Elegant Way of Reaching Destination Using GPS and Drivers Ability

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Abstract— GPS equipped devices act as mobile sensor probing traffic pattern and user experiences to choose the driving direction. Time dependent graph used to describe about traffic pattern of the particular route. Variance Entropy Clustering method is used to find out alloction of travel time between two landmarks in dissimilar time period. Two stage routing algorithm used to find fastest and safest route to reach destination. Rough and refined are the two routing stage algorithm used. Label setting algorithm used to find shortest distance between source and destination. Interactive voting map matching algorithm used for construction of Landmark graph.

Keywords— Include at least 5 keywords or phrases

I. INTRODUCTION

User travelling in a route depends upon on three factor Physical feature such as distance, Traffic flow of the route, Driving behaviour. Fast driving not only saves time but also energy consumption. Driving behavior usually varies depending upon experience of the driver..GPS sensor which is equipped in taxis used to report information about the location for every 2-3 minutes. We are computing fastest route for particular user. First GPS sensor probing the traffic rhythm of the city. Second cloud used to collect information about the route from taxis, web maps and weather forecast. Third this cloud information can be used by other ordinary driver in physical world. Finally user having GPS phone sends the query. Client gets the query, communicate with the server and gives the result to the user. Three challenges need to be faced by the user are

- Intelligence modelling.
- Data sparseness.
- Low sampling rate problem.

In Intelligence modelling user can select any source or destination .How to develop model using taxis driver intelligence is a challenge . In data sparseness we cannot guarantee there are many taxis are available but some time taxis may not travel through that particular route. In Low sampling rate to save energy consumption user need to report their location information like for every 2-5 minutes.

A.BUILDING THE LANDMARK GRAPH

Landmark is the road segment which are frequently traversed by user. Reason why we use landmark

- User can remember the route easily.
- Travel time of taxis trajectories cannot be estimated using low sampling rate and sparseness.

Using landmark we can easily estimate travelling time between two landmark.Meanwhile, we cannot guarantee there are adequate taxis traversing on each road sector anytime eventough there are huge number of taxis. Speed pattern of each road segment cannot be estimated directly using taxi trajectories. Tag is associated with a taxi's reporting information to the server when the taximeter is turn on or off. IVMM is the algorithm employed, which has better performance than existing map-matching algorithms when dealing with the low-sampling rate. To calculate static/dynamic score matrix for a trajectory and performs a voting-based approach among all the candidates. As a result, each taxi trajectory is converted to a sequence of road segments.

B.TRAVEL TIME ESTIMATION

Travel time estimation is used to calculate travelling time for each road segment. VE-Clustering algorithm is used to find travel time estimation. To learn different time partioning from different Landmark. Travel time estimation based on cluster of landmark together. This may be induced by

- Different number of traffic lights encountered by different drivers
- Different routes chosen by different drivers.
- Drivers behavior, skills and preferences.

In V-Clustering different categories of data based on travelling times are clustered together. In E-Clustering we learn how to partition time for each Landmark.By learning we can estimate travel time for each Landmark. The travel time of an landmark edge Varies in time ,it is not a Gaussian distribution and a set of clusters to estimate travel time.
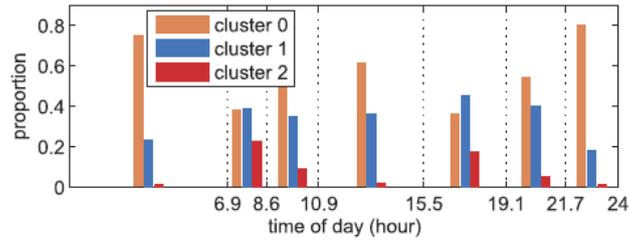
Fig 1.2 VE-Clustering Algorithm

C.ROUTE COMPUTING

Route computing consists of rough routing and refined routing.Sometimes, different drivers takes different amounts of time to travel the similar road at the same time slot are different. The reasons be positioned in a driver's driving mold, skills and knowledge of routes.Also, even on the similar path, precautious people will likely drive comparatively slower than those prefer to drive very quick and belligerently. Using custom factor we can estimate travelling time of the route. Custom factor indicates how fast a person would like to drive as compared to taxi drivers.The Complexity of solving Time dependent fastest path problem depends on network satisfy FIFO property. If we implement FIFO then user starting first reaches the destination faster than user who starts later. We find Time dependent fastest path problem for each landmark using label settings algorithm which is an extension of Dijkstra algorithm. For any visited landmark edge we use custom factor to determine travel time. Speed constraint cost is used to find travel time from source to destination.

D.ROUGH ROUTE SMOOTHING

While estimating travel time of the route error occur in landmark because of some disturbance occurs in the form of noise. Three principles that are followed in rough routing Source farther principle states that from each landmark source should farther away from previous one. Destination closer principles current landmark should be closer to destination compare to previous one. Next nearest principle states next landmark L_{i+1} should be nearest landmark L_i,otherwise path directly moves to L_i. Roundabout route which does not follow any principles. If there is any roundabout route then time taken to travel will be longer. Smoothing used to remove roundabout route. Global smoothing and local smoothing are two types. First two principle follow global smoothing. Next nearest principle is follows local smoothing.
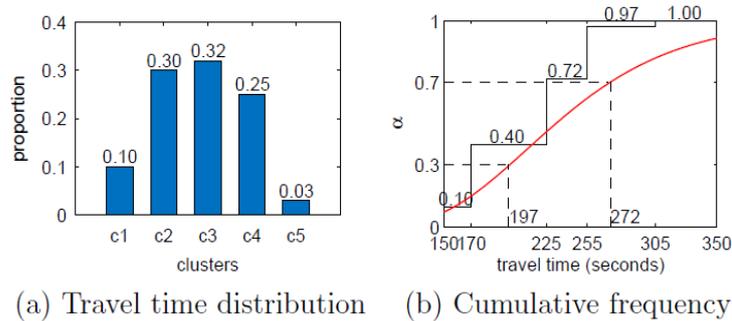

(a) Travel time distribution   (b) Cumulative frequency

Fig 1.2 Travel Time with respect to custom factor

E.REFINED ROUTING

Refined Routing is the final output which we get from the server. Output produced is the shortest path from source to destination. Label setting algorithm is used to find the shortest path. It is the generalization of Dijkstra algorithm. For each Landmark find the fastest route using Landmark Graph. Custom factor is used to determine travel time for each Landmark edge. Speed constraint used to estimate cost of travelling from source to landmark**.** It used to find out fastest route that are sequentially passes the landmark of rough route by dynamic programming.
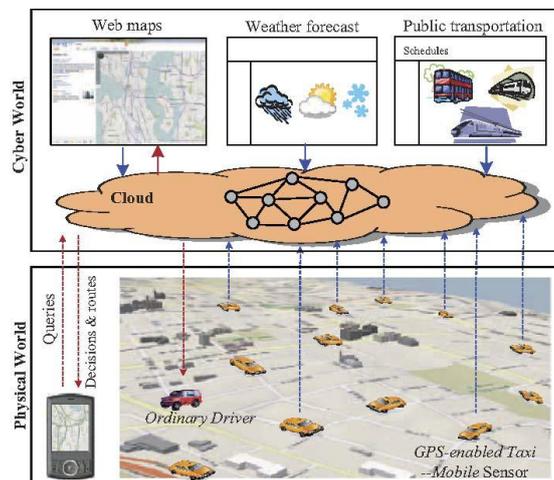
II. RELATED WORK AND EXISTING MODEL

A speedy driving route saves not only the instant of a driver but also authority utilizationTherefore, this overhaul is vital for both finish users and governments aim to alleviate traffic problems and guard environment. Essentially, the time that a driver traverse a direction depends on the following three aspect,

- The physical distinctive of a direction, such as distance, capability (lanes), and the number of traffic as well as direction turn.
- The time-dependent traffic flow on the road.
- User's driving activities.

Given the same route, precautious drivers will likely drive pretty slower than individuals prefer driving very rapid and belligerently. Also, users' driving behaviours typically vary in their making progress driving experiences. For example, travelling on an strange path a user has to disburse consideration to the road signs, hence drive quite leisurely. Usually, large cities have a more number of taxi cabs traverse in metropolitan areas. Bing map page relatively loads the pages slower then google map.It is not relatively included in bing search which do not boost of using the map. With Google Maps scores points with users by giving a wide selection of different ways to view the map.

III. PROPOSED SYSTEM

The pre-processed taxi trajectories, we identify the top-k frequently traverse highway segments, which are termed as landmarks. The cause why we use "landmark" to sculpt the taxi drivers' cleverness is that, First, the sparseness and low-sample speed rate of the taxi route do not support us to directly compute the travel time for each road section while straight forwardly compute the travelling time connecting two landmarks (which include repeatedly traverse by taxi).Second, the apparition of landmarks follows the expected thinking mold of people. The threshold is used to eradicate the ends infrequently traversed by taxis, as the less taxis that pass two landmarks, the lower precision of the expected travel time. Due to the low-sampling speed delay occasionally, a taxi may successively traverse three land marks while no point is record when passing the middle (second) one. Such kinds of ends would not only promote the space convolution of a landmark graph but also bring inappropriateness to the travel time estimation. Travel time estimation we can learn how to travel in particular road segment which is useful in finding shortest path between two given location. The travel times of transition pertaining to a land mark edge unmistakably gather about a little values rather than a single rate or a typical Gaussian distribution, as numerous people expected.It can handle the situation when a taxi was trapped in a traffic pack where many points may be recorded on the identical road section.

IV. MODULE DESCRIPTION

1.INTELLIGENCE MODELLING

A user can select several lay as a source or target, there would be nix taxi path accurately transient the query points. That is, we cannot respond user queries by directly mining path pattern from the records Therefore, how to model taxi drivers cleverness that can answer a mixture of query is a challenge. Intelligence in selecting the route such that it should free from obstacles, traffic less route to travel.

2. ROUTE GENERATION

The traffic situation of a path, the travel instant of a path also depends on drivers. Sometimes, diverse drivers receive unusual amount of time to traverse the similar route at the identical time period. The reasons recline in a driver's driving put into practice, skills and familiarity of route. For example, people recognizable with a route can usually go by the route faster than a new comer. Even on the similar path, precautious people will likely drive pretty slower than those preferring to drive very swift ,insistently.

3 .TRAFFIC IDENTIFICATION

Using the updated information by Gps user ,server used to examine the traffic mold in the routes. User knowing about traffic occurred in specified path and takes alternate route to reach destination. Travel time estimation of the route not only depend upon speed, distance of the route but also incidence of traffic in that route.

4. BEST ROUTE SELECTION

Server used to send best route to the user which has requested.Two stage routing algorithm used to find fastest and safest route to reach destination.Best route is the shortest route to reach destination in terms of time. Label setting algorithm is used to find shortest path between given location. Multiple Paths available for given location. If there is any traffic indication then provide possible alternate path. If multiple alternate path available then among them find shortest path to reach destination.

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