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TOURIST PLACE RECOMMENDATION SYSTEM

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Abstract- **Android Phone has power to access or fetch data from remote location and provide various facilities to the user. Hence android applications have more and more demand because of its user friendly nature and its power of computation. Many tourist are having problem to search proper tourist places due to communication overhead or less facility of tourist guide. It is impractical to search each and every tourist place at every location. So in order to provide feasible as well as user friendly solution for this problem we develop an android application which will automatically recognize famous and nearby places and send notification to android phone. This application also provides weather recommendation feature which notifies the tourist about weather conditions of the destination before visiting it. All places are properly categorized and also with review or rating. The application also provides facility of vehicle mark to reach your vehicle after site visit. We are using Triangulation method with LBS as well as GPS to track the location of user. And as per his location, relevant list of tourist places will be send in the form of pop up notification.**

Key Words- Recommendations, Ratings, Context Management, Tourism, Mobile devices

I. INTRODUCTION

This application is intended for tourist those want visit places with the use of android phone. This may also be useful to those who want to visit nearby places and working on similar projects. It is assumed that the reader is aware of using smart phone and familiar with graphical user interface of android operating system.

The purpose is to make an interactive system that helps tourist to identify tourist location and recommend places they would like to visit. An android application which will show nearest as well as categorized tourist visiting places with rating. This application provides descriptions about places in the form of notifications send by our system.

Users are tracked using GPS and getting current location. After getting current position, system will recommend nearby places. User will be notified with weather of selected place. Application will suggest assets according to weather conditions. Application gives the brief information about the places.

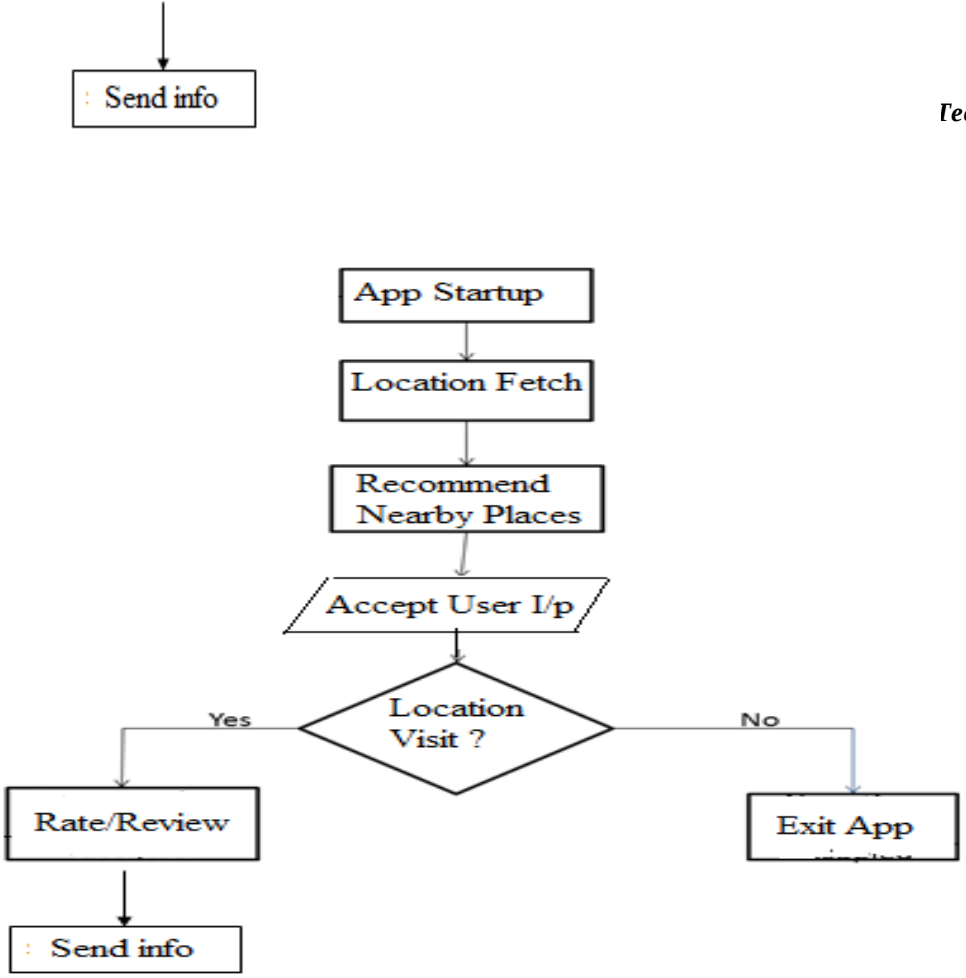

Fig 1.Flowchart

II. LITERATURE SURVEY

This section includes the work done on related topics by various researchers. Following is the brief description of some of them:

Artem Umanets, Artur Ferreira, Nuno Leite[1] proposed a paper in which development and the key features of a tourist guide, named GuideMe, with a mobile and Web application. The service offers a set of search filters to facilitate the exploration of new locations. Facebook and Twitter social services are integrated in the service, allowing for users of these social services to easily register as a new user or to login into the GuideMe service. Thus, it is possible to follow a user directly through the GuideMe service. The system suggests new locations based on both the user's past actions and its current location. It takes into account the preferences of other users Users provide information regarding the locations that they visit. The recommendation process can be done through the analysis of the items characteristics, named as content-based filtering (CBF). Another approach, designated as collaborative filtering (CF), use evaluations about items done by other users. They choose to implement the IBCF method for the GuideMe RS.

Wahidah Husain and Lam Yih Dih. [3], did comparative study of available recommender systems and location-based services (LBS) to explore the different methods to recommender systems and LBS technology. The effectiveness of the system based on the proposed framework is tested using various scenarios which might be faced by users. Location Based Services (LBS) solutions deliver relevant information according to the user's current location using position information. LBS can retrieve the user's location through any Global Positioning System (GPS)-enabled mobile phone, through the location services provided by the mobile operator, or through WiFi positioning technologies. The technologies used in LBS are positioning technology, Geographic Information System (GIS) technology and Location Management Functions. Positioning technologies are used to identify the position of the client-side device. GIS provides map and geographical data such as the locations of buildings, streets, mountains, rivers, etc. Location management functions manage and process the position information and GIS data.

Liangliang Cao, Jiebo Luo, Andrew Gallagher, Xin Jin, Jiawei Han and Thomas S. Huang [5], build a system to suggest tourist destinations based on visual matching and minimal user input. A user can provide either a photo of the desired keyword describing the place of interest, and the system will look into its database for places that share the visual characteristics. To that end, we first cluster large-scale geotagged web photo collection into groups by location. Tourist destination recommendations are produced by comparison of query against the representative tags or representation of images under the premise of "if you like that place, you may also like these places". To cluster the geotagged photos, we consider the mean shift GPS algorithm for the GPS coordinates. Mean shift clustering is a nonparametric method which does not require to specify the number of clusters, and does not assume the shape of the clusters. Starting from a given sample x, Mean shift looks for the vector

$$m(x) = Pi\ xigi\ Pi\ gi$$

Where gi is the local kernel density function in the form of

$$gi = g(||(x - xi)/h||2),$$

Where g should be a nonnegative, nonincreasing, and piecewise continuous function.

Daniar Asanov [7], proposed a paper on different approaches and algorithms of data filtering and recommendations giving. In this paper we describe traditional approaches and explain what kind of modern approaches have been developed. All the paper long we will try to explain approaches and their problems based on a movies recommendations. In the end we will show the main challanges recommender systems come across.It contain information about Content-based filtering and Collaborative filtering. Going in details of methods of collaborative filtering we can distinguish most popular approaches: user-based, item-based and model-based approaches.

Dan Pescaru and Daniel-Ioan Curiac [6] proposed next step of localization algorithm is based on the well-known triangulation method. Triangulation is the process of determining the location of a point by measuring angles to it from other two points whose position on a map is known. In case of more than two reference points, triangulation could be applied repetitively on all possible pairs formed by two distinctive points in order to decrease the error by averaging the results.Triangulation method is important to calculate the exact location of required place using GPS.

Subramaniyaswamy V, Vijayakumar V, Logesh R and Indragandhi V [10] proposed a probabilistic travel recommendation model which retrive automatically mined knowledge from user contributed photo tags and detected people attributes, travel group types and travel group season in photo contents .For future work, they implement real time application for Intelligent travel recommendation that will mine user's preferences from user contributed photo tags and recommend location to users. They adopt Bayesian learning model as recommendation model. Bayes theorem states that the probability that the location Lj is suggested destination given a start location Li and attribute value PRu of a specific user u is

$$P(Li->j / PRu) = P(Li->j,PRu) / P(PRu)\ (eqn\ 1)$$

Li is starting location Lj is ending location to predict the location Lj probabilities that the user might like to visit from a location Li .To calculate Lj equation 1 can further be transformed into following equation

$$P(Li->j/\ PRu)=P(Li)*P(Lj/Li)*P(PRu/Li->j)\ /\ P(PRu)(eqn\ 2))$$

III. PROPOSED METHODOLOGY

In this paper we have studied different methodologies which can be useful to complete the given problem. Recent research in computer vision has increasingly focused on building systems for observing humans and understanding their appearance, movements, and activities, providing advanced interfaces for interacting with humans, and creating realistic models of humans for various purposes. In order for any of these systems to function, they require to track exact location of User. System will provide classified view for searching places with rating and reviews. As well as allow the user to rate the system. System will also show weather condition of selected spot, suggest required things (like cap, umbrella, sunglasses), mark (get the position of the parked vehicle).
Show nearby subplaces, give the information in terms of notification (history etc.)
The modules which can be used in the system are:

1) *Location Track*
2) *Rating and Review system*
3) *Place recommendation*
4) *Weather recommendation*
5) *Social media upload*
6) *Profile follower*

IV. RECOMMENDATION SYSTEM APPROACHES

Recommender systems (RS) are used to generate meaningful information to a collection of users for items or products that might interest them. The recommendation process can be done through the analysis of the items characteristics, named as *content-based filtering* (CBF). Another approach, designated as *collaborative filtering* (CF), use evaluations about places done by other users. In CBF methods, the places are recommended to the active user based on rating given by the user. So, recommendations are based on the object features as well as on data acquired on the behavior of each user. In CF methods, the recommendation process is based on ratings of "similiar" users, that is, users who have similar preferences. The CF methods are classified into two categories memory-based (or *user-based collaborative filtering* – UBCF) methods and model-based (or *item-based collaborative filtering* – IBCF). Also another approaches is the hybrid method with features from CBF, CF, and other approaches, achieve the best results but there is the increased complexity of implementing a hybrid approach.

GCM is a service which allows developers to send push messages to Android devices from the server. GCM handles the queuing of the messages as well as delivering those messages to the target applications on the devices. GCM is a free service by Google, and it has no quotas. It is the default push messaging solution for the Android platform.

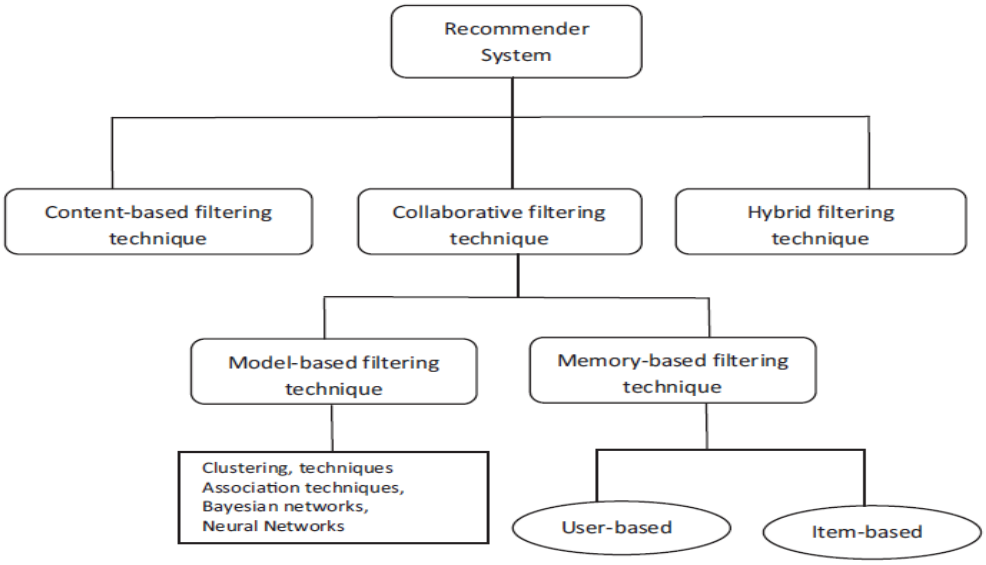

Fig 2.Recommendation System Approaches

A Location Based Service (LBS) is an information and entertainment service, accessible with mobile devices through the mobile network and utilizing the ability to make use of geographical position of the mobile device. A LBS services can be used in a variety of contexts, such as health, work, personal life, etc. LBS include services to identify the location of a person or object, such as discovering the nearest banking cash machine or the where about of a friend or employee. LBS services include parcel tracking and vehicle tracking services.
LBS have two major actions, that is:
1. Obtaining the location of user
2. Utilizing this information to provide a service.

Global Positioning System is space based navigation system that provides location and time information in all weather conditions, anywhere on or near the earth where there is unobstructed line of sight to four or more GPS satellite.

The Global Positioning System can provide extremely accurate location information for mobile objects and people far superior to earlier tracking techniques. The challenge today is integrating the necessary components into older systems and

improving GPS accuracy in areas with numerous obstructions. As more devices become GPS enabled, accuracy will increase and the system's scale and global reach will benefit everyone.

Several factors limit GPS accuracy. A major source of error is radio signal speed is constant only in a vacuum. Water vapor and other particles in the atmosphere can slow signals down, resulting in *propagation delay*. Errors due to *multipath fading*, which occurs when a signal bounces off a building or terrain before reaching the receiver's antenna, also can reduce accuracy.

V. ALGORITHM

Algorithm 1 : Mean-shift based GPS Clustering [5]
Input: GPS coordinates $X=\{x_l\}$, where x_l is a two dimensional vector denoting longitude and latitude.
1: Initialize center set $C = \emptyset$, and non-visited set $U = X$.
2: **for** each $x_l \in U$ **do**
3: Set $x = x_l$, $V = \{x_l\}$.
4: **do**
5: Find x's neighborhood set $\{x_j\}$ using (2).
6: Compute the vector m(x) using (1).
7: Update $x = m(x)$ and $V = V\ S\{x_j\}$.
8: **until** x converge.
9: Update $C = C\ Sx$ and $U = U - V$
10: **end for**
Output: The set of cluster centers C and the corresponding samples in each cluster.

VI. CONCLUSION

This 'Tourist Place recommendation System' application provides recommendations to the tourists of the nearby locations worth visiting automatically without the need to search for the locations explicitly. The system provides information about the locations in the form of notifications and also provides the shortest path to reach the destination location. The application also provides information about the weather conditions of a location the tourist wants to visit and recommends him/her to take the appropriate accessories according to the weather.

VII. FUTURE SCOPE

In future this application can be expanded to provide more accurate results by providing recommendations based on climate or time of the day.

After going through the surveying, it can be gathered that there is a huge scope of application development in mobile domain. Following the same notion, we can also develop application that can tackle following issues:
1) Location positioning technologies
2) Query processing
3) Cache management

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