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Research and Implementation of Mobile Advertising System Based on Location Service

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Abstract: ***A Location Based Mobile Advertising is an information and entertainment service, accessible through Smartphones through the ability to use the location of mobile phones. Marketers should be allowed to publish and classify ads according to the consumer interests. If information is not available voluntarily in the short term, Then the consumers Interest may be lost in order to purchase the products. They need to find more information and location without having to make a lot of effort. The Location-Based Mobile Advertising service allows customers to receive advertiser details such as their Location, discounts, and product descriptions. This service also provides information about the nearest tourist destinations according to their location.***

Keywords: Location Based Services, Digital advertisement, Mobile device, Social Networks, Framework.

I. INTRODUCTION

Local-based advertising services are the services which provide value added services to the customer based on their current location. most of us gladly share our location data with the various applications we use. This creates an opportunity for advertisers to personalize their messages to the people based on their current location. In real time personal location data is used, which is obtained from their cell phone, advertisers can send different messages to people depending on their location. Say you own a sandwich shop, and there are plenty of office buildings nearby. The workers approached their lunchtime, deciding where to get lunch. And all of a sudden, they found an ad that included your delicious sandwiches-and now they're all going to have lunch from your shop. That is the dream of a salesman. Local, target-based marketing identifies potential customers and It is very powerful. By personalizing ads to people based on their location, you may be showing them something worthwhile.

Local-based Marketing Program Finding out what customers are interested in and personalizing your message makes a lot of sense. Here, the user's social networks are used to collect information about the user you like, and to become his or her favourite. User interest issues related to work, age and status updates should be stored in a social database and access to user data from a social network database whenever needed. Current location data and marketing data added and sorted by user profile as its interest and provide relevant location-based advertising based on geo-Local services and to help find specific store indexes that display as an ad on his / her cell phone. Location-based GPS detection uses GPS data and information on roads or available routes for oncoming routes: bus, foot, car and construction. Mobile reading can be done by GPS tracking. GPS data can define three concepts: users, locations, and functions on a particular site.

A. Existing System

"Designing a Recommender System Based on Social Networks and Location Based Services"- Current generation of place-based services do not provide users with personalized suggestions, instead they just offer suggestions close to interests based on users distance from the place where they are. In order to solve this problem, the idea of using social recommender systems was discussed which contains capability of identifying user's interests and preferences and based on them and user's current place, it offers some suggestions.[1]

"Social tagging for personalized location-based services"-The integration of location-annotated data with existing personal and public information and services creates opportunities for insightful new views on the world, and allows rich, personalized, and contextualized user experiences. These current designs makes it hard for users to integrate LBS from a variety of service providers, either to create intermediate value-added services such as social information sharing facilities, or to facilitate client-side aggregations and mashups across specific LBS providers. Our approach, the architecture, applies the well-established, standard Web service pattern of feeds, and extends it with query and location-based features. Using this approach, LBS on the Web can be exposed in a generalized and aggregation-friendly way. We believe this approach can be used to facilitate the creation of standardized, Web-friendly, horizontally integrated location-based services.[2]

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"Gateway to the internet of things – beacons"- Beacons can be used for proximity detection and sensing to enable organizations to manage assets and realize significant cost savings in operations through remote monitoring, preventative maintenance, alerts and big data analytics. Beacons provide a simpler, scalable and lower cost IoT solution compared to legacy industrial sensing. They are part of what's being called 'Industry 4.0' and 'The 4th Industrial Revolution'.[3]

"Personalized Recommendations Based On Users' Information-C Networks"- The overwhelming amount of information available today makes it difficult for users to find useful information. The study tried to prove the expandability of social network-based recommendations to more diverse and less focused social networks. In our results, users in online social networks shared similar interests with their social partners. The social network-based recommendations produced as good as, or sometimes better, suggestions than traditional collaborative filtering recommendations.[4]

"Targeted Advertising Using Behavioral Data and Social Data mining"-The explosive growthof social networks has led to prolific availability in customer tastes and preferences. This data can be exploited to serve the customers better and offer them the advertisements they would be delighted to see. To provide relevant advertisements to consumers, one has to consider the location of the consumer as well. The consumers will be highly contented if the offers shown to them are easily accessible in nearby areas. In this paper, we propose a model combining the idea of social and spatial data to provide targeted advertisements. Social data is acquired through user's Facebook profile and location of the user is found with the help of Beacons.[5]

"Automatic keyword extraction from individual documents"- This paper introduces a novel and domain-independent method for automatically extracting keywords, as sequences of one or more words, from individual documents.[6]

"Introducing context into recommender systems"- In this paper, have given an overview of our work to investigate the integration of context into different kind of recommender systems.[7]

"A Social Network Based Approach to Personalized Recommendation of Participatory Media Content"-In The results show that the graph model system benefits from the additional information embedded in social knowledge. In addition, the graph model outperforms the standard collaborative filtering method.[8]

"CATIS: A Context-Aware Tourist Information System"- a context-aware tourist information system that leverages Web services and XML technologies for its implementation. We review notions of context as they relate to tourists and provide relevant tourism scenarios that helped drive our design.[9]

"Discriminative Features Selection in Text Mining Using TF-IDF Scheme"-this paper describes technique for discriminative features selection in Text mining.[10]

B. Problem Definition

Ads are designed to create public notices to inform and encourage about paid, non-personal, public communications for goods and services, ideas, organizations, offers and places, in ways such as mail, radio, television, and the Internet. There was no direct way to publish the ad to the user. They should use another method of advertising. A site-based advertising service will help people find the right ad easily depending on their location. Ads will appear directly on screen design.

C. Goals and Objectives

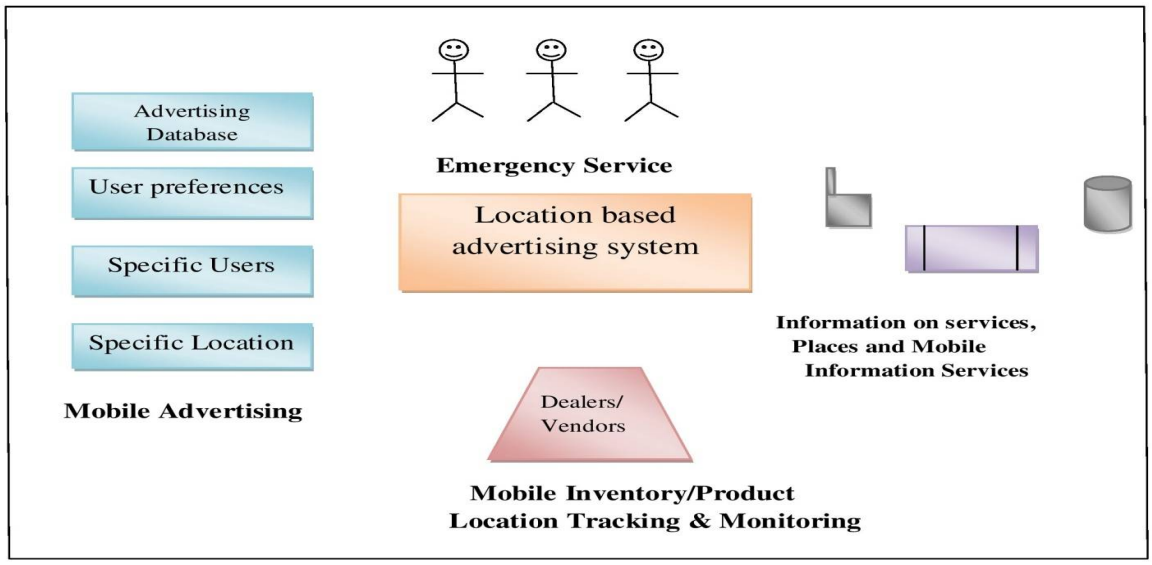
To design and implement a client server system that helps users to get the notifications about the offers (like discounts on products in some shop) available in particular area. To provide services to customers based on the knowledge of their current location. To create the personal social network sit application for mining the user interest.

D. Purpose

The purpose of the application is to provide an opportunity for advertisers to customize their ads to people based on their location. Here the Geographic positioning (GPS) system is used to determine the current location of the user. The Geographic Position System (GPS) operates based on satellite tracking and allows the user to get all the location points accurately. Mobile reading can be done by GPS tracking. GPS information can define three concepts: users, location and functions on a specific site.

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II. ARCHITECTURE



This activity is used to create an interactive app based on user interest. Creating a large web-based advertising database. Advertising details contain categories of different gadgets, clothing, food categorized by user preferences and interests. Creating a server-based schedule to get current location from a user (Android user). A server-based editor helps find or access a current user's location and send an advertising message to a specific user according to their interests. Here the Geographic positioning (GPS) system is used to determine the current location of the user. The Geographic Position System (GPS) operates based on satellite tracking and allows the user to get all the location points accurately. Mobile reading can be done by GPS tracking. GPS data can define three concepts: users, locations and functions on a specific site. The rapid growth of wireless technology has provided a platform to support smart systems in the field of mobile marketing. Using Local Based Services and Global Navigational Satellite Systems enable real-time, scheduled, and people-oriented advertising.
The functionalities of the proposed system are distributed among the following use cases:

A. User
1) User access the Mobile application system through Mobile interface.
2) User provides the login details of the application, checks available options, selects the desired options.

B. Admin
1) Manages the web-portal.
2) Adds the advertisements.
3) Accepts the registration of customers and the advertisers.
4) Maintains the Database

C. Advertiser
1) Contacts the Admin, registers at the web portal
2) Submits advertisement to admin
3) Updates the advertisements provided by him.

III. SYSTEM REQUIREMENTS

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A. Hardware Requirement

1) Processor-Core i3
2) Bus Speed-2.5 GT/s DMI
3) Hard disk-160 GB
4) Memory size-1GB RAM.

B. Software Requirement

1) jdk 8 or above
2) Xamp server/Mysql workbench Apache tomcat server 7.0 Android studio

IV. GEOFENCING ALGORITHM

Geofencing is a location-based service in which an app or other software uses GPS to trigger a pre- programmed action when a mobile device or RFID tag enters or exits a virtual boundary set up around a geographical location, known as a geofence. Depending on how a geofence is configured it can prompt mobile push notifications, trigger text messages or alerts, send targeted advertisements on social media, deliver location-based marketing data.

To make use of geofencing, an administrator or developer must first establish a virtual boundary around a specified location in GPS enabled software. This can be as simple as a circle drawn 100 feet around a location on Google Maps, as specified using APIs when developing a mobile app.

This virtual geofence will then trigger a response when an authorized device enters or exits that area, as specified by the administrator or developer.

Step 1. Setup for Geofence Monitoring

The first step in requesting geofence monitoring is to request the required permission. In order to use geofencing, your application must request access to a convenient location. If you want to use Broadcast Receiver to listen to a geofence change, add an item that describes the name of the service. To access local APIs, you need to create a geofencing client model.

Step 2. Create and Add Geofences

1) Create geofence objects first, use Geofence. Builder to create a geofence, setting thedesired radius, duration, and transition types for the geofence.
2) Specify geofences and initial triggers It shows the use of two geofence triggers. The GEOFENCE TRANSITION ENTER transition riggers when a device enters a geofence, and the GEOFENCE TRANSITION EXIT transition trigger when a device exits a geofence. Specifying INITIAL TRIGGER ENTER tells location services that GEOFENCE TRANSITION ENTER should be triggered if the device is already inside the geofence.
3) Add geofences To add geofences, use the GeofencingClient.addGeofences() method. Provide the GeofencingRequestobject, and the PendingIntent.

Step 3. Handle Geofence Trasitions

When Location Services detects that the user has entered geofence, it sends out the Intent contained in the Pending Intent you included in the request to add geofences. A broadcast receiver like Geofence Broadcast Receiver notices that the Intent was invoked and can then obtain the geofencing event from the intent, determine the type of Geofence transition(s), and determine which of the defined geofences was triggered. The broadcast receiver can direct an app to start performing background work or, if desired, send a notification as output. After detecting the transition event via the Pending Intent, the Broadcast Receiver gets the geofence transition type and tests whether it is one of the events the app uses to trigger notifications either GEOFENCE TRANSITION ENTER or GEOFENCE TRANSITION EXIT in this case. The service then send a notification and logs the transition details.

Step 4. Stop Geofence Monitoring

Stopping geofence monitoring when it is no longer needed or desired can help save battery power and CPU cycles on the device. You can stop geofence monitoring in the main activity used to add and remove geofences; removing a geofence stops it immediately. The API provides methods to remove geofences either by request IDs, or by removing geofences associated with a given Pending Intent.

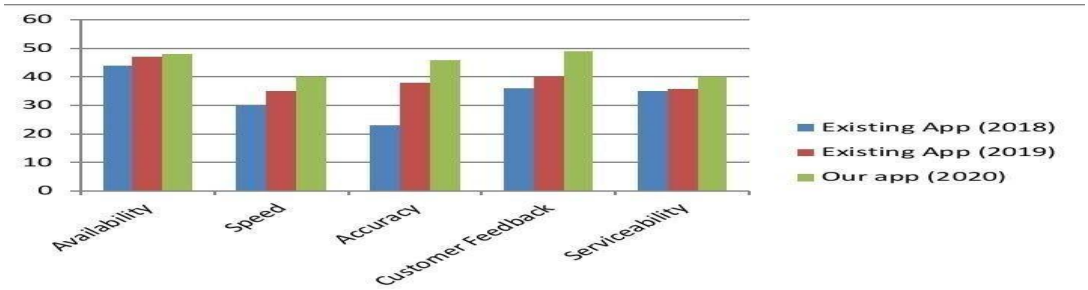
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V. CONCLUSION

Changes in communication have changed the way advertisers reach customers. Without advertising on The Internet, a modern advertising company, may also be hiring some form of mobile advertising, which reaches the audience in their environment as they use their cell phones or tablet. In this paper, we focused on building a system which can be used effectively by advertisers and users. Users do not have to directly enter his location and search instead receive all advertises about product in real time based on its location.

VI. RESULT

This project focused on building a system which can be used effectively by advertisers and users. The proposed system is able to changed the way advertisers reach customers by efficiently using mobile advertising, which reaches the audience in their environment as they use their cell phones or tablet. Mobile advertising is a great opportunity to attract our targeted customers and give them an additional value.

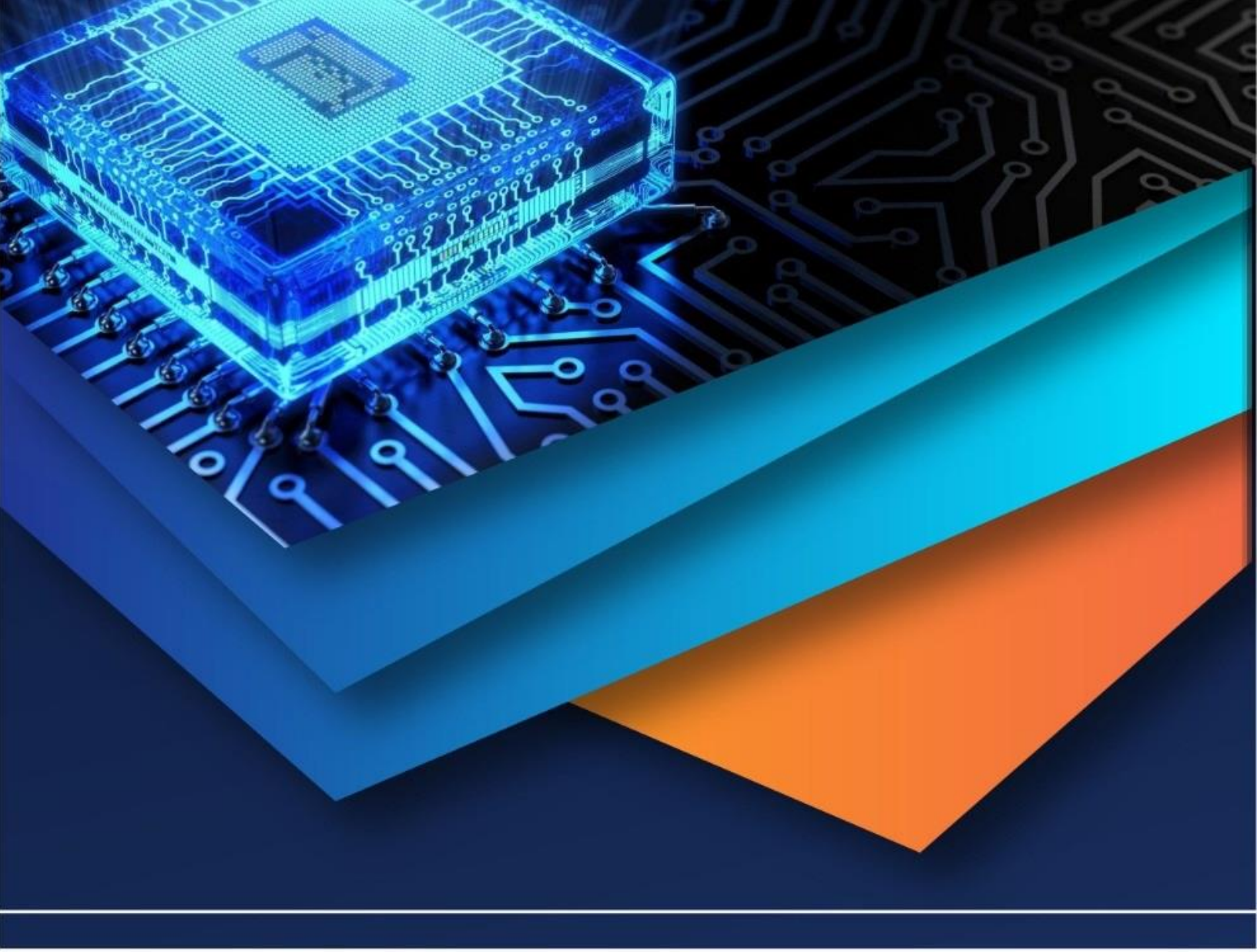


The bar chart illustrate the comparison between existing app in 2018, 2019 and our app in 2020. It shows the increased level in the form of Availability, Speed, Accuracy, Customer Feedback and Serviceability. And our app is comparatively much better than existing apps.

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