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## INTERNATIONAL JOURNAL FOR RESEARCH IN APPLIED SCIENCE AND ENGINEERING TECHNOLOGY (IJRASET)

## Universal Query for Travel Information in Intelligent Transportation System

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Abstract: - Intelligent Transportation System (ITS) applies on advanced technologies of electronics, communications, computers, control and sensing and detecting in all kinds of transportation system in order to improve safety, efficiency and service, and traffic situation through transmitting real-time information. Query to travel information is key to intelligent transportation system in Vehicular Ad Hoc Network (VANET). This paper proposes a universal query for travel information in intelligent transportation system. Universal query gives useful information to drivers and passengers to travel on best available path.

Keywords- vehicular ad hoc network, connection availability, intelligent transportation system, performance evaluation, dynamic route planning.

### I. INTRODUCTION

VANET is a form of Mobile ad-hoc network, to provide communications among nearby vehicles and between vehicles. It is a technology that uses moving cars as nodes in a network (mobile network) so each vehicle can receive and transmit others messages through the wireless network.[12]



#### Figure 1. VANET MODEL

The term Intelligent Transportation Systems (ITS) refers to information and communication technology that improves transport outcomes such as transport safety, transport productivity, travel reliability, informed travel choices, social

equity, environmental performance and network operation.ITS exploit in-vehicle information technology (e.g. mobile computing and wireless communication) in surface transportation systems are an example of emerging technologies to reduce the impact of traffic congestions. Vehicle-to-vehicle communication systems are an important component of ITS and useful for a wide variety of applications that include incident detection, crash reporting, congestion warning and traveller information dissemination [13].

The Interest in ITS comes from the problems caused by traffic congestion and a interaction of new information technology simulation, real-time for control, and communications networks. Traffic congestion has been increasing worldwide as a result of increased motorization, urbanization, population growth, and changes in population density Congestion reduces efficiency of transportation infrastructure and increases travel time, air pollution, and fuel consumption. Universal query for travel information in intelligent transportation system provide us useful and timely travel information to traveller or passengers to eliminate unnecessary travel and optimise the traffics of transportation system. Through universal query we have to find shortest distance between two cities or source to destination so that the problems of delay due to congestion can be solved.

#### II. RELATED WORK

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AnujPuri et al.(2002) have suggested wireless Token Ring Ashutosh et al.(2012) has suggested Dijkstra's single source Protocol (WTRP) is a medium access control protocol for shortest path algorithm is used to find out the shortest path wireless networks in Intelligent Transportation Systems.WTRP between two places on Google map. Dijkastra's algorithm is is efficient in the sense that it reduces the number of very fastest and easy to implement where there are no negative weights. GPS gives the current location of device and it is a retransmissions due to collisions.

K Sampigethaya et al {2005} has suggestegheit is possible great tool for mobile devices for business and others. to locate and track a vehicle based on its transmissions, during communication with other vehicles or the road-side Transportation Systems (ITS) are aimed at addressing critical infrastructure. This type of tracking leads to threats on the issues like passenger safety and traffic congestion, by integrating location privacy of the vehicle's. information and communication technologies into transportation

Karnadi, FelizKristianto et al (2007) has suggested Rapid infrastructure and vehicles. generation of realistic mobility models for VANETin which vehicles constitute the mobile nodes in the network. Due to the prohibitive cost of deploying and implementing such a system in real world,

Jing Zhao et al. (2008) have suggested the multi-hop data services relating to different modes of transport and traffic delivery through vehicular ad hoc networks is complicated. The management and enable various users to be better informed and idea adopted is carry and forward, make safer, more coordinated, and 'smarter' use of transport

RajiveBagrodia et al. (2009) have suggested the accurate and networks. The demonstrating figure 2 will show the working efficient evaluation of vehicular network applications such as scenario of ITS. This will be adapted from Vi Tran Ngoc Nha et Intelligent Transportation System (ITS) is based on simulation al. (2012).

which integrates transportation simulation and wireless network simulation.Simulation provides dynamic interaction between two simulation domains, which control the vehicles at runtime,

Massimiliano et al.(2009) have suggested traffic monitoring system implemented through Wireless Sensor Network (WSN) technology. Which provide a flexible, robust, low-cost and lowmaintenance wireless solution for obtaining traffic-related data that can be used for automatically generating safety warning.

IzzatAlsmadi et al.(2010) has suggested the security issues and how security can be improve in mobile banking services by using RFID.RFID enabled phone for mobile banking security, which solve problems of identity or credit card thefts or security.

Yuh-Shyan et al.(2010) has suggested the unicast protocol, multicast protocol, geocast protocol, mobicast protocol, and broadcast protocol which observed that carry-and-forward is the new and key consideration for designing all routing protocols in VANETs.

Zongwei et al. (2011) have suggested Ubiquitous Query for Travel Information (UQTI) in Intelligent Transportation System A. Query for travel information: The main goal of query for over Mobile Relay Network (MRN) to facilitate the needed travel information in intelligent transportation system is to find information access for drivers on the road. Design can achieve the shortest distance from source to destination by comparative much higher packet delivery ratio in network with poor study of algorithms. This will give us the best available path or route to reach at destination so that the problems of delay can be connectivity with tolerant delay.

Sona et al.(2012) has suggested identifying major issues and reduced. challenges associated with different protocols and selecting the optimal protocol for future work. One of the main challenges in In universal query for travel information we have to check Vehicular ad-hoc network is of searching and maintaining an following parameters:-

effective route for transporting data information.

Vehicle Traffic **Current traffic City Map** characteristics prediction conditions VRP algorithm Updated traffic Incidents prediction Best route

## IV. INTELLIGENT TRANSPORTATION SYSTEM

ITS are advanced applications which provide innovative

Ambarkar et al. (2012) has described the Intelligent

Figure 2Vehicles' routing algorithms: main inputs and updates

Weighted graph



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- I. Travel distance: - This is the basic criterion for shortest Transportation System over Mobile Relay Network (MRN) to path finding. Each road on the map has its associated facilitate the needed information access for drivers on the road. length value. Finding the shortest path means searching The evaluation is based on the computing model and network the route from the origin location to the destination simulation. The main goal of universal query for travel through which the vehicle travels the shortest distance. information in intelligent transportation system is to find best
- II. route planning algorithm. In this case, we consider the which are explained as follows in flowchart. fastest route rather than the shortest one. The fastest route is the path through which the vehicle can reach its fastest path might be different from the shortest path chosen algorithm (e.g. Dijkstra, Algorithm etc.) due to the traffic constraints like traffic congestion and random incidents as well as the driving regulations like speed limit.

available path from source to destination by comparative study Travel time: -The travel time is another criterion for of algorithms. Three main steps are taken to find out best route

Step 1: calculate an initial best route from the origin destination with within minimum travel time. The location of the vehicle to its desired destination according to a

> Step 2: Re-calculate the best route due to an update in traffic conditions. In this case, whenever a vehicle reached an intersection, the traffic conditions are checked for any update. If

III. Easiness of driving: - Car navigation device (RSU) there is an update impacting at least on link in the best route, the should provide user information about safer and more affected links are removed from the map and the route planning comfortable driving route. This is also considered as algorithm is re-applied to calculate a new best route for the driver preference reflected by factors such as number of vehicle. Otherwise, the vehicle carries on its journey.

turns or number of signal or width of the road. Based on this metric, route planning algorithm aims to find a vehicle route satisfying driver's preference the most.

- IV. Travel cost: -The travel cost refers to the number of toll tags in the chosen route as well as the estimated fuel consumption level during the journey. This value is not updating. Combination of two or several metrics.
- V. Combination of two or several metrics: - In this case, several metrics could be combined together to reflect the drivers preferences.

In general, the following three key evaluation metrics are used to measure the performance of vehicles routing algorithms;

- Computation complexity 1.
- Scalability and 2.
- Quality of the best route. 3.
- 4. Delay

## V. PROPOSED WORK

The basic model of query for travel information in intelligent transportation system is taken from (ZongweiLuoTianle Zhang, Chunlu Wang. RFID enabled vehicular wireless query for travel information in intelligent transportation system. In this paper research has been done on Ubiquitous Query for Travel Information (UQTI) in Intelligent

Step 3: Is the destination location reached? If no, the step 2 is repeated until the vehicle reaches its last intersection and arrives at its desired destination.

The flowchart in figure 3 will show the model of best route



Figure 3- Model of Best Route Updating

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#### VI. CONCLUSION

enabled vehicular wireless query for Travel Information in In this paper the basic idea of universal query for travel Intelligent Transportation System." RFID-Technologies and information in ITS is presented .the main objective is to reduce Applications (RFID-TA), 2011 IEEE International Conference the problems of delay due to congestion which can be solved by on.IEEE, 2011.

finding best availability pathfrom source to destination. Suitable [9] Yang, Yi, and RajiveBagrodia. "Evaluation of VANETsimulation is done in MATLAB by considering the problem of based advanced intelligent transportation systems." Proceedings delay during computing the best available path. A comparison of the sixth ACM international workshop on will be drawn among available shortest path algorithms for VehiculArInterNETworking. ACM, 2009. VANET. [10] Lin, Yun Wei, Yuh-Shyan Chen, and Sing-Ling Lee.

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