

N.M.A.M. Institute of Technology

A PROJECT REPORT ON

“Home Automation”

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ABSTRACT

Home automation is a topic which gaining popularity day by day, because of large advantages. One can achieve home automation by simply connecting home appliance electrical devices to the internet or cloud storage. The reason for this surge demand of network enabled home automation is reaching the zenith in recent days for its simplicity and comparable affordability. Platforms based on cloud computing help to connect to the things surroundings everyone so that one can find it easy to access anything and everything 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 are assuming a system which can control devices through wireless based network or cloud based approach. In this project we use IOT based home automation system which goal is to develop a home automation system that gives the user complete control over all remotely controllable aspects of his or her home. The automation system will have ability to be controlled from a central host PC, the internet, and also remotely accessed via a packet PC with a web based application.

INTRODUCTION

The main objective of this project is to build a smart home device which can be used to control the home appliances via internet. The home automation device that we built can be integrated with almost all the home appliances and can be used to control them remotely from any part of the world.

In this project we use IOT based home automation system which goal is to develop a home automation system that gives the user complete control over all remotely controllable aspects of his or her home. The automation system will have ability to be controlled from a central host PC, the internet, and also remotely accessed via a packet PC with a web based application.

OBJECTIVES

- The main objective of this project is to build a smart home device which can be used to control the home appliances via internet. The home automation device that you build can be integrated with almost all the home appliances and can be used to control them remotely from any part of the world.

Hardware Requirement

- Raspberry pi 4
- LED lights
- DC Cooling Fan
- Bread board
- Arduino UNO
- LDR sensor
- DHT11 sensor
- Resistor
- Wires
- Cables and Connectors

Operating System

- Raspbian OS

Software Requirement

- Programming Language: Python

SYSTEM ANALYSIS

Process Specification

The entire process can be depicted using these basic steps:

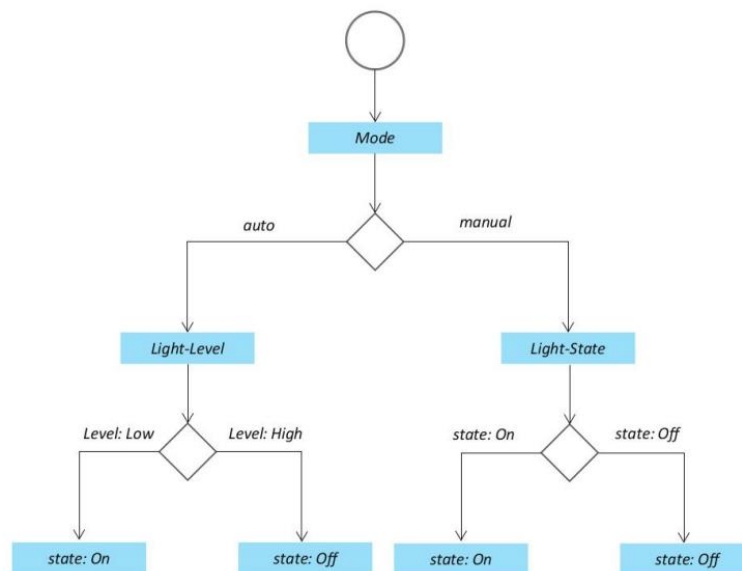


Fig 1: Process Specification Diagram

Domain Model Specification

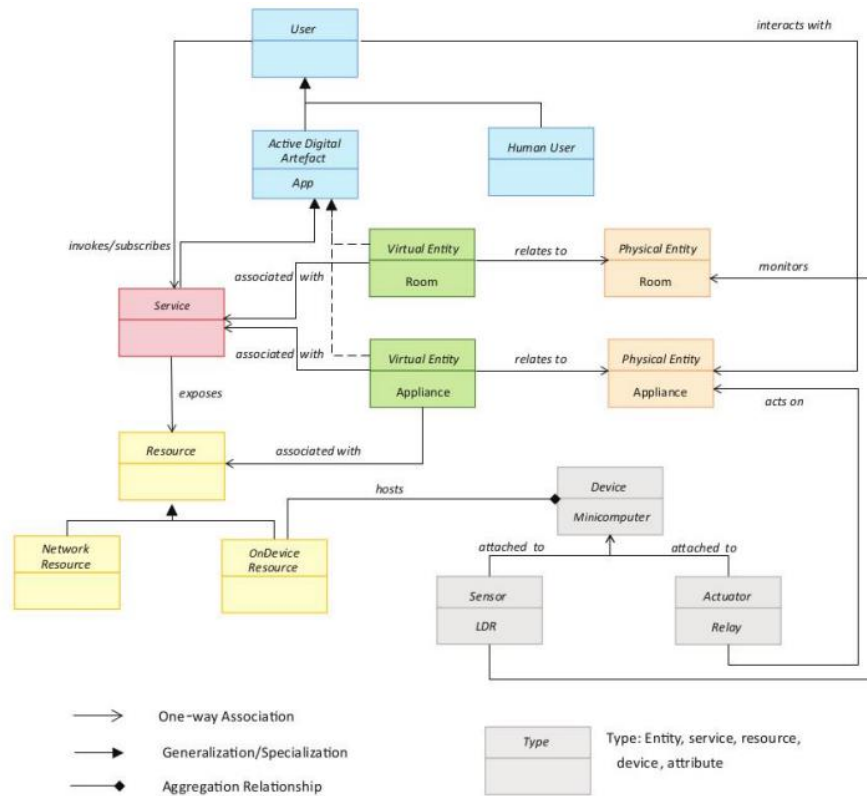


Fig 2: Domain Model Specification

Information Model Specification

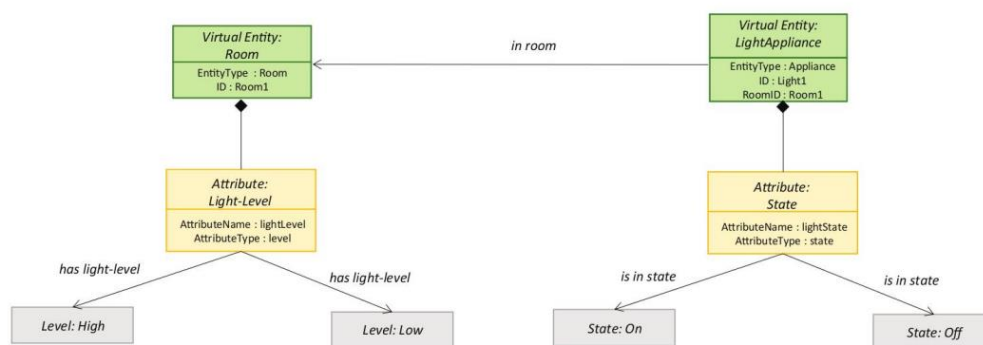


Fig 3

Service Specification

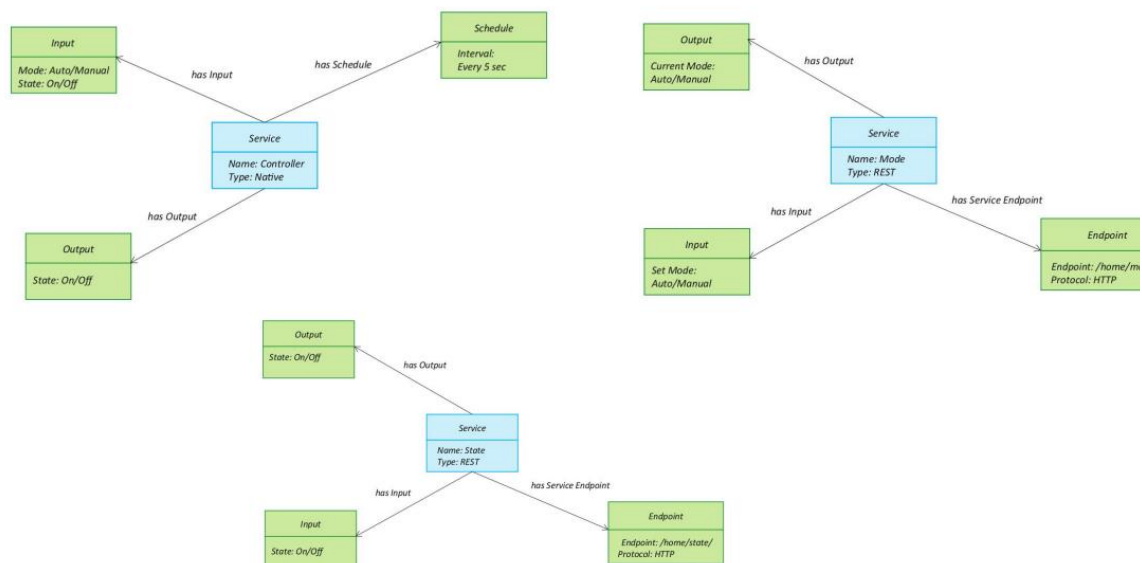
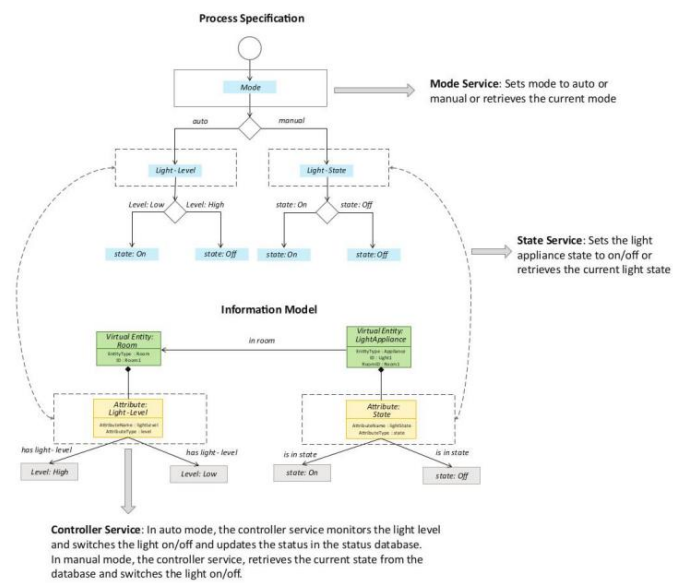


Fig 4

IOT Level Specification

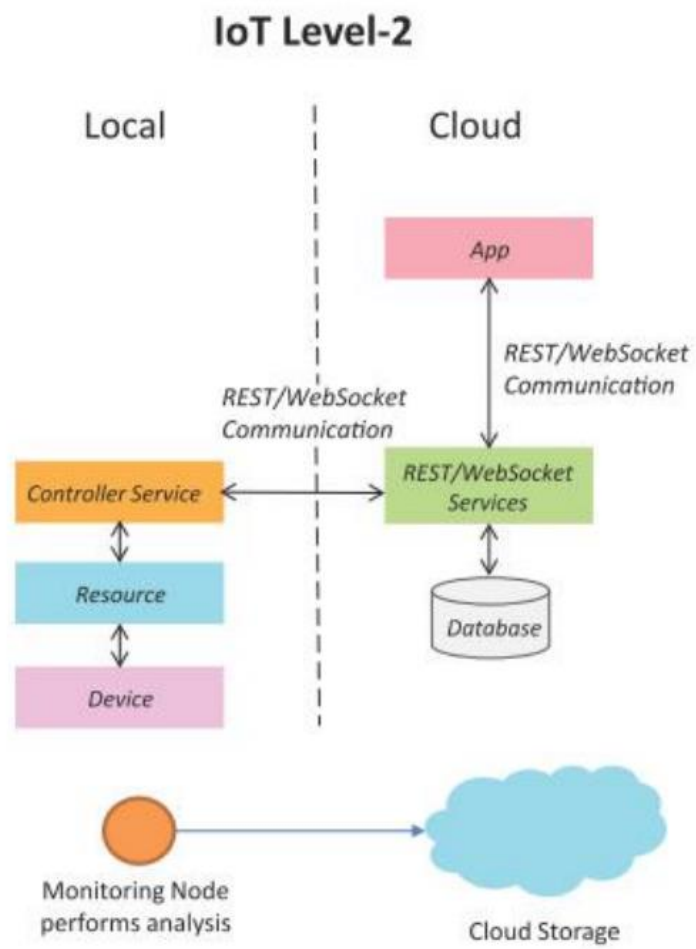
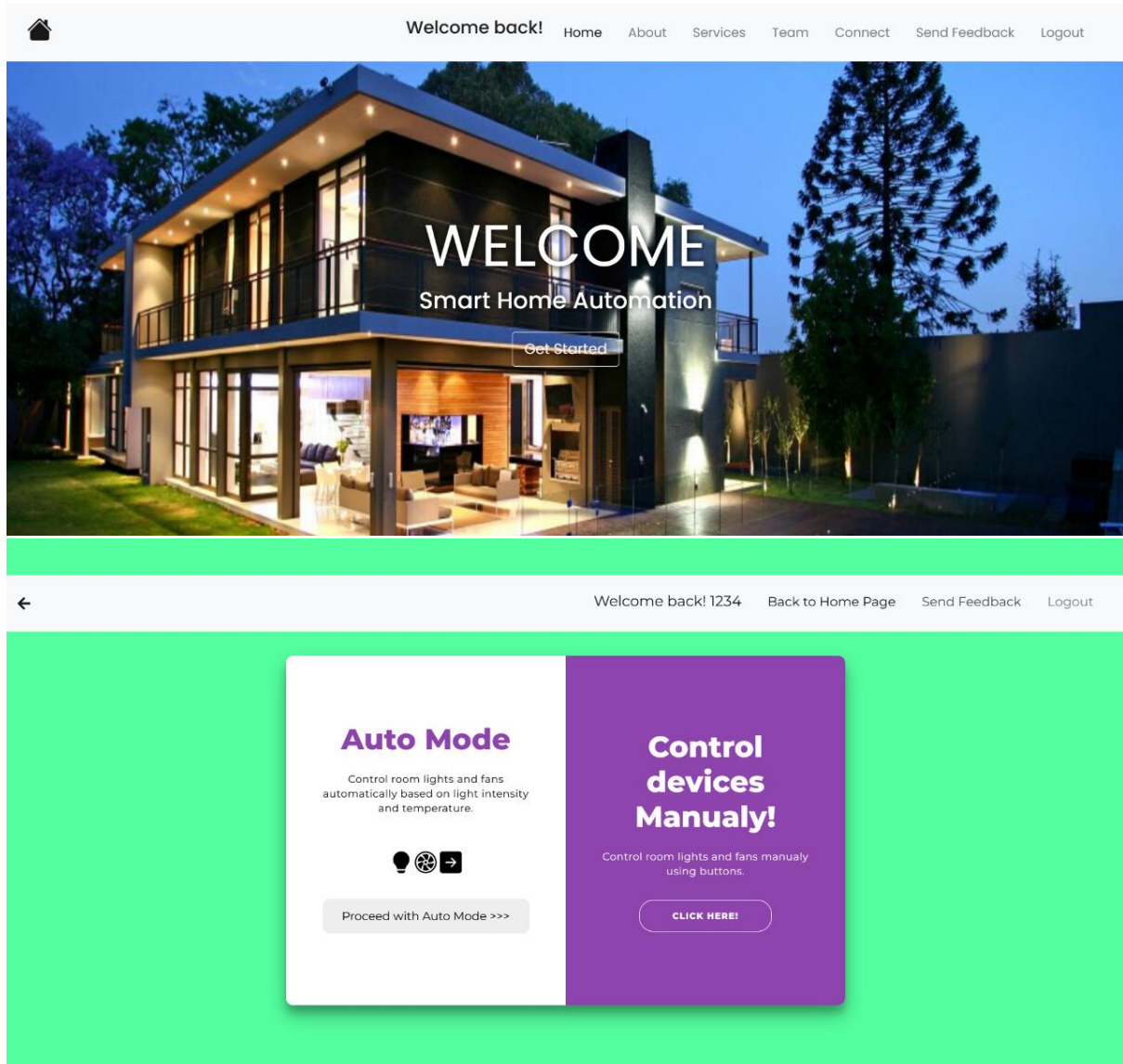


Fig 5

SNAPSHOTS



Welcome back!
 [Home](#)
[About](#)
[Services](#)
[Team](#)
[Connect](#)
[Send Feedback](#)
[Logout](#)

[←](#)
 Welcome back! 1234
 [Home](#)
[Change mode](#)
[Send Feedback](#)
[Logout](#)

STATUS

Light

Light1 --> OFF

Light2 --> OFF

Light3 --> OFF

Light4 --> OFF

Fan

Fan1 --> OFF

Fan2 --> OFF

Fan3 --> OFF

Fan4 --> OFF

Mode --> **Manual Mode**

CONTROLS

Light

Light 1 CNTRL ==> [TURN ON](#) [TURN OFF](#)

Light 2 CNTRL ==> [TURN ON](#) [TURN OFF](#)

Light 3 CNTRL ==> [TURN ON](#) [TURN OFF](#)

Light 4 CNTRL ==> [TURN ON](#) [TURN OFF](#)

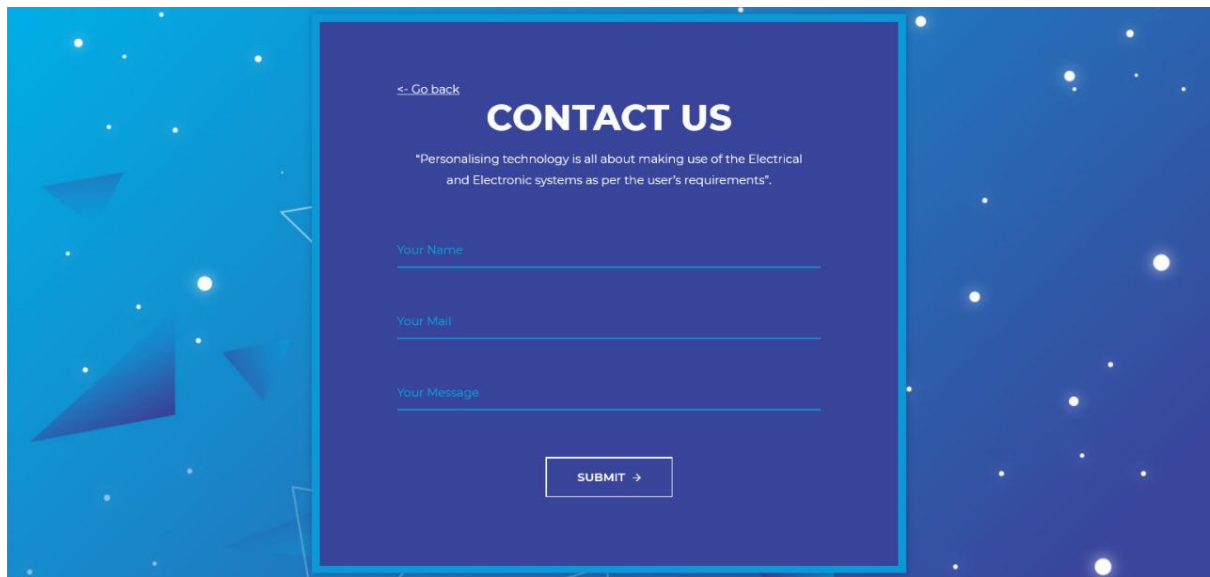
Fan

FAN 1 CNTRL ==> [TURN ON](#) [TURN OFF](#)

FAN 2 CNTRL ==> [TURN ON](#) [TURN OFF](#)

FAN 3 CNTRL ==> [TURN ON](#) [TURN OFF](#)

FAN 4 CNTRL ==> [TURN ON](#) [TURN OFF](#)



⏪ Go back

CONTACT US

Personalising technology is all about making use of the Electrical and Electronic systems as per the user's requirements.

Your Name

Your Mail

Your Message

SUBMIT →

CIRCUIT DIAGRAM:

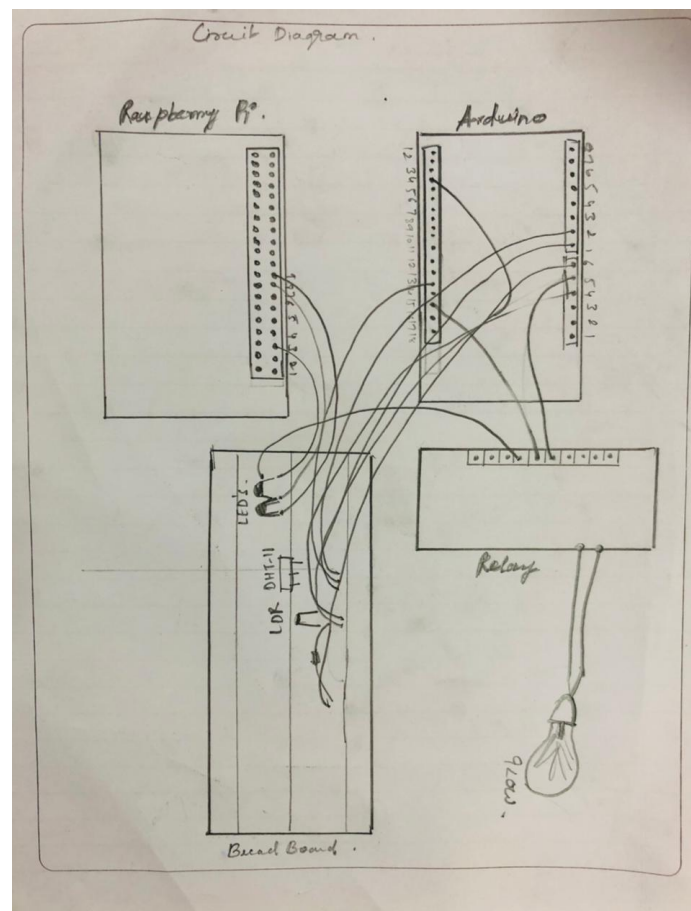
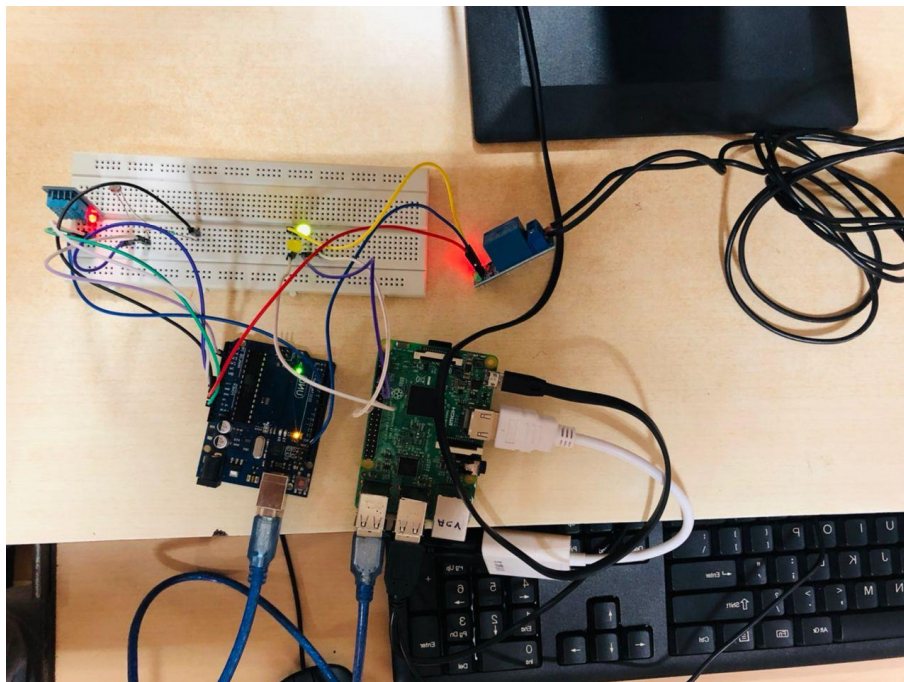


Fig 6



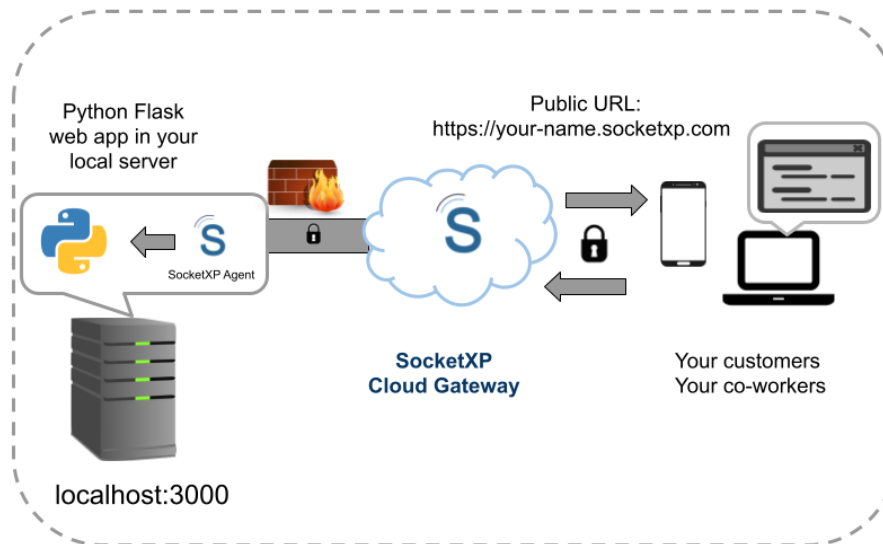


Fig 7

FUTURE SCOPE

The next phase for the home automation market will occur based on a few key improvements in the technology available in automation, such as improvements in wireless automation solutions as well as lowering of price points as the market begins to accept home automaton usage in larger volumes. Some trends that we foresee for this phase of the industry are Big companies like philips, Siemens & scheider will eventually bring out fairly mass market automation products with appealing user interface but at a lower price point today, and more people will be able to afford the products. Some foreign players will have niche in high and automation and focus fun the premium market.

Advantages

- Error probability reduced Ease of access and low cost and power consumption
- Can reduce human effort
- Smarter processing and services
- Can be implemented at any device and automated
- Alert system is quick in case of an emergency
- Eliminates the use of PC for automation
- Helps old age people to control the remote devices
- Simple interface

Disadvantages

- Security concerns
- Vulnerable to attacks
- Most of the times range is restricted
- High dependency on sensor devices which makes the system vulnerable if system fails

CONCLUSION

We built a web application interface using python's Flask API which has manual mode and auto mode. To log in to the web application one has to have a working username and password which is then followed by two factor authentication for more security purposes. Whenever a user logs in to the application, a notification is sent to the admin via mail. A feedback form is also implemented into the application for taking feedbacks from the user. The website is made live to the internet using SocketXP.

REFERENCES

- [1] Raj Kamal, "Internet of Things: Architecture and Design", McGraw Hill
- [2] Google
- [3] P. S. Pandey, M. K. Aghwariya, P. Ranjan, G. Rani, "Designing of Tracking System And Emergency Vehicle Locator With UltraSensitive GPS Receiver Active Antenna" on National conference on Advancement in Engineering Materials(NCAEM-2016) M.J.P.Rohilkhand University, Bareilly, 24-25 Feb 2016, ISBN No.: 978-93-82972-12-9.