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Finding Optimal Vehicular Route Based On GPS

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Abstract -This paper presents a driving direction for finding optimal route based on the GPS. In this system, GPS-equipped taxis are employed as devices send location information to a centralized sever. This project develop an online social service primarily based on the service employs crowd sourcing as its primary means of providing real-time traffic updates to subscribers on its platform. A smart driving direction service based on GPS traces using crowd sourcing of Taxi drivers. Find out the fastest driving directions with less online computation according to user queries. Based on the min-max algorithm we can find the fastest and shortest route for end users. Through the Google, Yahoo, Bing map we can analysis the date and then we can find the shortest path. A cloud-based cyber-physical system for computing practically fast routes for a particular user, using a large number of GPS-equipped taxis and the user's GPS-enabled phone. To reduce the traffic problem viewing the different types of application, GPS, Wi-Fi, etc. So through these we can avoid the traffic problem.

Index Terms— Data mining, GPS trajectory, driving directions, driving behavior

I. INTRODUCTION:

This paper describes a system to find out the practically fastest route for a particular user at a given departure time. Finding the expense driving direction has being to be a daily activity is implemented in the aspect of some of the map provided data like Google and Bing Maps. Most of the drivers can't identify the alternative route for the passenger, before they use the VE clustering through that they used to identify the given location. The two stage routing algorithm also used for rough route and refined route. The rough route is identified for the landmark graph based on some query using the time-depend routing algorithm and the refined route is used to finding out the fastest path for connecting the consecutive landmarks here we use the speed constraints and dynamic programming then these are efficient for smaller search spaces and computed in parallel[9]. So, the drives can't having the updating process properly in each and every minute, due to the signal problem we cannot get the proper data from the source to the destination point[9]. To overcome this two stage routing algorithm analyzing the min-max algorithm the time has be reduced and the driver's knowledge has been increased. This algorithm is used to reduce the fuel and noise pollution to avoid the traffic problem. In the existing process they cannot finding the shortest path through the two stage routing algorithm. The application used for traffic analysis is GPS, WI-FI. The data can be scattered thinly here and there in the curved line that something follows as it moves through air.

II. PROBLEM OUTLINE

This paper describes some applications and algorithms are used here, real time traffic information is calculated. A real time monitoring the data can be shown in a curved line for the source and the destination point. Algorithm used here is HMM (hidden Marko model), through these we can easily find the scattered data to identify the alternative route [10]. The overcrowded are occurred in the traffic especially in town and cities. So, the drivers used to find the alternative way to find the correct path to reach the destination in the precision time. Sparse data and probe data are the approaches used sparse data means scattered thin data can be identified for starting and the ending point to reach the correct area. Probe data is to analysis the travel time estimation for every vehicle through the GPS device [16]. A shortest path for the alternative route techniques used are pre-compute and proximity, the calculation of the every route to be changed by the server and send to the GPS sensor. Then we have to re-calculate the current route for the alternative way to find the source and destination point. The proximity can be also a k-candidate path to analysis the k-best alternative possible way. The quality parameters like cost, response time, reliability and availability etc [9]. Some of the major problems are [9]

- Map matching does not be done properly.
- Road segment calculation can be in bi-directional.
- Over all the week the location can be shows the same date to each and every driver.
- Till the road data cannot show the real time traffic analysis

A variance-entropy-based clustering approach used to find out the fastest path. The two-stage-routing algorithm is used to find the time-dependent landmark graph for the taxi driver. The following V-E clustering algorithm steps is given below [1]

- Input value sorted here is S
- Output sequence distributed here is D1, D2, and D3…., Dk.
- Sorted sequence ordered by y ascending
- Split the data and convert it into y
- Finally send the data to y.

A coherence expanding algorithm is the most popular route for the driver. The curved line only we can find in the coherence expanding algorithm. To view the source to destination there is no map is available for the taxi driver [17].

III. TITLE OF OUR WORK

This paper describes the smart driving direction based on GPS-equipped taxis to send and receive the data from source to destination point. Through the online service the real time traffic can be analysis.

1. Overview of proposed work:

In this paper, a cloud-based cyber physical system for computing practically fast routes for a particular user, using a large number of GPS equipped taxis and the user's GPS-enabled phone. GPS-equipped taxis are used as mobile sensors probing the traffic rhythm of a city in the physical world. A Cloud in the cyber world is built to aggregate and mine the information from the taxis as well as other sources from internet like Web maps and weather forecast. The mined knowledge includes the intelligence of taxi drivers in choosing driving directions and traffic patterns on road surfaces. The knowledge in the Cloud is used from ordinary drivers in the physical world. Then a client, typically running in a user's GPS phone, accepts a user's query, communicates with the Cloud, and presents the result to the user. The client gradually learns a user's driving behavior from the user's driving routes, and supports the Cloud to customize a practically fastest route for the user. It is mainly focus to identifying the shortest optimal path from location data collected by large number of users. GPS-equipped taxis are used as mobile sensors probing the traffic rhythm of a city in the physical world. The fig.1 diagram is explained here:

1. The client has to send the request to the GPS.
2. The GPS is used to analysis the mobile IME number, date and time to create the web service.
3. The data has been received from the cloud to the knowledge map.
4. The knowledge map is analysis through the INTERNET like Google map.
5. From knowledge map the optimal path can analysis for the alternative route form source to destination point.

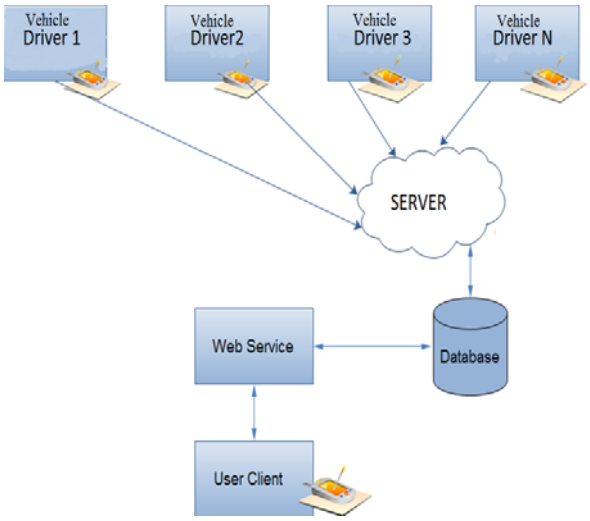

FIG 1: system architecture

2. Description of Experimental designed

- Pre-processing
- Building landmark graph
- Estimate travel time
- Min-max algorithm

Step 1: Pre-processing

- Trajectory segmentation
- Find out effective trips with passengers inside a taxi
- A tag generated by a taxi.
- Map-matching
- map a GPS point to a road segment

Step 2: Building landmark graph Detecting landmarks

- A landmark is a frequently-traversed road segment
- Establishing landmark edges
- number of transitions between two landmark edges

Step3: The travel time of a landmark edge

- Varies in time of day
- A time-based Data sparseness
- Loss information related to drivers
- Different landmark edges have different time-variant patterns
- Cannot use a predefined time process
- Min-max algorithm

3. Description of Framework:

- This project mainly focuses, to identifying the shortest optimal path from location data collected by large number of users.
- Data will be collected from different users and stored in Database.
- We will processed the collected data using data mining techniques to find the optimal routing path knowledge map(information)
- The shortest path can identify by using different methodologies.
- 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
- We can also find the weather condition for the routes computed.

Modules Description:

1. Android background application to capture GPS coordinates.
2. Web service to get GPS data and store it in DB.
3. Determine the data and create knowledge map.
4. Web service to expose that knowledge map.
5. Android application to find optimal path from the knowledge map.

1. Android background application to capture GPS coordinates:

- In this module, we create application for capture groups of user's location using GPS. It shows the exact location of the mobile user via the GPS.

2. Web service to get GPS data and store it in Database*:*

- We create the web service to obtain the location id from the databases, which we acquired through GPS. The location information is stored in a database.

3. Determine the data and create knowledge map:

- Data mining is done to group the specific coordinates that we acquired and stored the information in the knowledge map.

4. Web service to expose that knowledge map:

- User needs to get specific information of the required data, so a web service is used to communicate with the knowledge map and deliver the information retrieved faster and efficiently.

5. Android application to find optimal path from the knowledge map:

- Mobile application will be create and we can use it remotely and user access the data from knowledge map.

IV.RELATED WORKS

The problem outline in this paper has been discussed previously by other papers; the present work attend first assigning weights to attributes on the other hand while working with the implementation of the traffic analysis as seen in Table 1.

Title and author	Technologies	Limitations
1.Discovering popular routes from trajectories Author: Zabian Chen, Heng Tao Shen, Xiaofang Zhou[16]	They develop a COHERENCE EXPANDING ALGORITHM to retrieve a transfer network from raw trajectories, for indicating all the possible movements between locations.	To discover the most popular route from one location to another
2.T.Drive:Driving directions based on taxi trajectories Author: Jing Yuan1:2, Yu zheng2, Chengyang	The varience entropy based clustering approach is devised to estimate the distribution of travel time between two landmarks in different time slots.	Finding efficient driving direction for the passenger through Google map and bing map, energy consumption.

V .CONCLUSION

In this paper, the traffic analysis is to formulate the way of finding the best way for the traffic estimation among the mobile phone. GPS application is available in the mobile phone, to analysis the traffic pattern for the drivers. The algorithm is based on the min-max algorithm. The project mainly focuses, to identifying the shortest path from location [source-destination]data has been collected by large number of users and send through the mobile.

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