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PAL TRACKER: Track and Meet Friends and Family Nearby

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ABSTRACT

In this paper, Do we really care about who is around us and the security of our family members? Many social media companies have envisioned the internet as a facilitator for real world interaction — a way to make it easier to see the people we care about. So far, though, it's been tough to get a critical mass of users interested in features like mobile based service is developed such that registering user's when he/she arrives with in a location near by registered user and deliver notification for the registered user. Then we use a novel method called location-based delivery (LBD), which combines the short message service (SMS) and global position system (GPS), is proposed, and further to assist with the exact information, at right place in real time with personalized setup and location is tracked to meet.

Keywords: *Nearby Friends, Tracking*

I. INTRODUCTION

Early iterations of the Nearby Friends concept are found on Google — with its Latitude Feature — and Foursquare. Both technologies were launched in 2009, as Google brought Latitude to its mobile Maps product and Foursquare launched at South by Southwest. Both services were somewhat primitive. Google Latitude started as a way simply for people to share their location, but became more sophisticated over time. Meanwhile, Foursquare's technology could only filter friends who recently checked in at a nearby location, rather than seeing everything in real time [1].

Location-based applications are one of the most anticipated new segments of the mobile industry. These new applications are enabled by GPS-equipped phones and range from Emergency 911 (E-911) applications to buddy finders (e.g., "let me know when my friend is within 1000 feet") to games (e.g., treasure hunt) to location-based advertising (e.g., "enter the Starbucks to your left and get $1.00 off a Frappuccino"). These services are designed to give consumers instant access to personalized, local content. In this case, local content is local to the consumer's immediate location. Some of these applications will couple LBS with notification services, automatically alerting users when they are close to a preselected destination. LBS proponents believe that these services will create new markets and new revenue

opportunities for device manufacturers, wireless providers, and application developers.

The goal was to provide enhanced LBS solutions [4] for people to stay in touch with their friends and family, to be able to find one another, and to get directions.

II. PROPOSED APPROACH

The three main features of the proposed LBD approach are a well-defined SMS format, location prediction module, and dynamic threshold module (see Fig. 1). LBD uses a proprietary SMS format. The location prediction module, which is built in both the target and the tracker side, uses the information on the current location, moving speed, and bearing of the target to predict its next location. The dynamic threshold module, which issued only on the target side, minimizes the number of short messages by dynamically adjusting the threshold TH according to the moving speed of the target.

The tracker periodically updates the location of the target on the local screen according to the predicted location However, when it receives a short message response from the target, it means that the predicted location is far from the actual location.

For more accurate location tracking, the tracker updates the target's location using the information encoded in the received message, rather than its prediction.

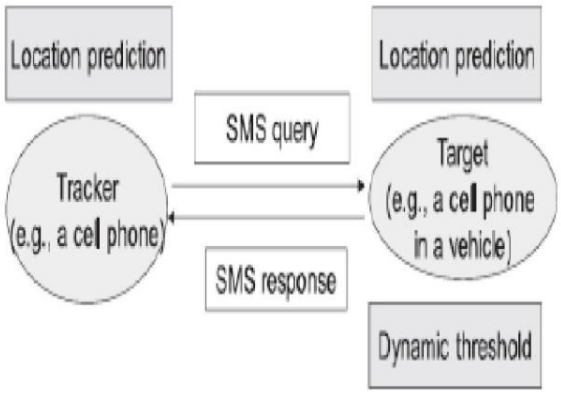

Fig. 1. Structure of the LBD system

The idea of using the mobile handsets and phones is

To deliver the valuable services, Location-based services or LBS refer to a set of applications that exploit the knowledge of the geographical position of a mobile device in order to provide services based on that information. 'Location based services (LBS) provide the mobile clients personalized services according to their current location. They also open a new area for developers, cellular service network operators, and service providers to develop and provide value-added services. Location-based services offer many merits to the mobile clients. For the mobile user, the examples of location based services [2] are:

□□Nearest registered Friends notification reminder

□□Privacy in Person Location tracking by Family Member

III. LBS COMPONENTS

All In order to make LBS [5] services possible, some infrastructure elements are necessary, including mobile devices, applications, communication network, positioning component, and service servers Mobile devices are tools used by users to access LBS services, to send requests and retrieve results. Such devices can be portable navigation devices (PNDs), Personal Data Assistants (PDAs), laptops, mobile phones, and so on. Application is the interface for users to access the LBS service. It is usually software developed by an application provider, downloaded and installed on user's mobile device. A specific application is usually developed for specific LBS Service. Due to the restrictions of mobile devices (small screen size, limited processor power and memory, battery capacity), LBS applications need to be lightweight and battery saving. Communication network refers to the mobile network which transfers service request from user to service provider, and requested information back to the user. A positioning component is usually needed in an LBS application to determine

the location of user's mobile device. Service providers maintain service server's which offer different kinds of LBS services to users and are responsible for processing service requests and sending back request results. Servers calculate positions, search for a route, or search specific information based on user's position. Service providers usually do not store and maintain all the information requested by users Instead, content providers are responsible for collecting and to bring geographic data, location-based information, and other related data. These data will be requested and processed by service servers and then returned to users.

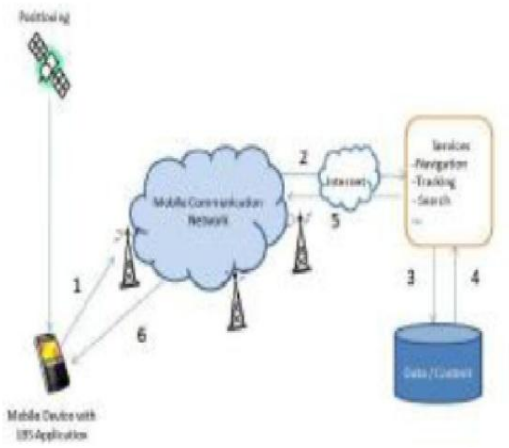

Fig. 2 shows the interactions among these

Components and the process of a LBS service. First, user sends a service request using the application running on mobile device (Step 1). The service request, with user's current location information obtained from the positioning Component (in this example, GPS data), is sent to service server via the mobile communication network (Step 2) The service server requests geographic database and other related database to get required information (Step 3, 4). At last, the requested information is sent back to user's mobile phone via mobile communication network paragraphs must be indented Fig. 2 LBS components and Service Process Every LBSs contain a number of components including maps and Geographic Information System (GIS) information, location collection services, and LBS application-specific subcomponents. The architecture of LBS can be generalized as shown in Fig 3.LBS Application this represents a specific application such as a find my friends‖ application. This consists of a Smartphone component, which has a number of sensors, and potentially a server component that includes application specific data (such as location-tagged information LBS Middleware this wraps access to Core LBS Features (Location Tracking, GIS Provider and Location Collection Services)to provide a consistent interface to LBS applications.

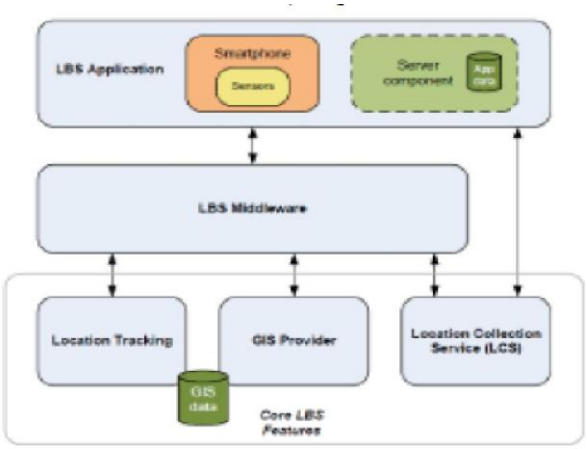

Fig. 3 Components of LBS

A. Location Tracking

This component stores the location trace of individual users. This represents a fundamental component in next generation LBS as it contains the data that allows a user's route to be determined and potentially predicted. In particular, this component would typically support the following functionality:

1. Keep records on user's current and past locations.
2. Notify other components when a specific user Has moved, or when they move in or out of an area. This supports location-based notifications being sent to users.
3. Determine which users are within a defined location this supports geo-casting features.
4. Queries of location trace to generate user Movement models

B. GIS Provider

This component provides geospatial functionality for many LBSs including map information, map visualization and directory services. Google Maps with its API can be considered a GIS provider. Location Collection Service This component performs location collection to get altitude and longitude for a specific user. Depending on the technology, this component may be accessed via the LBS Middleware (e.g., mobile network triangulation via eservice provider) or directly (e.g., via GPS receiver in the Smartphone). Android provides access to the above components to facilitate the implementation of

LBS services through the help of following classes;

1. Location Manager
2. Location Provider
3. Geo-coding
4. Google-Map

C. Location Manager

Location Manager Class of android is present to manage all other components needed to establish a LBS system.

D. Location provider

Location provider represents the technology to

Determine the physical location i.e. to handle GIS. Location Provider component of Android application is a present to facilitate the determination of available provider and selection of suitable one. There are two methodologies to implement LBS [3].

□□To process location data in a server and to forward the generated response to the clients.

□□To find location data for a mobile device-based application that can use it directly.

To discover the position of the mobile, LBS must

Use positioning methods in real time. The accuracy of the methodology depends on the approach used. Locations can be represented in spatial terms or as text descriptions. A spatial location can be represented in the used latitude longitude-altitude coordinate system. Latitude is defined as 0-90 degrees north or south of the equator and longitude as 0-180 degrees east or west of the prime meridian, that passes through the Greenwich, England. Altitude Is represented in meters above sea level. A text description is usually defined as a street location, including city, pincode. The location of the device can be retrieved. As shown in below Fig. 4

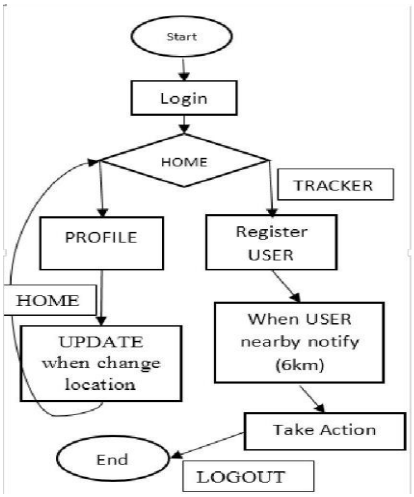

Fig. 4 Flow chart for Mobile App

1. Mobile Phone Service Provider Network

The current cell ID is used to locate the Base Transceiver Station (BTS) that the mobile phone is interacting with and the location of that BTS. It is the most basic and cheapest method for this purpose as it uses the location of the radio base station that the cell phone is connected to. AGSM cell may be anywhere from 2 to 20 kilometers in diameter. Other approaches used along with cell ID can achieve location granularity within 150 meters. The granularity of location information is poor due to Wide Cell Range. The advantage is that no additional cost is attached to the handset or to the network to enable this service.

2. Satellites The Global Positioning System (GPS) uses a constellation of 24 satellites orbiting the earth. GPS finds the user position by calculating differences in the times the signals, from different satellites, take to reach the receiver. GPS signals are decoded, so the smart phone must have inbuilt GPS receiver. Assisted GPS (A-GPS) is the new technology for smart phones that integrates the mobile network with the GPS to give a better accuracy of 5 to 10meters. This fixes the position

within seconds, has better coverage and can, in some cases, be used inside the buildings, consumes less battery power and requires fewer satellites. The granularity of location information is most accurate (Latitudes and Longitudes).The disadvantage is cost of AGPS enabled handsets for the user.

IV. USE OF LBS IN MOBILE APP

The LBS in Mobile App such that first user has to register the user detail by phone number or name as shown in Fig. 5 with that when they are nearby such location are notified.

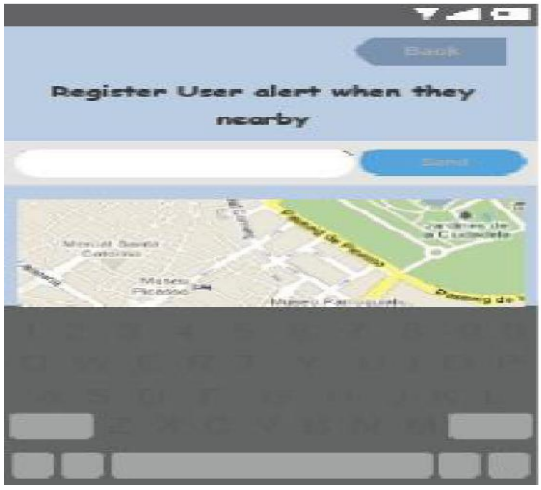

Fig. 5 Register User

1. Nearest Friends notification reminder This is another location based service provided by our android app, in which we are going to implement nearest friends notification reminder (e.g. Fig. 6). In this feature the user will get reminder message when his/her friend locate in the same area, so that the user can meet him/her. Here according to the friends list provided by user, user will get the notification reminder when the GPS tracks the location of the person from list in same area where the user is currently present. In this scenario, the area is based on the geographic cell.

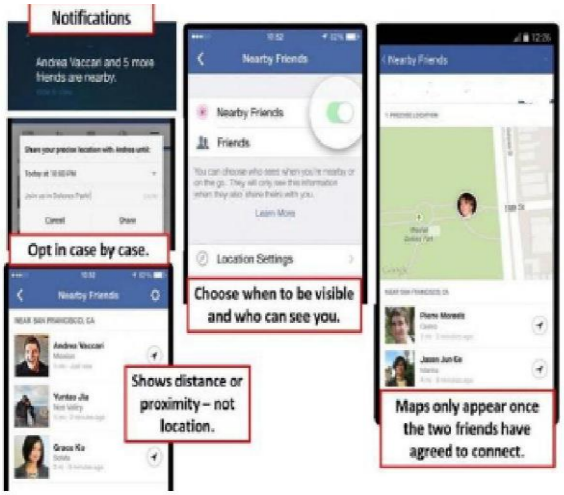

Fig. 6 Notification and listing nearby friends

2. Person Location tracking by Family Member (SMS) This feature of our android app will help the Family members to locate their other family member. In this module we are going to implement person‘s Location tracking with mobile device using Google map & GPS technology. Here when family members e.g. parents wants to find location of son/daughter then they have to just send a particular message on son/daughter‘s mobile then the app will send location to Google map service &then Google cloud‘s SMS service will this send location SMS to parents. So parents can easily get location of their son/daughter with help of this feature.

3. Profile changer based on place or area In this module of project we are going to implement automatic profile changing facility means using This feature of our android app, the profile of user‘s Mobile device will automatically change from normal mode to silent mode & vice versa. According to places where person goes. The user needs to register the particular places/location for which he wants to change the profile .And accordingly the profile changer will work in that particular registered perimeter only. Here first the user‘s mobile device will locate using GPS technology then according to place the profile of mobile will change Sometimes the person forgets to change the profile of mobile phone at certain places, so this app will help which automatically change profile.

V. CONCLUSIONS

There are various constraints to implement Location Based Services. The different kinds of constraints include:

□□Technology Constraints The most important factor in enabling the growth of LBS is wide availability of cheap GPS enabled handsets. GPS enabled handsets are being manufactured now days.

□□Infrastructure Constraints One of the main problems is the lack of spread of The wireless network into the countryside. In Developing country like India, the wireless technology is in very nascent stage. In metro cities and areas, the problem of network congestion is also an important issue.

The percentage of service operators not meeting the Congestion rate benchmarks has risen subsequently.

This paper proposes a developing an Android Application which is based on LBS & provides different location based services like profile changing of mobile from normal mode to silent mode & vice versa for certain places that user registered. Again nearest friend locator, family member location finder. Here for finding location the GPS technology with Google Map API can used. As android is an open source, this application can be used for further improvements in many Smartphones. Also in concern the security aspect of this application, the Reputation based security model can apply. After going through the surveying, it can be gathered that there is a huge scope of application development in mobile domain.

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BIOGRAPHIES

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