A

Project Report

On

Analysis of Localization of Hotspot

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Department of Information Technology

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1.ABSTRACT

We can access the internet almost anywhere and anytime.But there will be occasions when you struggle to get a decent wi-fi signal.Reasons for this are if your house is large, the wi-fi signal may struggle to reach far corners another problem could be that your router is in the wrong position.Our objective is to implement wifi positioning system and its effective use for all wifi users or to cover the maximum area.

There is a system available which tells you where is wifi is present but there is no as such system that where you should place a wifi hotspot. Research is going on .Many theories are available which we are going to use in our application like trialteration method.Our application finds correct places so that all wifi users can access full signal for maximum time.

The goal of our project is to give a location of wifi router in a given area such that it will provide a good signal strength and cover the maximum users in a given area.

2. SYSTEM STUDY

2.1 Python Language :

Python is a powerful high-level, object-oriented programming language created by Guido van Rossum.It has simple easy-to-use syntax, making it the perfect language for someone trying to learn computer programming for the first time.

Python's features include:

- Easy-to-learn
- Easy-to-read
- Easy-to-maintain
- A broad standard library
- Portable
- Extendable
- Databases**:** Python provides interfaces to all major commercial databases.

2.2 PyQt - Using Qt Designer:

The PyQt installer comes with a GUI builder tool called **Qt Designer**. Using its simple drag and drop interface, a GUI interface can be quickly built without having to write the code. It is however, not an IDE such as Visual Studio. Hence, Qt Designer does not have the facility to debug and build the application.

2.2 Hardware Requirements:

Minimum (basic usage) hardware

32-bit dual core 2Ghz CPU.
2 GB RAM.
24 bits 1280×768 display
Mouse or track pad.

2.3 Software Requirements:

1. Python 2.7.
2. Qt Designer.
3. Pyuic4 (.ui to .py file).
4. Ubuntu 16.04.

3. OBJECTIVES

1. To Learn Python Language and PyQt Designer.
2. To design, develop and implement a group project.
3. Create something useful for People.
4. To find the optimize router from the given list on the basis of range and cost.
5. To develop an algorithm for mounting the hotspot at proper place so that maximum area is cover.
6. To provide user friendly interface for administrator.

4. INTRODUCTION TO TOPIC

4.1 Wi-Fi-Hotspot:

Wireless (or Wi-Fi) hotspots are essentially wireless access points providing network and/or Internet access to mobile devices like your laptop or Smartphone, typically in public locations. To put it more simply, they're places where you can take your laptop or other mobile device and wirelessly connect to the Internet; some devices and Smartphone also act as mobile Wi-Fi hotspots.

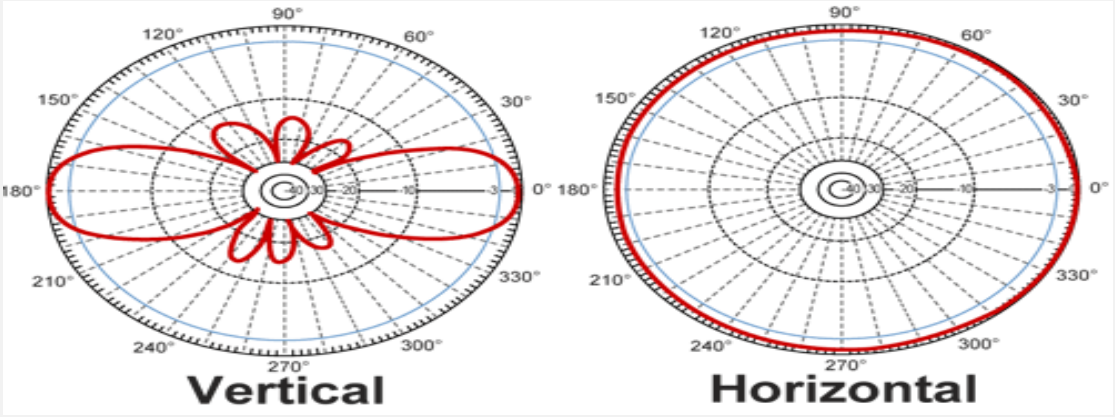
4.2 Wifi Antenna:-

Antenna	Type	Best use	Signal use	Location	Max Range
2.5 dBi	Omni directional	USB adapters	Receive	Indoors	300ft
5 dBi	Omni directional	USB adapters	Receive	Indoors	500ft
7dBi	Omni directional	Routers/Adapters	Receive/transmit	Indoors	800ft
8dbi	Omni directional	Routers/Adapters	Receive/transmit	Outdoors	1500ft
9dbi	Omni directional	Routers/Adapters	Receive/transmit	Indoors	1200ft
11dBi	Omni directional	Routers/Adapters	Receive/transmit	Outdoors	.25 miles
14dbi	Omni directional	Routers/Adapters	Receive/transmit	Outdoors	.4 miles
Yagi Cantenna Tripod 14dBi	Directional	Routers/Adapters	Receive/transmit	Indoors	2 miles
Yagi Cantenna Mount 14dBi	Directional	Routers/Adapters	Receive/transmit	Outdoors	3 miles
Panel Mount 14dBi	Directional	Routers/Adapters	Receive/transmit	Outdoors	4 miles
Dish Grid 19dBi	Directional	Routers/Adapters	Receive/transmit	Outdoors	5 miles
Parbolic Grid 24 dBi	Directional	Routers/Adapters	Receive/transmit	Outdoors	8 miles

4.3 Types of Antenna:

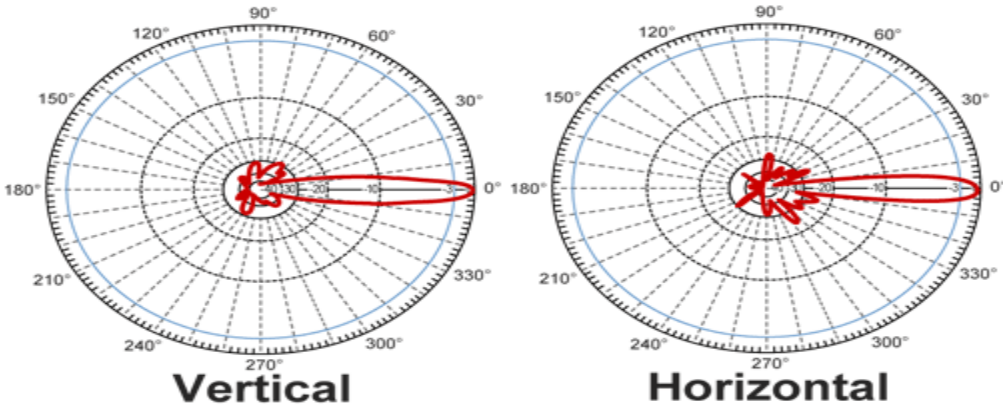
1. Omnidirectional Antenna:-

An omnidirectional antenna radiates transmissions out and receives transmissions in from all directions, although not equally in all directions. Most of the antennas in this category are thin rods or long flat sticks.



2.Directional Antenna:-

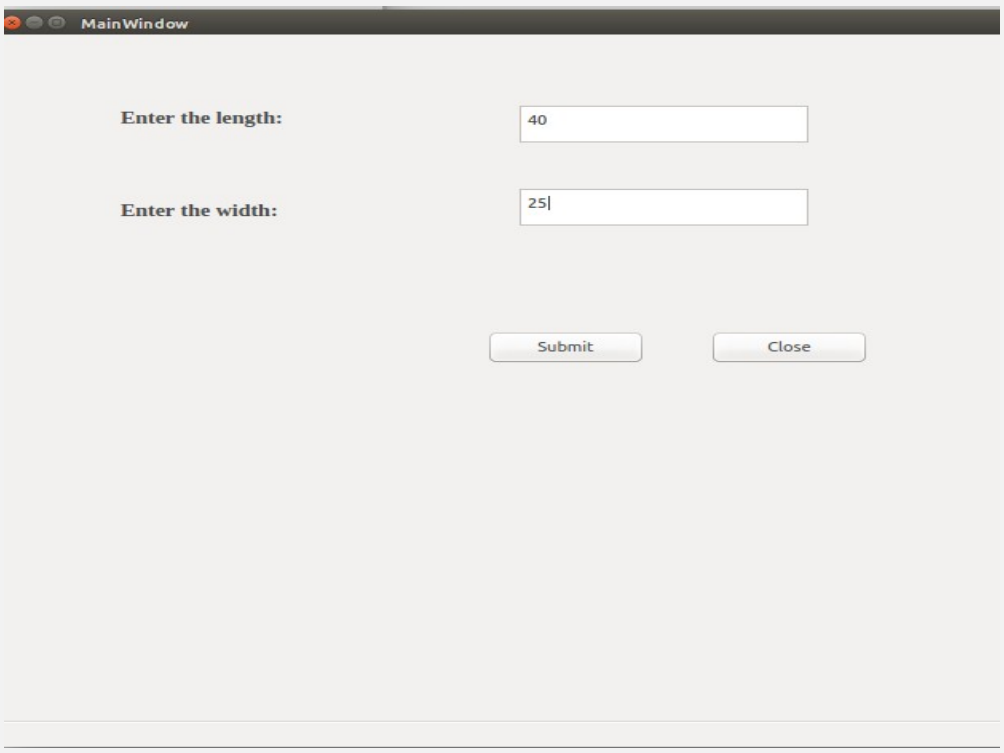
A directional antenna is one that has a wide dispersion of more than 80 degrees and less than 120 degrees.They are often used for corner placement in a room to radiate to all portions of the room, and point in the direction of the main network path.Directional antennas use parabolic reflectors, right angle deflectors, and panel deflectors.



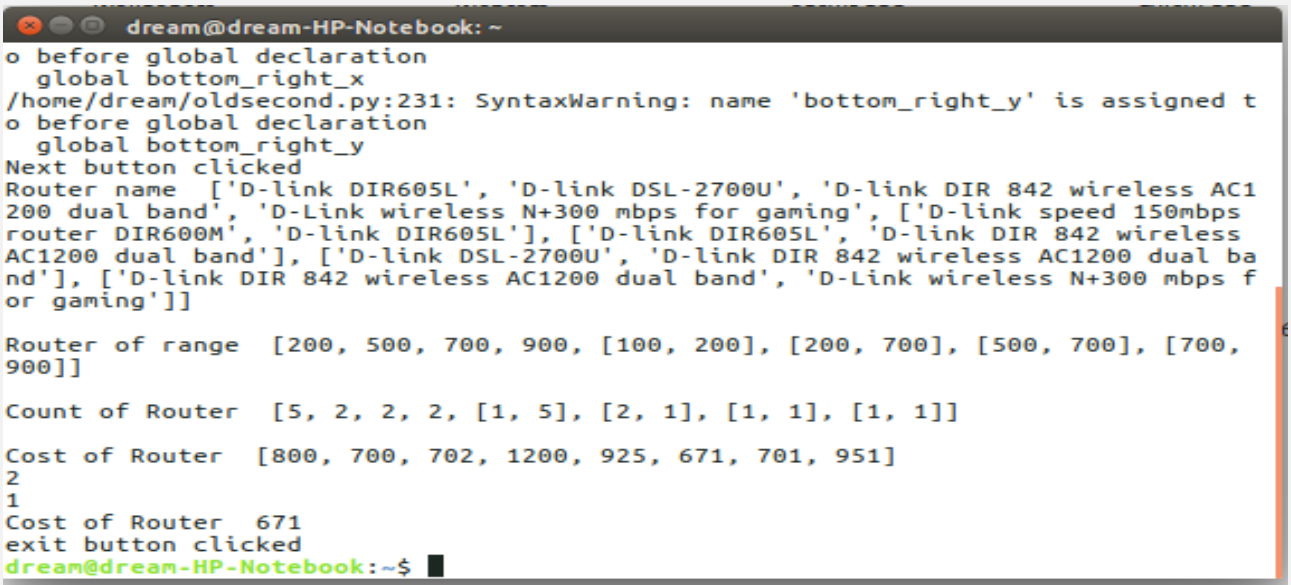
5. System Overview

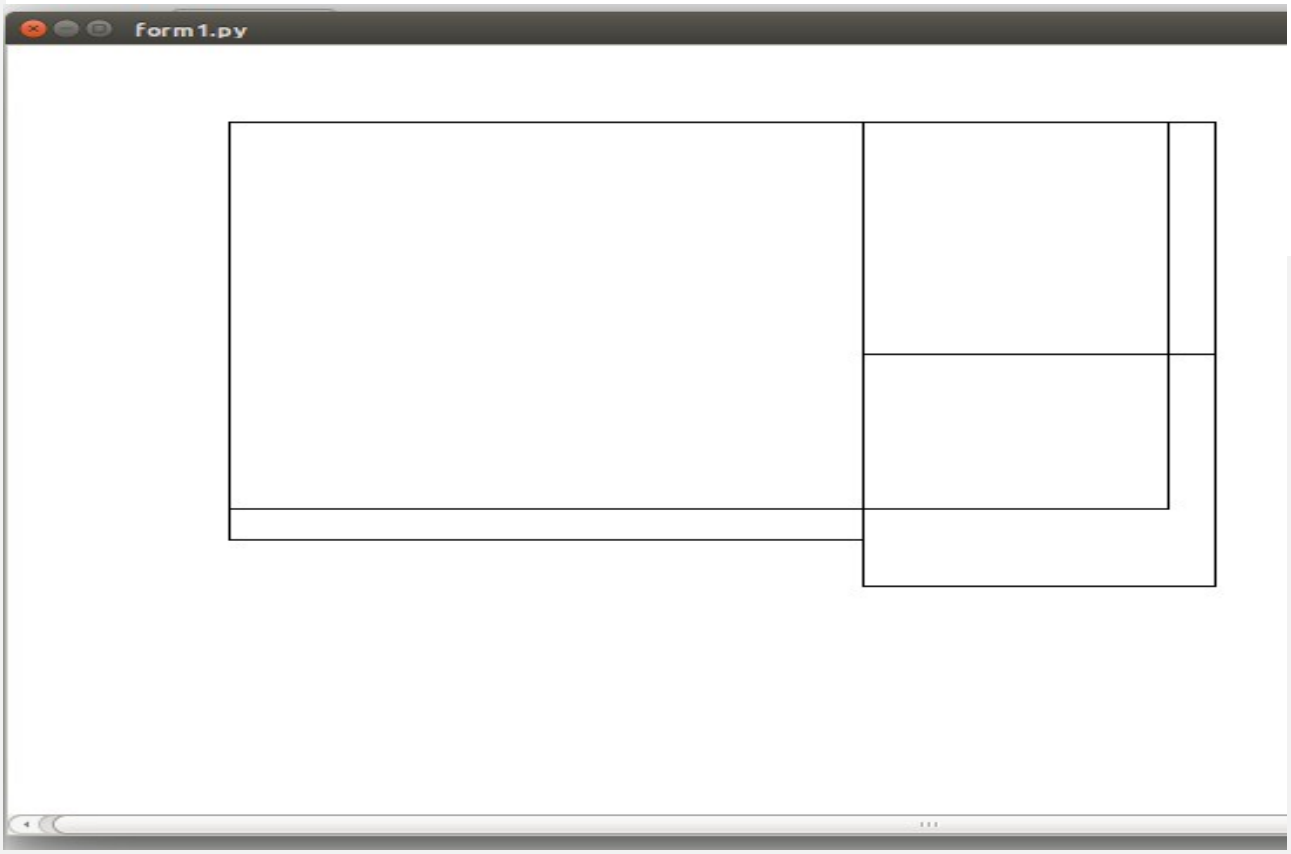
5.1 . Home Screen:-

5.2. User Requirements:



5.3. Optimal Router List:-





6. CONCLUSION

1. Python is effective language for Creating Desktop application.
2. PyQt Designer is tool for creating suitable GUI for Application.
3. We have followed the List of Routers, Range, Cost, Total area covered by that router.

7. Future Scope:

1. Implementation done on real data.
2. Embed the wifiAnalyzer for providing Signal Strength.
3. Making Adaptable to changing scenario.
4. Platform Independent.
5. Work for different shapes of area.

8. REFERENCES

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