

INTEGRATED WEB/MOBILE WIFI HOT-SPOT FINDER APPLICATION

Introduction

Wi-Fi is the name of a popular wireless networking technology that uses radio waves to provide wireless high-speed Internet and network connections. A common misconception is that the term Wi-Fi is short for "wireless fidelity," however this is not the case. Wi-Fi is simply a trademarked phrase that means IEEE 802.11x.

A **Wi-Fi hot-spot** is a wireless access point that provides Internet access to network devices in public locations such as downtown centers, cafes, airports, and hotels. Businesses and schools are increasingly using Wi-Fi hot-spots for their internal (intranet) networks.

The most basic way to find open Wi-Fi hot-spots around you is to browse nearby networks from your phone or laptop. This will display a list of the hot-spots within a tiny distance.

Definition of the problem

A hot-spot will always contain an identity which is the name displayed to the user. This technology is not very helpful if you consider the following cases.

1. If you want to find hot-spots that are a **further distance** away from you. Then the ordinary hot-spots finder wouldn't be of use.
2. If you want to know the **exact location** of the hot-spots then this would be a drawback.
3. If you want to **find your way** to the so-called hot-spot.
4. The need to know about the **traffic** at a certain spot – how many people are using a certain hot-spots. This would finally deem this Wi-Fi feature more of a burden than a blessing.

The Innovation

This is where **Ace**, a proposed Integrated Web and Mobile Hot-spot Finder application, comes into play. Ace will use **Global Position System Geospatial Technology** in order to determine the precise coordinate location of the user as well as the Wi-Fi hot-spot.

Imagine an application that would solve all this hustle.

An application that:

- ✓ **Spatially visualizes** real time information about hot-spots on a map.
- ✓ The **most suitable routes** to follow get to those spots from current location(including distance and direction).
- ✓ The **amount of human traffic** in each hot-spot.

- ✓ Whether the location is **accessible**, that is, closed or open .
- ✓ The **exact location** of the hot-spot.
- ✓ An application that will let you **share location** of Wi-Fi hot-spots as well as leave **reviews and ratings** about these hot-spots.

This would **save you time and even money** as a user would be at the right place at the right time. The added benefit of reviews and ratings from other users of the **Ace** help you find the right hot-spot.

While there are several precautions you'll want to take before using a public Wi-Fi connection, if you absolutely need to, this proposed application can save you from having to drive/walk around looking for a good connection.

Methodology of development

Field surveys will be conducted in order to locate as many Wi-Fi hot-spots as possible. Tools such as GPS Essentials will be used to collect images as well as accurate coordinates (latitude, longitude) of those hot-spots.

React Native, a framework for building native apps using React, will be used in the development of both Android and IOS application. On the web development side the software requirements used will be **MongoDB, Express, Angular, Nodejs** (MEAN stack).

Proposed design of application

Ace will be divided into two components, a mobile application and a web application. Both of these components will be synchronous with each other hence any update made on the web application will automatically be reflected on the mobile application. Both components will be accessible to the target audience mentioned. The users will have no permission to add or remove a hot-spot. This will solely be the role of the administrator.

Target users

The target audience for the proposed system will be students and lecturers as well as visitors. This group of people need the application the most and will reap the largest reward.

The user will be required to create an account within their first login if they value their privacy or continue as a guest and interact with the application's functionality right away. The application will then go ahead to display a list of Wi-Fi hot-spots spatially arranged from the nearest to the farthest from the user. The user will have the ability to view each hot-spot's detail and a road map of how to get to it.

Benefits of the proposed application

Ace will play a key role in benefiting the users by:

1. **Spatially visualizes** real time information about hot-spots on a map.
2. Displaying the **most suitable routes** to follow get to those spots from current location(including distance and direction) hence save time.
3. Notifying the user on the **amount of human traffic** in each hot-spot.
4. Informing the user if the location is **accessible**, that is, closed or open thereby ensuring the user is at the right place at the right time.
5. Giving the **exact location** of the hot-spot.
6. Will let the user **share location** of Wi-Fi hot-spots as well as leave **reviews and ratings** about these hot-spots.

Budget

Project Stages		Percentage of Overall Budget	Cost Breakdown (Ksh)
Planning & Documentation	Development	12.5%	Ksh50,000
Development		15%	Ksh60,000
Testing and deployment		20%	Ksh80,000
Scope Changes		10%	Ksh40,000
Application Management		10%	Ksh40,000
Server and hosting		2.5%	Ksh10,000
First Phase Marketing	Marketing	30%	Ksh120,000
TOTAL		100%	Ksh400,000

References

User location | Web Fundamentals | Google Developers

<https://developers.google.com/web/fundamentals/native-hardware/user-location/>

Wi-Fi Hot-spots meaning

https://www.webopedia.com/TERM/W/Wi_Fi.html