Tripper Application: Optimal Pruning Method via the Collection of Real Time Traffic Data in Road Networks

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Abstract—Road traffic congestion is a frequent problem worldwide. In India, a fast emerging economy, the difficult is intensely sensed in nearly all major cities. This is predominantly because infrastructure development is slow compared to growth in number of vehicles, due to space and cost limits. Secondly, Indian traffic being non-lane established and messy is largely different from the western traffic. In recent times, the management of transport systems has become increasingly important in many real applications such as site-based services, provide chain management, traffic inhibit, and so on. These applications typically take in queries over spatial road systems with dynamically changing and difficult traffic conditions. Transport Specialists universally are facing related strategic defies around fading jamming, insufficient transport infrastructure, affordability restraints, increasing secretions and growing client needs. In this paper, we representative such a network by a probabilistic time-dependent graph (PTD-Graph), whose edges are associated with unexpected edge delay functions. We intend a useful query in the PTD-Graph, namely a Tripper Query (TQ), which recovers trip plans that traverse a set of query points in PTD-Graph, having the minimum traveling time with high confidence. To undertake the efficiency problem, we present the pruning methods time interval pruning for reducing the search space of the TQ problem. For the probabilistic pruning, we develop a cost model to show the pre-computation of probability upper limits such that the query cost is estimated to be low. For the structural pruning, we precisely design synopsis for vertex/edge labels by considering their distributions and other structural information, in order to improve the pruning power. Furthermore, we design a pre-computation technique based on the cost model and construct an index structure over the pre-computed data to enable the pruning via the index. We integrate our optimal pruning methods into an efficient query answering to TQs. Through extensive experiments, we exhibit the efficiency and effectiveness of our TQ query answering approach.

Index Terms—Probabilistic time-dependent graph, tripper query, probabilistic data, road network

I. INTRODUCTION

The spatial road network has received much interest from the database community. Specially, a spatial road network can be represented by a large graph in a 2-dimensional geographical space [1], [19], whose edges correspond to road segments, and are associated with weights related to the traffic information (e.g., road-network distance, vehicle speed, or the delay time). In this paper, we will investigate a useful query in spatial road networks, namely the tripper query (TQ), which is helpful for the decision making by user purposely, user may want to visit several cities of attention, and stay at each place for a period of time. Due to the difficult situations, the traffic conditions of road networks may highly depend on specific time periods. To represent such a spatial road network, we use the (time-dependent) probabilistic model to take the undefined traffic data such as sudden change of weather, road closure for the construction or traffic accident it is difficult to predict from database [19].

In this circumstance we formulate a probabilistic time-dependent graph (PTD-Graph) with undefined edge weights. In turn, our TQ problem is to recover the best traveling plans over such a PTD-Graph, which minimizes the total traveling time with high confidence. In this paper, to undertake the efficiency issue of TQs, we use effective pruning techniques to filter out false alarms of trip plans. Additionally, we also intend to offline pre-compute data that can help online query answering, and design an indexing mechanism for the PTD-Graph, as well as those pre-computed data. Finally, we demonstrate an efficient query processing approach to return TQ answers by traversing the index.

Here the following contributions are aimed,
1) Formulate the Tripper Query problem about the Unexpected Edge Delay Function (UEDF) on probabilistic time-dependent graph (PT-Graph) in Section II.

2) Contribute the Related work of road network and understand the various pruning technique such as Effective Pruning, Time interval Pruning, Probabilistic Pruning and Structural Pruning in Section III.

3) The Design of Architecture diagram for query answering approach to pre-compute data in the PTD-Graph, to estimate relaxed bounds of the traveling time which can help prune false alarms of Tripper Query candidates in Section IV.

4) Through extensive experiments, an efficient query answering approach to TQs through the CPU performance and Number of candidate plan using the threshold value of α in Section V.

5) To solve the Tripper Query problem, and show the efficiency of our Tripper Query answering approach and conclude this paper in Section VI.

II. PROBLEM DEFINITION

A. Unexpected Edge-Delay Function (UEDF)

UEDF (ea,b,t) according to a departure time t € [t_{low},t_{high}], for each edge ea,b at each successive timestamp t. The UEDF say UEDF(ea,b,t) random variable, which has the probability distribution of a probable delay times to travel towards this e(a,b) denoted by a probability density function (PDF) pdf(ea,b,t). Consider this scenario, in week days the periodicity of traffic is so high, comparatively in weekends. Based on this scenario, we can do of such temporal traffic data. From that we can make some samples by using this sample, we can predict PDF. We concern that the Unexpected Edge-Delay Function UEDF (ea,b,t) ranged by an time-gap between UEDF- (ea,b,t) and UEDF+ (ea,b,t), which is derived from the conditioned of high and low number of vehicles travelled on the road networks.

B. Tripper Problem

Tripper is wishing to visit much number of spots q, on the road networks. For every spots q, tripper can stay for some time TST (q) ∈ [TST−(q),TST+(q)], it follows minimum and maximum tripper staying time respectively. The delay time for every spot is depends on staying time of previous spots. Therefore the computation of total travelling time of best plan with high confidence.

III. RELATED WORK

A. Pruning Via Spatial Road Network

This work is supported in part by Xiang Lian and Lei Chen [19], investigate a useful and important problem, called the trip planner query (TPQ), in the probabilistic and time-dependent geographical spatial road network. It is usually modeled by a set of road fragment (lines, or edges) that are linked at their ending points, which can be also considered as a graph. Many other queries have been studied in spatial road networks, including range queries [10], [15], k-nearest neighbor (kNN) queries [15], [18], reverse nearest neighbor queries [20], and multi-source skyline queries [4]. Li et al. [13] studied the query of finding the shortest paths between source and destination that pass through some types of interesting data points. Ding et al. [5] considered the shortest path queries in a time-dependent graph, where edges are coupled with certain and specific delay time functions, and the staying time is allowed at any vertex in the graph in [5]. In contrast, the data model in our TPQ problem is probabilistic time-dependent graph with uncertain UDFs, the staying time is only attached with each query point, and the total traveling time is a summation of time among multiple query points that exclude the staying time (as a replacement for of with the staying time between only two points, source and destination)

B. Pruning Via Probabilistic Databases

A probabilistic database contains a set of x-tuples (entities), ti, and each x-tuple can have at most one tuple to be true, and the resulting database in the real world is called a possible world [3]. Therefore many research problems such as range or nearest neighbor queries [2], top-k queries [14], and skyline queries [16] aimed to address the efficiency issue of the query answering under the possible worlds semantics. For probabilistic RDF graph [17], [11], [8] containing edges associated with existence probabilities (i.e., edges either exist or do not exist in the graph). Furthermore, Hua and Pei [7] studied path queries on road networks with uncertain traffic data, which retrieve paths between 2 vertices having total weights less than a threshold with high probability.
C. Subgraph Matching on Probabilistic RDF Data Graph

This work is aided in part by X. Lian and L. Chen [12]. Probabilistic RDF graphs generally exist in real applications such as data incorporation, where data often demonstrate uncertainties. In certain graph databases, Zhao and Han [21] intended a neighborhood signature to directly store labels within k hops from each vertex. In contrast, our work uses synopses to compactly store uncertain labels, which can efficiently filter out false alarms by the structural pruning via bit operators (e.g., bit-AND). Furthermore study the problem of recover subgraphs from probabilistic RDF graph databases that match with a given query graph with high confidence. It proposes effective structural pruning methods with the help of synopses that are adaptively intended according to label distributions in RDF graphs. Huang and Liu [11] modeled such RDF data by a probabilistic database. However, this model assumes that RDF triples (corresponding to edges in RDF graphs) have independent existence probabilities to appear in reality. Based on this assumption, their query processing method is to decompose the query graph into triple patterns (edges), compute probabilities of candidates for each triple pattern, and finally join candidates by calculating their actual probabilities. Most importantly, our synopses can be also used to enable the graph distance pruning, and the synopsis design is based on an adaptive hashing (instead of uniform one) to increase the pruning power.

D. Path prediction and reach querying in road network databases

This work is supported in part by Hoyoung Jeung, et al[10]. Path prediction also enables better results of predictive range queries and reduces the location update rate in vehicle tracking while preserving accuracy. Here develop the network mobility model for effectively and succinctly capturing the turning patterns of moving objects at road junctions and estimating the objects travel speeds on road segments. Here used the Maximum Likelihood algorithm for path prediction. Maximum Likelihood and PLM keep all candidate (sub) paths produced from the graph traversal until the best path is selected at the times when the algorithms terminate. while the Greedy algorithm promises high efficiency and scalability for large road network graphs and predict the path using this algorithm with efficiently.

E. Path Queries on Certain Traffic Networks

Probabilistic path queries in road networks with uncertain weights. Three methods for efficient probability calculation and a best-first search algorithm were proposed. Gonzalez et al. [6], mined essential driving and speed patterns from historical data to help to compute the fastest paths on traffic networks. A road hierarchy is design by based on different classes of roads. A Depth First Search Method can be used to answer a path query (u,v). The search starts at u. Each time when a new vertex vi is visited, the weight probability mass function of the path P for (U…. Vi) is calculated using the following methods as P* Best First Search Method, it is still computationally challenging to search all paths in real road networks. The heuristic evaluation function for each vertex vi is simply the total of the actual distance between u and vi and the estimated distance between vi and v. before we decide to call vertex vi, we want to evaluate how possible vi would be included in an answer path. Suppose P1 is the explored path from u to vi, and P2 is an unknown path from vi to v. hierarchical partition tree is maintained the information of weighted probability supply for efficient query answering.

F. Evaluating Probabilistic Queries over inaccurate Data

This work is supported in part by R. Cheng, et al[2], the degree of error (or uncertainty) between the actual value and the database value is controlled, one can place extra assurance in the request to queries. Here evaluated probabilistic query evaluation based upon undefined data. A categorization of queries is prepared based by the nature of the result set. First, queries can be classified according to the scenery of the replays. An Object-based query precedes a set of substance that convinces the circumstance of the query. A value-based inquiry precedes a solo value, examples of which include querying the value of a meticulous sensor, and calculating the typical value of a subset of sensor readings. The second property for classifying queries is whether aggregation is involved. Value-based Non-Aggregate Class is used for returns an attribute value of an object as the only answer, and involves no aggregate operators. Object-based Non-Aggregate Class is used for returns a set of entities, it satisfies the conditions of the query, independent of other objects. Object-based Aggregate Class used for returns a set of objects which satisfy an aggregate condition and also discuss several update heuristics for improving the quality of results.

G. K-Nearest Neighbors in uncertain graphs

Complex networks, such as natural, societal, and communiqué networks, regularly entail ambiguity, and it can be designed a probabilistic graphs. Here introduce
framework for processing k-NN queries in probabilistic graphs. Here introduce algorithms to efficiently process k-NN queries for the distance functions defined previously. The exact computation of the Median-Distance is intractable, as it involves executing a point-to-point shortest-path algorithm in every world and taking the median. A natural way to overcome the intractability of computing the Median-Distance is to approximate it using sampling. The idea is to (i) sample r possible graphs according to P, an (ii) compute the median of the shortest-part distances in the sample graphs. Median distance kNN pruning for dM is based on exploring the local neighborhood around the source node s, and computing the distribution pt,s,t, truncated to the smaller distances. Majority distance kNN pruning for current majority value in pt,D,s,t, and let rt be all Dijkstra executions in which a node t has been visited. These algorithms prune the search space by computing a truncated version of the shortest-path distance distribution. It assess the quality of our functions in real-world data. Our functions identify better neighbors than their competitors. It also observed that larger probabilities of the edges result to more effective k-NN pruning.

H. Distance Constraint Reachability Computation in Uncertain Graph

This work is supported in part by Ruoming Jin, et al.[11], investigate a fundamental problem concerning undecided graphs, which it say the distance-control reachability (DCR) problem. Here introduce two basic Monte-Carlo methods for estimating Rd,s,t(G), the s-t distance-control reachability. A unified unequal probabilistic sampling estimation framework and a novel Monte-Carlo method which effectively combines the deterministic recursive computational procedure and sampling process. Both can significantly reduce the estimation variance. Especially, the recursive sampling estimator is accurate and computationally efficient! It can on average reduce both variance and running time by an order of magnitude comparing with the direct sampling estimators.

IV. ANALYSIS

A. Query Processing Approach

Tripper find the best plans for their journey spot-visiting order, as well as staying time at each place, such that the total traveling time on road networks (i.e., the total time on the way to targeted places qi) is the smallest with high confidence. First to estimate the travel time for any route between any two points in the road network under specified trip conditions, both the mean travel time and the variability are of interest, considering that link travel times along the route may be correlated. The observations used for the estimation come from probe vehicles that travel on the network, reporting the time and their positions at certain intervals. The sampling frequency is assumed to be low, in the sense that the distances between consecutive reports are typically longer than the scale desired to estimate travel times. The only information considered is the observed travel times and distances between reports thus the data for example, instantaneous speeds, are not available.

B. Index Traversal and Query Answering Protocol

Input: Probabilistic Time-Dependent graph (PTD-Graph), a tree index I over G, set of n query points q1,q2,…, qn, associated with their tripper staying time (TST) and a probabilistic threshold value.

Output: Tripper plan that match with q with confidence α

1. Initialization
   - Initialize the min-heap H accepting entries (plan,key)
   - Obtain the tripper plan, w.r.t different order of entries

2. Iteration
   - Obtain synopses and parameters for each qi ∈ QS, and initialize an empty candidate list cand(qi) for each qi
   - Calculate travelling time intervals, [LB_T(plan), UB_T(plan)] of tripper plan
   - Apply graph distance pruning to filter out false alarms of pairwise nodes between cand(qi) and cand(qj), and obtain candidate set cand(qiqj) (10) while (cand( · ) contains nodes)
   - Prune the false alarms of candidate plan via α
   - Insert other candidate plan into H
   - While H is not empty if (plan,key)=de-heap H
   - obtain children nodes/vertices via index I for each entry(Ni) ∈ cand(qi) for each (Ni,Nj) ∈ cand(qiqj)
   - use structural/probabilistic pruning to prune (Na,Nb) for Na ∈ Ni and Nb ∈ Nj
     - add (Na,Nb) to candnew(qiqj) if it is not pruned
     - cand(qiqj) = candnew(qiqj)
   - join candidate lists among cand(qiqj) for (qi, qj) in QPlan
   - refine candidate subgraphs in the join results and return the actual answers
3. Termination

The key value is greater than threshold value, then terminate the loop.

Fig.1 is represented the Architectural diagram for Tripper query answering approach. The Tripper entering the planning query into transportation system and the Traffic management control consisting of the various traffic information about the road way network and traffic condition. With the help of this transportation system tripper get the plan for his/her travel. To proposed three structural/Time interval/probabilistic pruning methods for obtaining the efficient plan when the uncertain functions are occurred on the road network. For Example some accident is happened the road way the traffic jam is occurred so the tripper plan is delayed for reach the destination. Using this pruning technology tripper know the alternative path and achieve the goal.

C. ITS applications

Indian traffic can benefit from several possible ITS applications. One set of applications is for traffic management.(1) Intersection control At junctures, decisive the total signal cycle and the split of green times among different flows, is some of the most simple traffic management applications [7].(2) Incident detection Pinpointing locations of accidents or vehicle breakdown is important to handle the emergency situations. (3) Vehicle classification Knowing what kind of vehicles, and in what proportions, pursue a certain road elasticity, helps to choose appropriate road width and pavement materials.(4) Monitoring Pollution and road quality monitoring are necessary for taking corrective measures. (5) Revenue collection Toll taxes for infrastructure maintenance and fines for rule enforcement need to be collected. (6) Historical traffic data Long term data helps to plan new infrastructure, regulate traffic signal times, add public transport and so on. Another set of applications can aid the commuters on roads. (1) Congestion maps and travel time estimates These help commuters in route selection. (2) Public transport information about arrival of public transport helps in choice of travel mode and reduces wait delays.(3) Individual vehicle management Getting information about parking places or estimates of carbon footprint, help owners of private vehicles. (4) Accident handling Emergency services after accidents are a vital necessity.

D. Sensing

To handle any road application, the first thing that we need is information from the road. Sensors on roads can provide such information. There are several existing modes of sensing: static sensing where sensors are statically placed on the road, mobile sensing , where sensors are placed in the moving vehicles and hybrid detecting, where both in-vehicle and on-road infrastructure are needed. In this section, we discuss the key technologies in each category and outline some open questions in the context of Indian roads.

V. ONLINE AVAILABLE REAL-TIME TRAFFIC DATA

In this chapter we propose to identify some relevant sources providing real-time traffic data on-line. It should be noted that "real-time" traffic data is assumed here to be daily, hourly or even per minute data (typically used in the U.S.) which are generally made available by national traffic centres. Most of the examples proposed hereafter are available free on-line and most of the time provided by the national department of transports without requiring any registration access.

The traffic data are most often obtained from permanent count stations installed on major roads (generally on motorways). Hence classic parameters are traffic flow and average speed. Further data such as occupancy rate and travel times (e.g. calculated from FVD) can also be collected. Although these raw data are implicitly collected by transport centres for many years, more and more countries are making them available online by means of new displaying tools (e.g. Google maps).
A. The Floating Vehicle Data

The principle of FVD is to collect real-time traffic data by locating the vehicle via mobile phones or GPS over the entire road network. This mostly means that all vehicles is equipped with mobile phone or GPS which acts as a sensor for the road network. Data such as car position, speed and direction of travel are sent namelessly to a central processing centre. After being composed and extracted, useful information (e.g. eminence of traffic, alternative ways) can be redistributed to the drivers on the road. FVD is an alternative or rather complement source of high quality data to existing technologies. They resolve help progress safety, efficiency and reliability of the transportation system. They are becoming crucial in the development of new Intelligent Transportation Systems (ITS).

B. GPS-based FVD

Even though GPS is becoming more and more used and affordable, so far only a limited number of cars are equipped with this system, typically fleet management services (e.g. taxi drivers). The vehicle location precision is relatively high, typically less than 30m usually, traffic data obtained from private vehicles or trucks are more suitable for motorways and pastoral areas. In case of urban traffic, taxi fleets are particularly useful due to their high number and their on-board communication systems already in place. Currently, GPS probe data are widely used as a source of real-time information by many service providers but it suffers from a limited number of vehicles equipped and high equipment costs compared to floating cellular data.

C. FVD Based on Cellular Phones

Since nowadays most of the driving vehicles are equipped with at least one or several mobile phones, it may be worth using mobile phones as anonymous traffic probes. The mobile phone positioning is regularly transmitted to the network usually by means of triangulation or by other techniques (e.g. handover) and then travel times and further data can be estimated over a series of road segments before being converted into useful information by traffic centres. Mobile phones need to be turned on, but not unescapably in use. This approach is particularly well adapted to deliver relatively accurate information in urban areas (where traffic data are most needed) due to the lower distance between antennas. Contrary to stationary traffic detectors and GPS-based systems, no special device/hardware is necessary in cars and no specific infrastructure is to be built along the road. It is therefore less expensive than conventional detectors and offers larger coverage capabilities. Traffic data are obtained continuously instead of insulated point data. It is faster to set up, calmer to install, and needs less maintenance. Note however that sophisticated algorithms are required to extract and treat high-quality data before sending them back to end-users. Even if the location precision is generally low (typically 300m), this paleness is somewhat compensated by the large quantity of devices. Note that more accurate data should be obtained from the UMTS technology (3G)

VI. ESTIMATION OF ANNUAL TRAFFIC FLOW

Two very important types of traffic data delivered by transport centres around the world concern the Average Annual Daily Traffic (AADT) and the Vehicle Kilometers Travelled (VKT). These two raw traffic variables, mostly derivative from static sensors measurements, play a key role in traffic engineering analysis (e.g. model calibration, determination of traffic confession functions, etc.) and policy decisions.

A. Traffic flow – Average Annual Daily Traffic (AADT)

AADT is the average calculated over a year of the number of vehicles passing a point in a given counting section each day (usually stated in vehicles per day). It merely symbolizes the vehicle stream over a road section (e.g. highway link) on an average day of the year. AADT is considered as one of the most important raw traffic dataset where it provides essential inputs for traffic model developments and calibration exercises that can be used for the planning of new road manufacture, willpower of roadway geometry, jamming management, asphalt design, and many others. AADT is commonly available for most of the European road networks. The data is composed by traffic controller centres, refined and disseminated to users by traffic information centres in most of the EU countries. In this paper, one must keep in mind two types of definition of what the "traffic flow" revenues, liable on the time period considered. On the one hand, AADT is calculated annually for all motorway/road segments. On the additional hand, present traffic flows can be provided every minute or hour which is measured from traffic count recorders for some motorways links.

Methods for calculating AADT are generally based on data information resulting from two types of counts:
permanent automatic traffic counts and short-period traffic counts. A combination of these two measurements is generally employed to obtain an AADT estimate over a larger road network as described below:

First, permanent automatic traffic recording stations provide continuous counting of the traffic on selected roads (mostly on highways) for the whole year. The advantage is to propose traffic counts that are typically recorded in 15 minute or hourly interims, 7 days a week and 365 days a year interims. It thus allows a advanced level of study and a more accurate annual average than short-term counts. Perpetual instinctive traffic recorder is the only way to provide exact AADT values (when used under perfect conditions).

Secondly, short-term traffic counts (also named periodic, portable or coverage counts) afford roadway segment-specific traffic count information on a cyclical basis for a large number of road segments. The gathering data retro classically ranges from 1 to 7 days where data are recorded in 15 min or hourly intervals. Owing to variances in day-to-day disparity in the traffic flow, the tally duration is dependent on the road on which it is sited e.g. rural or urban. In order to control this disparity, the least requirements could be fixed for instance at 48-hours of continuous data for rural counts and 24-hours of continuous data for urban counts. Furthermore, special attention must be paid to count sites locations so as to improve the data accuracy [EHLE06].

**Estimation methodology**

While short-term traffic counts cover a very large network in a limited time, permanent counts are required to handle temporal variations in traffic flow and their main role consists in elaborating adjustment factors to estimate annual daily volume from short duration counts.

The principle is to start with data from short-period traffic counts (generally 1-3 days sample every few years at selected points across large-scale networks). Then tuning factors provided by everlasting counts are applied to remove temporal bias by taking into account the day of week and/or seasonal variations in traffic flow.

**B. Traffic volume – Vehicle Kilometres Travelled (VKT)**

Vehicle-kilometers refer to the distance travelled by vehicles on roads. It is often defined as an indicator of traffic pressure (or traffic demand) and is generally used to indicate mobility patterns and travel trends. It dramas a key part in several important decision-makings such as

air eminence compliance, roadway asphalt maintenance, risks of accident, etc. Due to its high impact on strategy decisions, it is then serious to have an exact estimation of VKT.

**Estimation methodology**

The estimation of traffic volume is not as straightforward as the traffic flow. Estimation procedures are well described in literature [FRIC02] and are not covered in this section. However, there are basically four methods to calculate vehicle-kilometers, which vary between Member States [UNECE05]. [UNECE07].

Odometer readings (vehicle-based method) - At regular vehicle inspections, the average distance travelled by the vehicles is determined and then multiplied by the number of road vehicles. It is mostly used by the Netherlands, Denmark, Latvia and Switzerland.

Traffic counts (road-based method) - For one considered link, the vehicle-kilometre is calculated by multiplying the AADT by the length of the link (in km). VKT for a motorway area can then be obtained by adding up the VKT of each segment. It is the main methodology used for estimating VKT in Belgium, Finland, Estonia, Hungary, Czech Nation, Poland, Slovenia, the UK and Sweden (and also in the US). As a basic example of estimate, the AADT on a highway segment can be given by:

\[
\text{AADT}_s = \frac{\sum_{j} T_{24h}^j}{365}
\]

Where \(T_{24h}^j\) the the 24-hour traffic flow on segment \(s\) at day \(j\). In this case, the average daily traffic volume can be estimated as:

\[
\text{VKT} = \sum_{s} L_s \times \text{AADT}_s
\]

Where \(L_s\) is the length of the segment \(s\) and \(N_s\) the total number of segments.

**Driver survey** – For instance, a questionnaire is sent every year to thousands households with one or more cars which are requested to provide several information such as the number of kilometers driven by each vehicle during the whole year and unit intake. It is generally
used by some countries as a supplementary source of information.

Fuel consumption - the volume of road traffic is estimated from information about fuel supply and fuel consumption as derived from estimates of kilometers driven per fuel liter for typical types of vehicles. It is for example used by Austria and Portugal.

VII. CONCLUSION

In this paper, the richness of road traffic data collection sources has grown substantially. The combination of traditional on-road sensors with floating vehicle data techniques can provide high quality traffic data in real-time that can be utilized by all the transportation actors. On the other hand, collecting traffic data from tracking cellular phone or GPS is technologically feasible and seems to be a very cost-effective alternative. What it was concept years ago, it is now becoming routine all over the world. The strength of this technology stems from high quality real-time data collected from thousands of vehicles over a large road network and for much less cost than traditional methods. Nevertheless, FVD is not targeted to replace the existing sensors but rather to act as a complement technology. Even if R&D and demonstration projects are still required, FVD is becoming key alternative for ITS developments. If current trends continue, the transportation actors may get huge benefits from the combination of fixed/mobile traffic measurements in a wide range of domains. We examine a useful and essential problem, known the tripper query (TQ) answering due to undefined function occurrence on spatial the road network. With the help of this literature work for perceptive how to solve the problem due to some undefined situation happening on the road network. In precisely, the tripper retrieve those trip plans, which visit several places of interest (staying at each place for some period of time that is staying time), and have the minimum traveling time on road networks with high confidence. To efficiently deal with this problems to propose the effective pruning techniques as time interval and probabilistic pruning for reduce the space of searching candidate plans, and structural pruning structural pruning methods with the help of synopses that are adaptively designed according to label distributions in PTD graph. Around the extensive experiments the efficiency of tripper answering approach with minimum travelling time and high confidence is achieved.

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