

ANDROID APPLICATION BASED ON OPTIMAL BUS ROUTE MAPS AND DRIVING DIRECTIONS WITH HUMAN INTELLIGENCE

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Abstract: Nowadays, the usage of Mobile phones are played significant role in Our life. Smart Phones have become a platform for applications and 3G connectivity has turned them into ubiquitous Internet clients. Among them android platform is very popular and holds the maximum users while compared to other platforms. The aim of this paper is to provide an app to exchange message between user and location service provider in mobile device, accessing the cloud by minimizing cost, data storage and processing power. The main goal is to provide dynamic location-based service and nearby provide an application based on the GPS system of user and by that we can track the place of the user and provide him information of the nearby bus stop from the cloud. The user then can also track the bus details like timings, route maps etc, required for the destination point. There by it makes easy for every user to track his location and find the way to reach the destination point with the use of a simple app by reducing the waiting time. For Driver purpose, A time dependent land-mark graph is introduced to model the dynamic traffic pattern as well as the intelligence of experienced drivers so as to provide a user with the practically fastest route to a given destination at a given departure time. Variance-Entropy-Based Clustering approach is devised to estimate the distribution of travel time between two landmarks in different time slots. Based on this graph, designing a two-stage routing algorithm to compute the practically fastest and customized route for end users.

Index Terms: Spatial Database, GIS, Data mining, GPS trajectory, Driving directions, Driving behavior, Bus routes, Route maps

1. Introduction

Recent Development in Information and Communication Technology, An Android Based Mobile Application plays a significant role nowadays. In recent years, two major trends have changed the way mobile phones are used: Smart Phones have become a platform for

applications, and 3G connectivity has turned them into ubiquitous Internet clients. Among them android platform is very popular and holds the maximum users while compared to other platforms. It has millions of users who use it for its simplicity and other features. Increasingly, applications on smart phones interact with the cloud as backend for data storage and computation. A special class of service among them is the location based service which depends on the geographical position of the user to provide services to the end users. We observe that, for much mobile application, the specific data that is accessed depends on the current location of the user. for example, a restaurant recommendation application is often used to get information about nearby restaurants. The aim of this paper is to exchange message between user and location service provider in mobile device accessing the cloud by minimizing cost, data storage and processing power. Our main goal is to provide dynamic location-based service and nearby provide application based on the GPS system of user and by that we can track the place of the user and provide him information of the nearby bus stop from the cloud. The user then can also track the bus details like timings, route maps etc, required for the destination point. Hence it makes easy for every user to track his location and find the way to reach the destination point with the use of a simple app.

Efficient driving directions has become a daily activity and been implemented as a key feature in many map services like Google and Bing Maps. A fast driving route saves not only the time of a driver but also energy consumption (as most gas is wasted in traffic jams). Therefore, this service is also important for both end users and governments aiming to ease traffic problems and protect environment. The time that a driver traverses a route depends on the following three aspects: 1) The physical feature of a route, such as distance, capacity (lanes), and the number of traffic lights as well as direction turns; 2) The time-dependent traffic flow on the route; and 3) A user's driving behavior. a cloud-based cyber-physical system for computing practically fast routes for a particular user, and the user's GPS Devices.

This paper is organized like this Section II Literature Survey, and its related work, Section III Problem Description, Section IV Proposed Architecture and its Component, Section V Implementation and Experiment Result and Analysis, Finally Section VI Conclusion and Future Enhancement is explained.

2. Literature Survey

[2]Garima Pandey Diksha Dani proposed paper “Android Mobile Application Build on Eclipse”. This paper gives a complete knowledge of how to start working on eclipse and develop an application and get it run on emulator. The main Advantage of this paper is that Android is a Linux-based, open source mobile operating system. Developing with Eclipse is the preferred method because it can directly invoke the tools that we need while developing applications. The Disadvantage involve that Android studio takes more to get installed and need all the downloaded plugins in order to perform app. The main observation involve that the tools required for android app involves, Android SDK tools, revision 20 or newer, SDK platform Android 3.0, Eclipse IDE, ADT plug-in for Eclipse, AVD manager.

The main purpose of this research paper “PROFILING OF ANDROID PHONE CUSTOMERS USING GPS TRACKING SYSTEM”[3] is to study the methodology that can be used to attract more food lovers and customers through GPS Tracking System. Its Advantages would be that it uses GPS system to locate the exact position of the device by using satellite. It finds the latitude and longitude of device and then displays the exact position. Android offers a relational database which is SQLite for data storage purposes. Disadvantages involve that Android requires an active internet connection for GPRS to run to find location and Application in the Android phones can indeed free, but the consequences in each of these applications, will always be ads on display. This paper focus for sending notification to customers using GPS system. A brief idea of GPS and its usage with the android technology in today would track the location of customers.

The paper “Implementation of Android Application to Search nearby Places with GPS Navigation Technology”[4] is mostly used for consumer who is travelling to another city or new place. The application finds the relative place’s distance from consumer’s current position and generates the Google map. In this application the main advantages are that all data are linked through Google. So there is no need to maintain separate data base. This data base is redirect as per user requirement. Information regarding distance, timing and address of the nearby places is also displayed on the android device screen. The disadvantages involve that

this application can be scaled in 1 to 50Km range to find out required places. The research work presented in this involves new service based design approach and that is utility search places application for client and it is implemented for large collection data form Google.

[5]“Cloud Based Application Development for Accessing Restaurant Information on Mobile Device using LBS” aim is to exchange messages between user and location service provider in mobile device accessing the cloud, Each cloud stores restaurant related information like address, contact number, food style information etc. Its major advantages is When a user arrives at a new city, he may want to know the typical or popular food or restaurant in this city. Then it is very hard for him to search. In our system, we have considered only restaurant searching services. Disadvantages involve that user needs to register with LSP to access the available services. LSP performs authentication by assigning user with unique ID i.e.,Phone Number. User is able to access required service by providing unique.

The paper describes Android Phone Based Location and File Sharing systems. The main advantages of this paper “DESIGN AND IMPLEMENTATION OF ANDROID PHONE BASED LOCATION AND FILE SHARING SYSTEM” [6] involve that it Interact with the webserver and sharing location and message. Connect with the external database MySQL to maintain a centralized database. Disadvantages involve that Improvement in user interfaces in android device as well as in webserver. Maintaining different group of users to share information within groups only. Its main Observations involve Getlocation() function is used to achieve self-location and locate friend’s position. When you want to locate friend’s position, you must achieve agreement of your friend firstly. If the friend agrees, the friend’s location information will be sent to the server and the server will be forwarded the information to your phone.

2.1 Related Work

A continuous query system for dynamic route planning[9]

Addressing the problem of answering continuous route planning queries over a road network, in the presence of updates to the delay (cost) estimates of links. A simple approach to this problem would be to recompute the best path for all queries on arrival of every delay update. However, such a naive approach scales poorly when there are many users who have requested routes in the system. Instead, two new classes of approximate techniques are proposed – K-paths and proximity measures to substantially speed up processing of the set of designated routes specified by continuous route

planning queries in the face of incoming traffic delay updates. Our techniques work through a combination of precipitation of likely good paths and by avoiding complete recalculations on every delay update, instead only sending the user new routes when delays change significantly.

Discovering popular routes from trajectories[11]

Investigate the problem of discovering the *Most Popular Route* (MPR) between two locations by observing the traveling behaviors of many previous users. This new query is beneficial to travelers who are asking directions or planning a trip in an unfamiliar city/area, as historical traveling experiences can reveal how people usually choose routes between locations. To achieve this goal, firstly develop a *Coherence Expanding* algorithm to retrieve a transfer network from raw trajectories, for indicating all the possible movements between locations. After that, the Absorbing Markov Chain model is applied to derive a reasonable *transfer probability* for each transfer node in the network, which is subsequently used as the popularity indicator in the search phase. Finally, propose a *Maximum ProbabilityProduct* algorithm to discover the MPR from a transfer network based on the popularity indicators in a breadth-first manner

Statistical modeling and analysis of sparse bus probe data in urban areas [12]

Congestion in urban areas causes financial loss to business and increased use of energy compared with free flowing traffic. Providing citizens with accurate information on traffic conditions can encourage journeys at times of low congestion and uptake of public transport. Installing the measurement infrastructure in a city to provide this information is expensive and potentially invades privacy. Increasingly, public transport vehicles are equipped with sensors to provide real time arrival time estimates, but these data are sparse

3. Problem Description

Nowadays there is no system to inform the Passenger about the bus Timing, Schedule, etc well in advance. Bus stops are not located near to you. So, you may not aware of nearby bus stops, their name and how much distance is away from user. We have to wait for longer time to catch particular Bus, To change Bus from one terminal to another terminal, like that we have to face lots of problems for a particular destination. Busses doesn't have proper schedule and you'll have to wait for long hours sometimes. If you want to start your trip at some particular time you need to be minimum 15 minutes early, by considering this.

Efficient driving directions has also become a daily activity and been implemented as a key feature in many map services like Google and Bing Maps .In the previous system we cannot guarantee there are sufficient taxis traversing on each road segment even if we have a large number of users.

4. Proposed Architecture

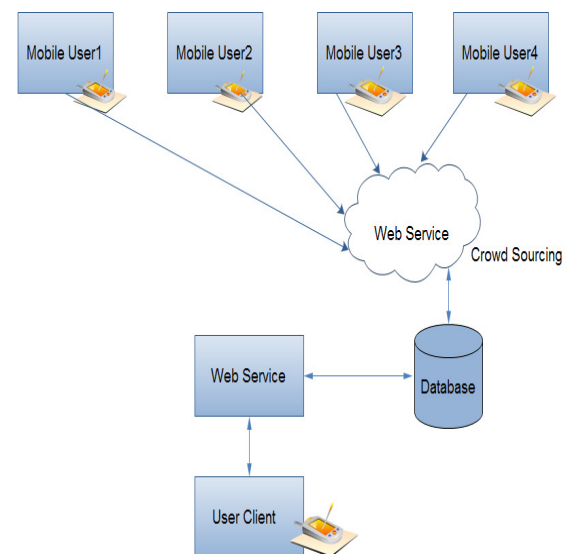


Figure 1. Architecture diagram

4.1 System Architecture

System architecture is a conceptual model that defines the structure, behavior, and more views of a system. An architecture description is a formal description and representation of a system, organized in a way that supports reasoning about the structures and behaviors of the system.

4.2 Road Segment

A road segment r is a directed (one-way or bidirectional) edge that is associated with a direction symbol ($r:dir$), two terminal points ($r:s$, $r:e$), and a list of intermediate points describing the segment using a polyline. If $r:dir=one-way$, r can only be traveled from $r:s$ to $r:e$; otherwise, people can start from both terminal points, i.e., $r:s \rightarrow r:e$ or $r:e \rightarrow r:s$. Each road segment has a length $r:length$ and a speed constraint $r:speed$, which is the maximum speed allowed on this road segment

4.3 Road Network

A road network Gr is a directed graph, $Gr = (Vr; Er)$, where Vr is a set of nodes representing the terminal points of road segments, and Er is a set of edges denoting road segments.

4.4 Time-Dependent Landmark Graph

A landmark is one of the top-k road segments that are frequently traversed by taxi drivers according to the trajectory archive. Given a trajectory archive A , a time threshold $tmax$, two landmarks $u; v$, arriving time ta , leaving time tl , we say $s = (u; v, ta; tl)$ is a transition if the following conditions are satisfied: $u = ri; v = rj; ta = pi.t$, $tl = pj.t$. records all the historical arriving and leaving times.

4.5 Travel Time Estimation

Partition time of a day into several slots (for different landmark edges). Estimate the travel time distribution of each time slot for each landmark edge using VE-Clustering.

4.6 Interface Prototyping

The user interface (UI) is everything designed into an information device with which a person may interact. This can include display screens, keyboards, a mouse and the appearance of a desktop. It is also the way through which a user interacts with an application or a website. The growing dependence of many companies on web applications and mobile applications have led many companies to place increased priority on UI in an effort to improve the user's overall experience.

5. Implementation and Working Principles

Based on crowd sourcing technique we collect the location information of users and store it in Database. We determine the raw location data collected from DB and find the following knowledge info: Find path of each and every user using location data. Find the common path of all the users based on time. Extract travel time from one point/route to another point/route. Extract route and time knowledge from the above processing and update it with DB. Write web service to expose the knowledge map to any users.

A data flow diagram (DFD) is a graphical representation of the "flow" of data through an information system, modeling its process aspects. A DFD is often used as a preliminary step to create an overview

of the system without going into great detail, which can later be elaborated.

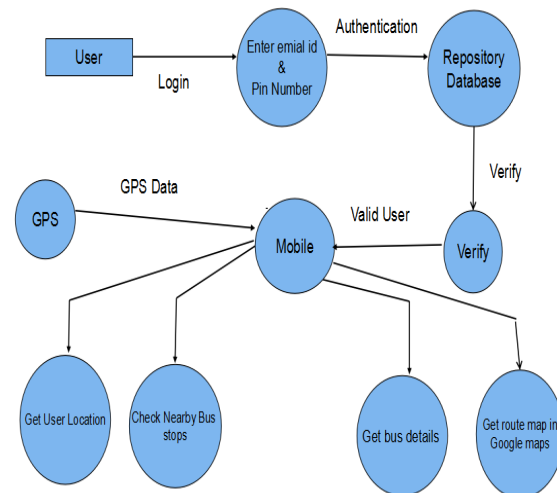


Figure 2. Working Process

6. Experiments Result and Analysis

5.1 Results and Analysis

An Android app is a software application running on the Android platform. Because the Android platform is built for mobile devices, a typical Android app is designed for a smartphone or a tablet PC running on the Android OS. In this paper, we have made an android application, where the user can go into the app and get all the details regarding the bus numbers and bus timings of chennai place.

Through this app we tend to help the people by giving correct information of the basic needs Eg. The user can get the bus numbers if he is unaware of the bus details. He can get the details by entering the source and destination points. He can also get the nearby bus stops, by using the GPS location of user. He can also track the path of the destination linking to the google maps.

7. Conclusion and Future Work

The conclusion of this study suggest that knowledge of specific domain improves the results. This project has been implemented on Android platform. Also, different attributes have been added to the project which will improve to be advantageous to the system. The project is implemented using Android and the SQL domain. Using the GPS system, the application will automatically display the maps and routes to the different locations and

also track nearby bus stops. The app shows location details are provided to the user along with bus no, so that the person can identify the bus correctly. It uses remote server as its database.

This project will be put up on the cloud platform, so that it will be accessible by every Android user. The application will prove beneficial for every bus traveler, or event tourists. Not just buses, but this application will be useful for every person travelling by any means of transport. The Location Tracker will give the exact location of the bus which will make it easy for the passengers to travel.

Describes a system to find out the practically fastest route for a particular user at a given departure time. Specifically, the system mines the intelligence of experienced drivers from a large number of taxi trajectories and provide the end user with a smart route, which incorporates the physical feature of a route, the time-dependent traffic flow as well as the users' driving behaviors of both the fleet drivers and of the end user for whom the route is being computed.

In Future work driving directions with effective paths will be composed by weather prediction and path prediction on weekend days.

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