedding light on improving quality, productivity, reliability and also helps in reducing costs, risk in exploration.

With this view of development we are trying to implement the IoT enabled technology in our environment to control the electrical appliances in the class, lab and a staff room.

This atomization [1] raises the college infrastructural standards to meet the high global standards. It also simplifies the work.

Now day a day's teams are aim to be more productive. But one often overlooked strategy to promote productivity lies in the organization's physical infrastructure and the technology that powers it. So the integrated system which we are focusing on could be beneficial in our work environment.

The proposed model addresses the following objectives:

1. To utilize Google assistant mini to recognize the voice commands and process it.

2. To develop a server side scripting using FLASK.

3. Design a complete layout for the devices connectivity.

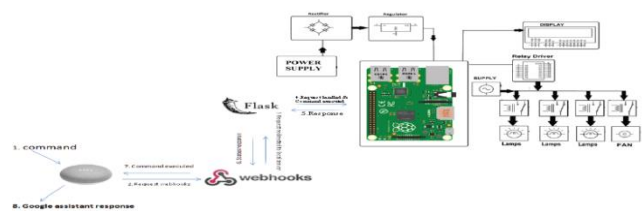4. To implement the design in the real environment.

## II.LITERATURE REVIEW

Shaiju Paul, Ashlin Anthony and Aswathy B, designed a home automation system in short HAS in which they have linked up all the electronic devices with a Raspberry Pi through a relay. The user interface have been developed in association with android phones.[2]. The Android phone and the Raspberry Pi board are connect to same Wifi-Network and used android app designed to control all appliances connected to Raspberry Pi. [3]

Home automation using Raspberry Pi by Monika M Patel et al stated that they have used a

Raspberry pi model B as a computing device, a Wi-Fi modem for their web availability, a relay circuit for associating electronic devices to the Raspberry Pi and WebIOPi for IoT system. Their relay circuit works at a 5-12V yield. WebIOPi is a coordinated IoT system for Raspberry Pi. The framework in this paper, will give status of machines associated with the framework. The system developed offers the user with a mobile remote so that user can remotely operate on the lights and other connected devices in their homes.[4]

## III.ARCHITECTECTURAL FRAMEWORK



This section contains a description of the components present in the architectural framework.

Raspberry Pi3: The Raspberry is loaded with Raspbin operating system that runs python script to process client request for controlling electronic devices. [5]

### A.GPIO

General purpose input output pins. We can set them in Input or output mode. To read sensor inputs set GPIO Pin in input mode. In the output mode the GPIO Pin is used to trigger electronic circuit [6]

### B.Python Flask framework

A python code build by using Flask Framework is deployed in Flask web server.

### C.Relay

Relays are switches that open and close circuits electromechanically or electronically. Relays control

one electrical circuit by opening and closing contacts in another circuit.

### D. Power Supply

Powerhouse for Raspberry Pi3

### E. Webhooks

This is known as client characterized HTTP call backs. A web hook is a path for an app to impart different applications to valuable data. A web hook pushes data to other ongoing real time applications, which means you get information right away. Dissimilar to common APIs where one would need to send solicitations to servers for information all around every now and again so as to get it in real time. This settles on web hooks effective decision for designers in giving continuous data to customers.[7]]

### F.Google Assistant

Google assistant is an artificial intelligence-powered digital assistant developed by Google. At present Google assistant is integrated into mobile phones and smart devices. Google assistant with its natural language processing abilities providing valuable information to the user queries. It learns about user by maintaining personal information like where you worked, your meetings and travel plans, the sports teams you liked, and your food preferences to better serve the user. [8]

### G. Flask server

It is a smaller scale web framework written in Python. As it does not need any specific tools or libraries it is delegated as a micro framework.[9]. Flask is created by Armin Ronacher, who drives a worldwide group of Python lovers named Pocco. Flask is based on the top point of Werkzeug WSGI toolbox and Jinja2 template engine.

### IV.IMPLEMENTATION

Step 1: Start
Step 2: Give voice command to Google Assistant as input.
Step 3: Google assistant mini sends the command to the web hooks service of IFTTT.
Step 4: The HTTP request from web hooks is redirected to the Flask server.
Step5: The request is handled appropriately by the flask server and given command is
 executed by the raspberry pi.
Step 6: A appropriate response will be sent back to the flask server from raspberry pi.
Step 7: Flask server will send a response to the Google Assistant mini and gives voice   response.
Step 8: Google Assistant mini gives voice response.
Step 9: Stop
To change the state of pin on the Raspberry Pi board.

### H. The sample code used is

```
for user in switch. each ():

    #Check value of child (which is 'state')

    if(user.val() == "OFF"):
```

#If value is off, turn LED off

```
    GPIO.output (pin, False)

else:
```

#If value is not off (implies it's on), turn LED on

```
    GPIO.output (pin, True)
```

#0.1 Second Delay

```
    time. Sleep (0.1)
```

On the execution of the code the Google assistant will recognize the command and switches on/off the lights.

### V.CONCLUSION

The current work environment is piled up with lot of activities and the employees are becoming multitaskers. It became very common practice to ignore certain regular tasks like switching off power supply which leads to the wastage of power. This project increases the reach to control the electronic appliances through IoT. It allows optimized resource consumption and instantaneous control and response in autonomous systems. It becomes an exemplary model which can be implemented for the real environment.

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