

Adfence

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Abstract - AdFence is a location based android application that uses geofence technology for product advertisement.

The application is based on the geo-fencing technology to deliver location-based services to the users. The application is basically aimed at advertising using the google maps by creating and setting a geo-fence of certain radius. A user can register a geo-fence (area of advertisement) on the map in the application. The geo-fence is characterized by the events in its entry, exit and inside of geofence section. Whenever a user enters or exits a particular geo-fence a series of event or activity triggers can be alerted to the user via the application.

The user as an advertiser must set a geofence of a particular radius on the google map in the application. The geo-fence must be provided with the details of its category (Shopping, Restaurants, Medical etc...). The user as a normal user can discover geofences on the map during his free roam. The user is expected to set the preference category of interest to be discovered on the map. Once the user enters a particular geo-fence of a selected category a notification of the details of the advertiser and the services offered is displayed on the application.

This project is an attempt to improvise and enhance the advertisement system using the geo-fencing technology. The data generated through the application can also be used to study the various factors affecting the market trends, customer survey, advertisement behaviour and user preferences.

It can also be used to predict the change in the market trends and customer-retailer interactions in the future and also come up with the solutions to tackle the ever changing markets.

This application can also be utilized in an emergency situation. In case of a disaster, hazard situation or road accident, the privileged user (such as a government or verified personnel) is given an option to signal the event on the map as a beacon signal to notify the people about the situation. This helps people to be aware of their surroundings and act accordingly to the situation they encounter.

Key Words: *Geofence, Offers notification, Shops are alerted using GPS*

I. INTRODUCTION

In the world, there are lot many places and many areas in each place. Every area has different number of shops like hotels, restaurants, shopping malls etc..

When a person is walking on the road, he will be passing by all kind of shops and he will be busy with his own work.

We have designed an application which is used to notify the person that he is nearby particular shop and offers of that shop on the particular day. So by looking at the notification, if the person is interested he will reach out to the shop or else he will ignore.

The main theme of the application is to make easy for every person to reach out to a nearby shop which he is interested off while he is on the go with a busy schedule.

II. RELATED WORK

The user as an advertiser must set a geo-fence of a particular radius on the google map in the application. The geo-fence must be provided with the details of its category (Shopping, Restaurants, Medical etc...). The user as a normal user can discover geofences on the map during his free roam. The user is expected to set the preference category of interest to be discovered on the map. Once the user enters a particular geo-fence of a selected category a notification of the details of the advertiser and the services offered is displayed on the application.

- Advertising is the best way to communicate to the customers. Advertising helps inform the customers about the brands available in the market and the variety of products useful to them. Advertising is for everybody including kids, young and old. It is done using various media types, with different techniques and methods most suited.

- In the recent times, the big retailers and e-commerce giants have overshadowed the smaller retailers. Using the sophisticated advertising techniques, the big retailers are able to grow their business seamlessly. Because of this the small retailers are either doing bad or not able to grow in the business because they lack a platform to advertise themselves.
- So our project AdFence is aimed at helping these small retailers or individuals to advertise themselves on the platform created by us so that both the customers and themselves are benefitted.

GEOFENCE TECHNOLOGY

- Geofencing is a technology that defines a virtual boundary around a real-world geographical area. In doing so, a radius of interest is established that can trigger an action in a geo-enabled phone or other portable electronic device. It is a virtual perimeter on the map. Allows to trigger an activity . By using Google maps or other mapping tool, you can identify the area that you want to geofence.
- Geofence can be create dynamically geofence area either in rectangle or circle with any radius. In most scenario, a Geofencing system can be divided as either being a mobile-specific or centralized solution based. In a centralized system, a smart phone device is specially being tracked by the surrounding infrastructure, e.g. by proximity sensing. An appropriate Geofencing component within the infrastructure, e.g. owned by a mobile-user or as a 3rd-Party user, is then constantly matching the position of the mobile device against a set of geofences.
- In case of an entry or exit action, the geo-notification can be either send to the mobile device, e.g. via SMS, notification or can supplementary be specified as an input for location stable services. These type of Geofencing systems are specially used in case a authenticate position is required, e.g. for calculating reasons in mobile-based public transport applications.

By far the most popular type of Geofencing system in use is the mobile-based solution. Thereby, the positioning, e.g. considered with Global Positioning System, as well as the matching with a set of geofences is executed on the mobile device.

API'S

- An application programming interface (API) is a set of protocols, routines, functions and/or commands that programmers use to develop software or facilitate interaction between distinct systems. APIs are available for both desktop and mobile use, and are typically useful for programming GUI (graphic user interface) components, as well as allowing a software program to request and accommodate services from another program. The basic concept behind the API has existed in some form for the

entire history of digital technology, as the interaction between unique programs and digital systems has been a primary objective for much of that technology's existence. But with the rise of the World Wide Web, and the subsequent turn-of-the-millennium dot-com boom, the incentive for this technology reached an unprecedented level.

- Over the years, what an "API" is has often described any sort of generic connectivity interface to an application. More recently, however, the modern API has taken on some characteristics that make them extraordinarily valuable and useful:
- Modern APIs adhere to standards (typically HTTP and REST), that are developer- friendly, easily accessible and understood broadly
- They are treated more like products than code. They are designed for consumption for specific audiences (e.g., mobile developers), they are documented, and they are versioned in a way that users can have certain expectations of its maintenance and lifecycle.
- Because they are much more standardized, they have a much stronger discipline for security and governance, as well as monitored and managed for performance and scale

III.PROPOSED SYSTEM

- AdFence, an android based application using geofence technology for product advertisement has been successfully created. With easy to use UI it is ready to be deployed on the application market.
- This unclosed up new outcomes for sophisticated geofence scenarios that phase of the art Geofencing systems are yet not able to process. Hence, it broadens the application range of Geofencing to the fields of e.g. smart advertisement, different management systems, warning signals etc. to specify the essential need for getting geo-notifications in a far more precise and effective way.

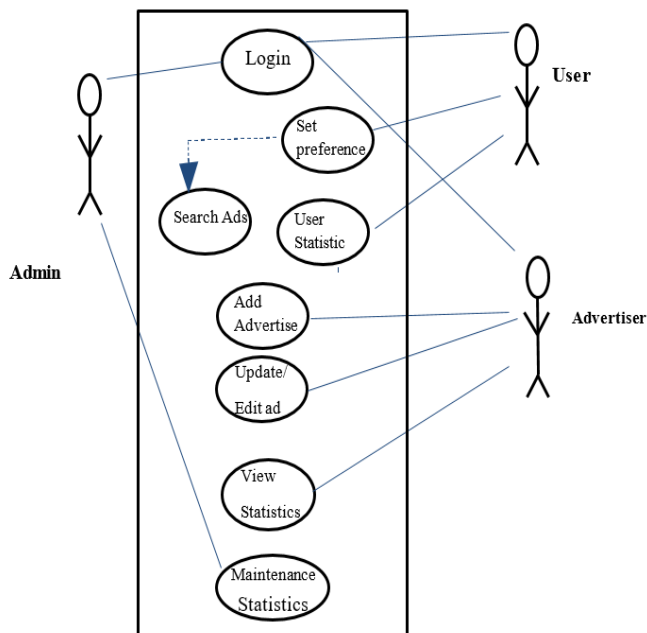
IV.METHODOLOGY

- In this project, there are certain functionalities that must be guaranteed by the proposed system. The first functionality is to identify and authenticate the users as an advertiser or a common individual who interact with the system using mobile technology.
- The second functionality of such a system is positioning, which consists of a system to determine the exact location of a user who is accessing the system resources.
- The third functionality is to be able to provide our targeted users to advertise or to discover the advertisements in the vicinity of their location. There are also other functionalities to be achieved but the above mentioned are the primary functionalities. All the functionalities are dependent on each other in the implementation of the project.

- The implementation consists of multiple layer of functionalities and the complexity of the system lies in the data handling across various layers in the system. The major task is to handle the flow of the data, efficiently process the data and present it to the user in a sophisticated manner.
- The process summary for an advertiser is as follows
 - Identify and authenticate the advertiser
 - Get the geo-fence at a particular location for the advertisement.
 - Get the details of the advertisement.
 - Publish an advertisement on the application.
- The process summary for a user is as follows
 - Identify and authenticate the user
 - Identify the current location of the user
 - Get the information of point of interest (preference category)
 - Identify the nearby point of interest
 - Notify the user about his point of interest

Use case diagram

- There are three modules.
- Merchant module, user module, Geofencing module
- User interface contains merchant and user buttons.
- In merchant module, merchant need to tap the location of his shop and create the geofence .
- After creating Geofence, merchant needs to fill the details of their shop like Shop name, Shop products and offers.



- In User module, user can set the preference of which type of category he wants to get notified when he is on the go.

- After setting the preference, when he reaches to particular place, he gets a notification that you have entered particular location.
- By this application, person can get informed easily that he is nearby the place and these are the offers, if he is interested he will go in or else he will ignore.

The user will have get a public key which is in mnemonic code and will have a QR code to receive transactions and he will also have the option to send the transactions.

V. TESTING

- Software testing is the most critical phase in the development life cycle. Testing performs a very critical role for quality assurance and ensuring the reliability of the software. Software testing represents the ultimate review of specification design and preview.
- During the development of software, errors can be injected at any stage. However requirements and design errors are likely to remain undetected. Those errors will be ultimately reflected in the code. During testing, the program to be tested is executed with a set of test cases and output of program for test cases are evaluated to describe the program performance to expected level.
- The purpose of testing is discovering errors. Testing is the process of trying to discover every conceivable fault or weakness in a work product. It provides a way to check the functionality of components, sub-assemblies, assemblies and/ or a finished product. It is the process of exercising software with the intent of ensuring that the software system meets its requirements and user expectation and does not fail in an unacceptable manner.
- The common view of testing by user is that it is performed to prove that there are no errors in the programs. However, it is virtually impossible, since analyst cannot prove that software is free and clear of errors. A successful test is the one that finds an error. Reliability is to be designed in to the system.
- There are various types of test. Each test type addresses a specific testing requirement. Following sections describes the system testing and test cases.
- In order to measure the accuracy of both the modules we downloaded 10k sample input and tested for each of the module.

VI. CONCLUSION

AdFence is an android application that has been integrated with many API's such as geofence, google maps etc. A geofence of an advertisement can be created anywhere on the google map with feasible radius. Once the geofence is encountered by the user, the user will be notified with appropriate notification about the geofence. It also shows

directions to the user to a particular location of the geofence advertisement.

AdFence UI has been designed in such a way that even the normal or casual user is able to navigate through the application and use it efficiently.

Everybody is eligible to use this application including government bodies which have certain special privileges to notify the users about surroundings etc.

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