

GPS-based Location Provider Application via Android Device

Aman Vishnoi^[1]

Abstract— Now-a-days technological advancement of computer science people are now searching the data about the location of any where for tracking purposes. Now, we demand more location based applications for being new and to save power and asset also. Google Positioning Service is a system which is already usable and anyone can access it without any permissions. Having the facility of this to develop this system we need a Google Positioning Service device to know the location from the data taken from this. Hence, we have chosen an Android device to perform this tracking because Android cells are cheap and offers many tasks having some special built-in attributes like GPS. Thus, this application is developed to provide locations of different places with ranging variation system using various new enhanced tools and technology like Android Studio, Java Programming Language, AVD, Firebase etc.

Keywords— Android Studio, Android Mobile Phone, GPS, Firebase, Location Tracking, API's

1 INTRODUCTION

The GPS, short for Global Positioning System, satellite based location tracking system made from a network system of 24 satellites by the U.S. Department of Defense in 1973. GPS was originally intended for military applications, but within the 1980s, the govt. made the system available for civilians. GPS works in any climatic conditions, anywhere within the world, 24 hours every day. There is no subscription amount or setup fees to use GPS. GPS was discovered by the U.S. (D.O.D) and Ivan, at the money of approximately twelve billion taxpayer dollars. The Global Positioning System is a satellite locational system, predominantly designed for location. GPS is now taking prominence as a timing weapon. Eighteen satellites, may be six in each of three orbital places spaced 120° aligned, and their surface stations, made the original GPS. GPS uses these "human-made stars" or satellites as reference locators to collect geographical position, correct to a matter of kilometers. In fact, with new forms of GPS, you can create calculations to better than a meter. GPS's are very fast becoming a brand in most advanced vehicles, and are even searching their way onto a variety of new mobiles. The mapping devices can come in handy under a range of circumstances. If we are thinking about buying a GPS or a machine that has a GPS built-in, here are some of the profits of having them. A GPS can help us to know exactly where we are at any given time. Not only a GPS give us the location of the road we may be going on,

but many others GPS devices can also give us the correct latitude and longitude of where you are tracking.

On the other hand, Android Studio platform is becoming more popular to the users for its multi-dimensional purposes. Thus, this known system namely "GPS-based Location Provider" uses GPS and any cell phones having an Android operating system to track the location of a place whenever demand.

2 SIGNIFICANCE OF THE STUDY

2.1 Socio-economical Significance

In this project, the application will inspire the other developers to create more effective and significant GPS-based location provider application via Android mobile phones.

2.2 Technological Significance

In real world, we like the people to make more used to this one of the latest inventions.

2.3 Safety Features

If a person want to search any particular location of any place, application shows the range of 10 kilometers.

3 OBJECTIVES OF THE STUDY

3.1 General Objective

The general objective of the development of this application is to serve the user more effectively location based tracking facility.

3.2 Specific Objective

In real world, when a bunch of people are in one place to another, it will be very beneficial. The participation of all participants is little tough because it is impossible to persist the movements of all members. But this application can help us to track where they are now and many more.

• [1]Aman Vishnoi is a Student in Department of Computer Science and Information Technology, Raj Kumar Goel Institute of Technology, Ghaziabad, Uttar Pradesh, India.

4 FUNCTIONS OF THE SYSTEM

4.1 Smartphone User Function

A Mobile phone user using this application has two main advantages. First one is whenever he/she move from one place to another, he/she is able to track the locations from anywhere. Well, you might be wondering that you are not going anywhere, then why would you install the application. The answer is that you can also track the important places locations around 10 kilometers of your area radius this feature is beneficial for all.

4.2 Administrator Function

The administrator function embedded in the GPS-Based Location Provider Application is to provide the functionality for monitoring the location of various important places. The application provides the administrator with the most known location update.

5 GOALS OF THE SYSTEM

5.1 Individual Task Management

Often most of people are feel guilty of themselves that they move to a place to finish a job but returned without finishing it. To help in this problem, the proximity alert system helps you manage your tasks on a location based alarm system. If you have assigned a task in the application to a location, then whenever you are close to your place of interest, regardless of timing the application will problem you an alarm. Thus no target that is allotted to the phone once would be forgotten.

5.2 Safety Tool

The application is very useful when you are on a trip or holiday. On a trip, one can easily find the nearest hotels, restaurants, ATM's easily. But if the GPS based tracking system is installed on your mobile, you are leaving your marks on an application which is monitored by someone who would be on the way when you really want someone to get you back to the station or base. So if there a issue generates with the person, he can easily be found by the host simply by having a stare at their previous location. Thus the app provides you safety in an unknown place.

5.3 Administrative Capabilities

Consider yourself as a guardian or teacher for a bunch of students that has gone on a holiday. You are the one who has been assigned the task to look after them and bring all of the students back home safely. If you are unaware of the place and do not know about the hotels then it would be impossible for all of you to bring back home safely. By using the application you get to know about the hotels at the locations, restaurants where you all can eat food, hospitals under any difficult circumstances.

5.4 Reliability

This application is based on GPS location provider embedded on your Android Mobile phone. GPS is a technology that is available anytime. So you can depend on this application.

5.5 Ease of Access

The application was developed to serve many users as can. That is why the user interface of the application is kept simple and attractive.

6 FEASIBILITY CONSIDERATION

Depending on the evaluations of the initial program the survey is now expanded to a more innovative feasibility data for "GPS-based location provider application via Android device."

6.1 Technical Feasibility

To develop this application, a high specification system, an Android Studio and software are required. The current project is technically flexible as the application was successfully deployed on Android Studio 3.0.1.

6.2 Economical Feasibility

This project is economically feasible as it only need a cell phone with Android operating system. The application is free to access once released into Play Store. The users must be able to connect to internet through cell phone and this would be the only prize required on the project.

6.3 Operational Feasibility

It will need an internet connection to locate the searched place. GPS is free of cost. We need the modification cost. This is the basic operational money which tends to very low.

7 TOOLS AND TECHNOLOGY

The required tools and technology used for "GPS-based location provider via android mobile phone" are illustrated below.

7.1 Scripting Language

A client script is a code that is used in a Web page. The program is converted by a browser, which gives an inter-active experience for a new end user. Client scripts can be done in scripting languages such as VB-Script or J-script. Each part on a Web page is shown by an object that may have attributes, events and methods. This is called as the Dynamic HTML Object Model. Client script can process programs generated by these parts.

A server script is a code written in a Web page that is tracked on the server side. The program is read by server software and it plays a vital role in a dynamic Web application. The server script is never forward to a client machine directly; instead, it dynamically makes HTML and client script that are written back to a browser. Server scripts can be printed in scripting languages such as PHP.

7.2 Android Operating System

Android is a Linux operating system designed initially for touchscreen mobile phones such as Smartphones and tablet cells. Firstly developed by Android, Corp., which Google backed economically and later bought in 2005. Android was unknown in 2007 beside with the opening of the Open Handset Alliance: a device of hardware, software, and telecommunication companies allotted to advancing open standards for mobile phones. The initial Android-powered cell was sold in October 2008. Android is open source to work and Google releases the codes under the Apache License. The open source and permissive licensing give access to the software to be freely modified and distributed by mobile phones manufacturers, wireless carriers and enthusiast coders. Additionally, Android has a vast community of coders writing applications ("apps") that can enlarge the functionality of the phones, written primarily in a customized version of the Java.

7.3 Global Positioning System (GPS)

The basis of GPS is the process of "survey" from a bunch of satellites. To survey, a GPS receiver calculates distance using the travel time of radio signals of satellites. Distance is calculated by measuring the amount of time it takes a radio signal from the satellite to make a one-way distance to the GPS Receiver in ground. Trilateration is something like triangulation, which uses a exact distance and the calculate of an angle to determine a mark in geographical nature. Trilateration uses two or more reference marks and the distance from those marks to the subject mark to determine the total distance.

7.4 The Java Programming Language

The Java programming language is a high-level coding language . In the Java programming language, all source program is first written in plain text files like notepad ending with the .java extension. Those source files are then compiled to .class files by the javac compiler. A .class file does not contain program that is native to your processor; it instead contains byte codes after compilation — the machine language of the Java Virtual Machine¹ (JVM). The Java launcher key then runs the application with an instance of the JVM.

7.5 The Java Platform

A platform is the place where hardware or software environment in which a code runs. We've already discussed some of the most used platforms like Microsoft Windows, Linux and Mac OS. Most platforms can be mentioned as a combination of the operating system and underlying hardware. The Java platform is different from most other platforms in that it's a software only platform that executes on push of other hardware based platforms.

7.6 Android Virtual Device

An Android Virtual Device (AVD) is a studio configuration that allows you model an real device by explaining hardware and software options to be emulated by the Android Studio.

7.7 Programming Languages and Tools

Different latest programming language and helping tools used to develop the system are listed below:

- Java
- Jason
- PHP
- Java Script
- HTML
- CSS
- XML
- Database Query language

8 REQUIREMENT ANALYSIS

8.1 Project Development Requirements

As the project is based on usage of two systems, we have divided our project requirements in two parts. These are distinguished in the following table.

Devices	A personal computer		Android Virtual Device
Hardware requirements	Processor	Pentium V or higher	Android Virtual Device can be configured with Android Studio 3.0.1. Need to have Android OS Google API version 4 or higher support .
	RAM	512 MB or higher	
	Disk space	512 GB	
Software requirements	Operating system	Windows – 10, 8.1, 7	

8.2 Application User Requirements

Smartphones with Android OS
Internet required
GPS required
Android OS version 4 or higher

9 CONCLUSION

As the staunch GPS equipment are costly we have chosen android cell phone as GPS device. Because all the android cell phones have this built-in feature. GPS device will find out the current exact coordinates from satellite. Depending on certain situation we will find the location once more. Might after some distance of location change we will calculate the location again. We will allocate this location to map. At the same time we will attach with an external web server to send this information there. Actually, the web server is a restricted zone. So we will have to use username and password to login that zone. We can see the visiting journey from the pc or any other portable machine.

REFERENCES

- [1] <https://www.geeksforgeeks.org/>
- [2] https://www.google.com/search?q=android+gps+tracker&rlz=1C1CHBD_enIN867IN868&oq=android+gps+&aqs=chrome.4.69i59l3j69i57j0l2j69i60l2.15622j0j7&sourceid=chrome&ie=UTF-8#qidu=UgxV0cxFMLGE9NdrWfV4AaABGg&ugcqualb=ugcaa
- [3] <https://developer.android.com/studio>
- [4] [https://en.wikipedia.org/wiki/Android_\(operating_system\)](https://en.wikipedia.org/wiki/Android_(operating_system))
- [5] https://en.wikipedia.org/wiki/Global_Positioning_System
- [6] <https://www.instructables.com/id/How-To-Create-An-Android-App-With-Android-Studio/>