GEOFENCING

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Abstract - In today's world, Geo-fencing is a great technology in a software program that will use Global Positioning System (GPS) or radio frequency identification (RFID) to explain the geographical boundary features. A geo-fence is a virtual barrier. It is an innovative technology, an online marketplace for enterprising contextual services that will allow users to easily discover interesting services, and can easily subscribe to it and allow providers to offer their services for a variety of applications like electronic toll collection, contextual advertising or tourist data system, even without adding additional infrastructure. The main objective of this research was to understand how the use of spatial data will improve advertising performance for its customers. Tracking systems and monitoring, supported global navigation services by satellite, comprising of geofencing function, could also come up with the precise location of an establishment or company and increase sales and business perspective efficiently. Instead of large billboards now they can advertise on Smartphone's that are economically and accurately tested.

Key Words: Geo-fencing, Location-based services, Geo-fence, Geolocation.

1. INTRODUCTION

A geo-fence may be a virtual perimeter of interest which will be found out to fireside notifications when it's entered or exited or both. For example, a geo-fencing app can alert us that our kid has left a previously specified area.

Now, with Google's location algorithm has been rewritten to be more accurate and use significantly less battery life.

Using geocoding, we can request an actual physical address from the user instead of coordinates. We will just change that address to a latitude/longitude pair internally to process user input. Notice how we use transparent UIs the maximum amount as possible to reinforce what some might call the user experience. Notice also that we offer a spinner so that the user can choose from predefined values. That saves the user some typing and it saves us from validating coordinates values whenever.

Still, if we would like to be even more user-friendly, we will give our users the likelihood to pre-fill the address field by long-pressing some extent on the map. We will then use reverse decoding to translate the coordinates to a physical address for display.

2. HOW IT WORKS

This is the project work that is developed for parents and their children. The parent and child should have GPS based Smartphone's. The application is needed to track the child's location using their Smartphone.

To access this application, parents had to create an account by filling up basic registration details and create a login id and password. Using the valid login credentials, parents can easily log in, and access the application modules.

After successful login, parents had to add their child details, and also need to create a login id and password for their child to track their current location. While registering their child's name, parents had to set a geofence around their children by selecting a point on the map. Parents can also update the geo-fence around their child.

Children need to log in user id and password provided by the parent. After a successful login, the application on the child's Smartphone will start monitoring the fence which is set by the parent for the child. Whenever the child exits or enters the fence, a notification will be received on the parent's application. Parents can keep track and stay aware of every exists and entries of their child around the geo-fence. The process can be shown in Fig. 2.1 as a block diagram.

Figure: 2.1

3. LITERATURE REVIEW

3.1 Description of Technology Used

a. A GPS device is used to track the location of the user. As a GPS device, the smartphone is used in this application.

b. Using the device, the current location is tracked and can be utilized for further requirements.

c. The user interface is designed in XML.

d. User can easily use this application and need the internet connection

3.2 Major Constituents of the system

a. GPS tracking device: This is provided by the user's smartphone.

b. User Interface: The UI determines how the user will interact with the application and access the required functionality.

3.3 Requirements

a. Efficiency requirement

Here the appliance is developed on the android platform, thus the appliance data and processes are handled implicitly by the android virtual OS. Also if the user is required to clear the app data, the user can explicitly clear the cache memory and increase the application speed.

b. Reliability requirement

If in case if the co-ordinate input by the user is not proper it will not match the dada (Coordinates) fetched from the map and thus there are chances of the failure to occur.

In other cases, if the internet connection in the user mobile device is running at low speed than it will not

be loaded completely and the required alert may not be generated.

c. Usability requirements

The application is user friendly because the user can easily operate the appliance. One-click access to every function is provided in the application.

d. Other requirements

Sufficient bandwidth (internet connection) is required on the device to download images. A Memory of the device will be used to store the application, data, and backup. RAM and a minimum SDK version of 12 are going to be required on the device. The security is going to be provided by the android virtual OS and therefore the server.
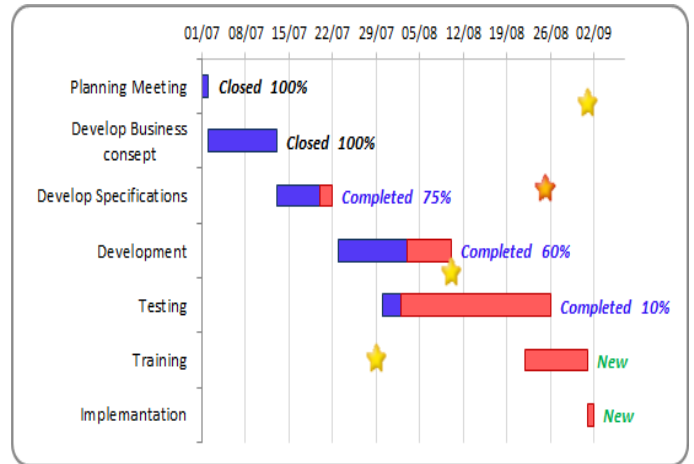
4. Application Architecture

Figure: 4.1

5. Gantt Chart
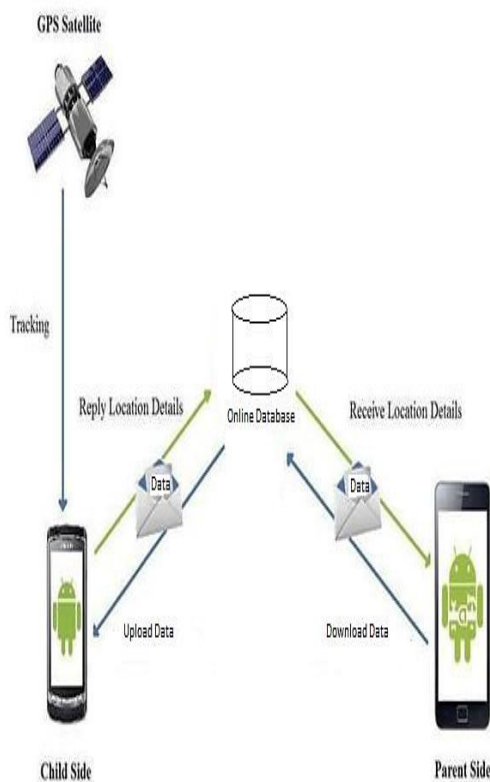
Figure: 5.1

6. PROJECT IMPLEMENTATION

The Project application is loaded in Android Studio. We used Android Studio for Design and coding of the project. We have created and maintained all databases into SQL Server 2008, in that we create tables, write queries for store data or records of the project.

7. RESULT

This paper deals with the concept of Geo-fencing. It presents various types of applications. This response deals with Geofencing: an innovative technology, based on telemetric and satellite positioning.

Geo-fencing enables remote monitoring of geographic areas surrounded by a virtual fence (Geo-fence), and automatic detection when tracked mobile objects enter and exit these areas. The research presents fundamental concepts of Geo-fencing based on these techniques.
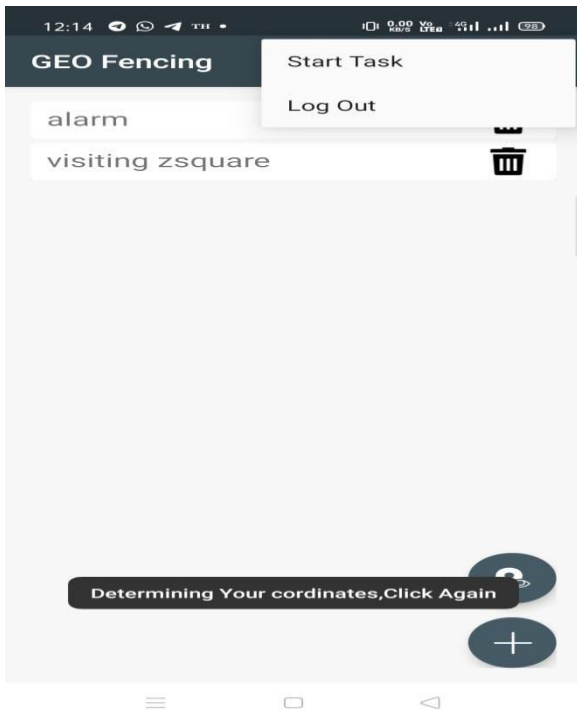
Figure: 7.1

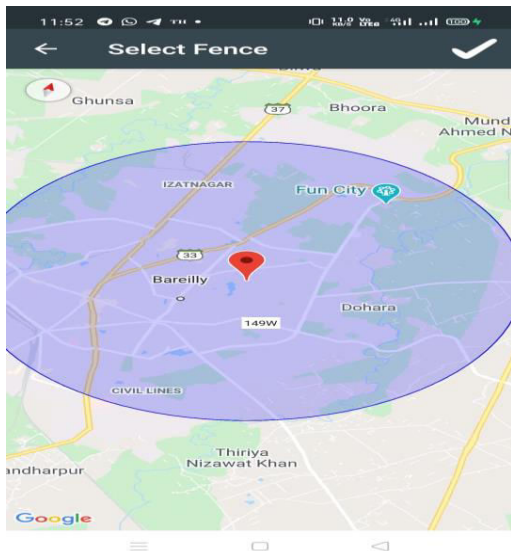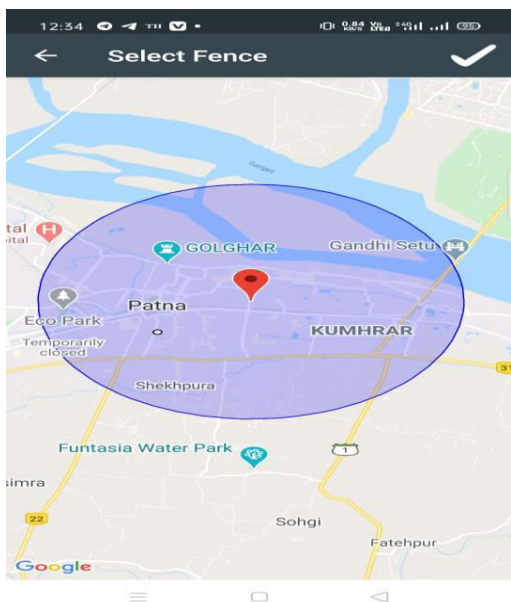Figure: 7.3

Figure: 7.2

Figure: 7.4

Figure: 7.5

Figure: 7.6

8. CONCLUSION

This was our project of System Design about the "**Human Safety Geo-Fencing**" application is based on Java and developed in Android Studio. The development of this project takes a lot of effort from us. We think that this system gave a lot of satisfaction to all of us. Though every task is never said to be perfect in this development field even more improvement may be possible in this application. We have learned so many things and gained a lot of knowledge about the development field. We hope this will prove fruitful to us.

ACKNOWLEDGEMENT

REFERENCES

1. www.wikipedia.com.

2. http://ijarcet.org/wp-content/uploads/IJARCET-VOL-4-ISSUE-4-1257-1260.pdf

3. http://waset.org/publications/9996929/gps-and-sms-based-child-tracking- system-using-smart-phone

4. The definitive guide to Geo-fencing by.

5. Aditi Gupta and Vibhor Harit, "Child Safety and Tracking Management System". North India Institute of Technology, Najiyabad.2016.

6. Location-Based Services-Fundamental and Operations by Axel k"upper Ludwig Maximilian University Munich, Germany.

7. S.Dhamodaran, IV.S.Mahesh, M. Saiswaroop, "Optimised Keyword search with proximity location-based services", Sathyabama University, Chennai, India,2016.

8. http://geoawesomeness.com/knowledge-base/location-based-services/location-based-services-applications

9. Kupper, A.2005.Location-based Services-Fundamentals and Operation. John Wiley and Sons.

10. Creating and Monitoring Geofences,https://developer.android.com/training/location/geofencing.html.