Location Based Vertical Handovers In Wifi Networks K-NN Pseudonym

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Abstract- *Location-based services (LBS) enable mobile users to query points-of-interest on various features and require accurate query results with up-to-date travel times. K-NN Pseudonym route analysis is proposed to exploit recent pseudonym routes requested from online pseudonym route APIs to answer queries accurately. Parallel pseudonym route requests are also studied to reduce the query response time. Our solution is three times more efficient than a competitor, yet achieves high result accuracy (above 99 percent). Combining information across multiple pseudonym routes in the log to derive lower/upper bounding travel times, which support efficient and accurate range and KNN search, is proposed. Solutions are evaluated on a real pseudonym route API and also on a simulated pseudonym Route API for scalability tests.*

I. INTRODUCTION

Mobile ad hoc networks (i.e., decentralized networks created on the fly by hosts located in proximity of one another) are no longer just a research concept. Due to their aptitude to require minimal effort to setup, ad hoc networks are suitable for a wide range of applications, including battlefield's communications and disaster recovery operations. In August of 2015, researchers at the National Institute of Standards and Technology (NIST) demonstrated an ad hoc network prototype for first responders in building fires and mines collapse. Unmanned vehicles (aerial, terrestrial, and aquatic) with autonomic operation of a few hours already can be sent to regions where human presence is deemed dangerous [3, 4], andthey can form networks on the fly to report observations to command and control centers When the hosts (or nodes) of an ad network are mobile, the network is called a mobilead hoc network (MANET). This proposed work focuses on a subset of MANETs, namelyvehicular ad hoc networks (VANETs). The rest of this chapter presents several usefulapplications of vehicular networks and discusses other vehicles-based network solutions inSection 1.1. Section 1.3 discusses the characteristics of vehicular ad hoc networks and thechallenges of routing and forwarding in VANETs. The contributions of this proposed workare presented in Section 1.4 and the contributors to this work are recognized in Section 1.5.Finally, Section 1.6 details the structure of this proposed work.

LAR ADHOC NETWORKS

The Vehicular Adhoc Network (VANET) consists of vehicles that are designed using wireless communication technology. In recent trends, VANET mainly focuses on the application development which can be grouped as improving road safety, traffic efficiency, and maximizing the benefits of road users [26]. In VANET, research on routing is limited to vehicles of short distance. But in some applications, it is necessary to send data to far vehicles. This is carried out by connecting vehicle with Road Side Units (RSUs) [2]that are interconnected with each other through a high-capacity mesh network. When Vehicles and RSUs are equipped with onboard processing and wireless communication modules, the communications between vehicle-to-vehicle and vehicle-to-infrastructure are directly possible when it is in range or also across multiple hops. With the help of Internet, the users of RSUs are allowed to download maps, traffic data, multimedia files and also to check emails and news update. We refer these types of VANETs as Service-Oriented VANET [1] that provides data to drivers and passengers virtually. The basic communication architecture of VANET is shown in Figure 1.1.Here we classify our paper into five sections. In Section 1, a brief introduction about the importance of RSU is given. Section 2 tells about the related works. Section 3 is about the different routing protocols based on V2V communications. Section 4 is about the different routing protocols based on V2I communications. Finally, Section 5 ends with conclusion of the paper and the future works that can be done.In recent years, most new vehicles come already equipped with GPS receivers and navigation systems. Car manufacturers such as Ford, GM, and BMW have already announced effortsto include significant computing power inside their cars [5, 6] and Chrysler became thefirst car manufacturer to include Internet access in a few of its 2009 line of vehicles [7]. This trend is expected to continue and in the near future, the number of vehicles equippedwith computing technologies and Mobile network interfaces will increase dramatically. These vehicles will be able to run network protocols that will exchange messages for safer, entertainment and more fluid traffic on the roads. Standardization is already underway for communication to and from vehicles. TheFederal Communication Commission (FCC) in the United States has allocated a bandwidth of 75MHz around the 5.9GHz band for vehicle to vehicles and vehicles to road side infrastructure communications through the Dedicated Short Range Communications (DSRC) [8] services. The emergence of vehicular networks would enable several useful applications, bothsafety and non-safety related, such as automatic road traffic alerts dissemination, dynamic pseudonym route planning, service queries (e.g., parking availability), audio and video file sharingbetween moving vehicles, and context-aware advertisement (e.g., [9, 10, 11]). To deploythese services, three types of communications involving moving vehicles are considered,including cellular network, vehicle to roadside infrastructure and ad hoc vehicle communications.Brief descriptions of each of these types of communication are provided below. Note thathybrids means of communication involving combinations of the methods described here

II. SYSTEM ANALYSIS

EXISTING SYSTEM

IEEE 802.11ah is a new sub-GHz Wi-Fi technology that provides several advantages over traditional Wi-Fi such as a higher communication range, enhanced scalability, and lower energy consumption, however at the cost of substantially lower throughput.This, however, compromises the energy efficiency of the device, as it implies concurrent utilization of different radio access interfaces. To mitigate this issue, the device should utilize the interface of a certain technology only when there is a high probability of establishing communication over that technologyTo address this issue, vertical handover algorithms based on the combination of devices' physical locations and either Radio Environmental Maps (REM) or propagation modeling have been proposed. Moreover, their suitability and encouraging performance have been demonstrated for a number of the established Low-Power Wide-Area Network (LPWAN) technologies.

DRAWBACKS:

It is especially difficult represent linear features depending on the cell resolution. Accordingly, network linkages are default to establish. Processing of associated attribute data may be cumbersome if large amounts of data exist. Raster maps inherently reflect only one attribute or characteristic for an area. Most output maps from grid – cell system\ms do not conform to high – quality cartographic needs.

PROPOSED SYSTEM

The proposed procedure entails three modules: user module, LBS module and Pseudonym route-Saver module. The LBS module is responsible for accumulating the specified data from consumer and generating optimized information. The Pseudonym route-saver utilizes contemporary traffic understanding and calculates the journey time and most beneficial path to source and destinations. To reduce the number of pseudonym route requests while providing efficient results, we combine information throughout a couple of pseudonym routes within the log to derive tight lessen/higher bounding journey times. Additionally, we compare the influence of exclusive orderings for issuing pseudonym route requests on saving pseudonym route requests. The Pseudonym route-Saver algorithm applies travel time bounds to reduce the number of pseudonym route requests and removes expired routes. K-NN-based pseudonym route analysis focuses on three steps: Online Pseudonym route APIs, Mobile User queries, and Location-Based Service/Server queries. The LBS may store a road network G with edge weights as spatial distances.

ADVANTAGES

It's used in many different areas, such as handwriting detection, image recognition, and video recognition. KNN is most useful when labeled data is too expensive or impossible to obtain, and it can achieve high accuracy in a wide variety of prediction-type problems. No Training Period- KNN modeling does not include training period as the data itself is a model which will be the reference for future prediction and because of this it is very time efficient in term of improvising for a random modeling on the available data.

III. SOFTWARE ENVIRONMENTS

FEATURES OF SOFTWARE

The software requirement specification is created at the end of the analysis task. The function and performance allocated to software as part of system engineering are developed by establishing a complete information report as functional representation, a representation of system behavior, an indication of performance requirements and design constraints, appropriate validation criteria. FEATURES OF JAVA Java platform has two components: The TheJava Virtual Machine (Java VM) Java Application Programming Interface (JavaAPI) The Java API is a large collection of ready-made software components that provide many useful capabilities, such as graphical user interface (GUI) widgets. The Java API is grouped into libraries (packages) of related components. The following figure depicts a Java program, such as an application or applet, that's running on the Java platform. As the figure shows, the Java API and Virtual Machine insulates the Java program from hardware dependencies.

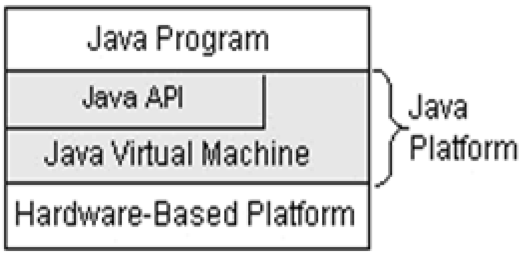


Figure 1.1 java program and hardware

As a platform-independent environment, Java can be a bit slower than native code. However, smart compilers, well-tuned interpreters, and just-in-time byte code compilers can bring Java's performance close to that of native code without threatening portability.

MODULE DESCRIPTION

1.Multiple peer simulation Module
2.Server Module .
3.Sharing-based nearest neighbour query visualization Module
4.Online query route API Module.

1.Multiple peer simulation:

The multiple peer simulation modules concurrently models a predefined number of mobile hosts. It implements all the functionality of a single mobile host and provides the communication facilities among peers and from peers to remote spatial database servers.

2.Server Module:

The server module is responsible for storing points of interest indexed by an R-tree structure. It performs NN queries from peers with pruning bounds and records the I/O load and access frequency of the spatial database server.

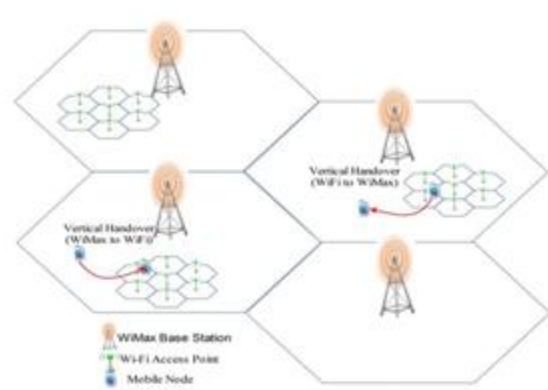
3.Sharing-based based nearest neighbour query visualization Module:

The sharing-based nearest neighbour query visualization Module provides a rendering of the verification process of a sharing-based NN query in a step-by-step manner. Users can arbitrarily select a mobile host and launch a location-based NN query within the simulation region. It provides mobile users with query services on a data set, whose POIs (e.g., restaurants, cafes) are specific to the LBS's application. The LBS may store a road network G with edge weights as spatial distances, however G cannot provide live travel times. In case P and G do not fit in main memory, the LBS may store P as an R-tree and store the G as a disk-based adjacency list.

4.Online query route API Module:

This module is to computes the shortest pseudonym route between two points on a road network, based on live traffic. It has the latest road network G with live travel time information. Mobile User. Using a mobile device (smartphone), the user can acquire his current geo-location q and then issue queries to a location-based server. In this module, we consider range and KNN queries based on live traffic.The aim of the ITS is to provide traffic safety and enhance traffic flow. VANET is a type of MANET with road routes, which depends on registration mechanism, roadside units (RSUs), and onboard units (OBUs) [4]. The OBUs are the radios that are installed in every vehicle as a transmitter to communicate with each vehicle, while RSUs are installed along the street with network devices. RSUs are used to communicate with the infrastructure and contain the network devices for dedicated short-range communication (DSRC) . VANETs are classified into two categories: vehicle-to-vehicle (V2V) and vehicle-to-infrastructure (V2I) communications. The main responsibility of VANETs is to produce effective communication; basically, the nodes require specific features to acquire information, to communicate with the neighbors, and then to take decisions based on all information collected by using sensors, cameras, global positioning system (GPS) receivers, and omnidirectional antennas

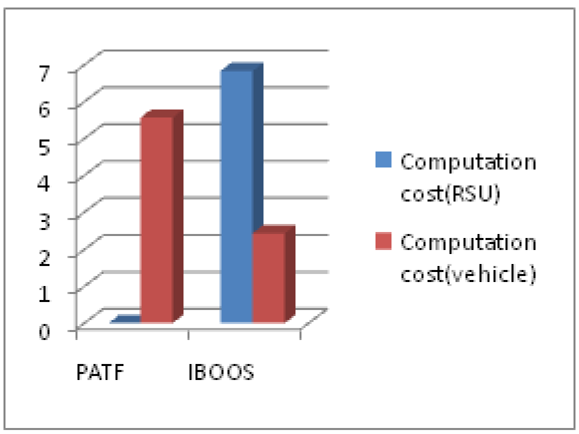
DIAGRAM:



IV. EXPERIMENTAL SETUP

Calculation cost of the proposed validation conspire is investigated. The fundamental computations in RSU and vehicle side for VANETs check and key circulation are separately examined. For better portrayal, the point duplication and the matching activity are individually meant as p and e. The utilized secure hash capacities, augmentation, and outstanding activity are individually indicated as H, M, and Ex. The correlation results on calculation cost is appeared in figure where the estimated execution time is given concurring. As depicted above, bilinear matching is applied in the proposed configuration, offering progressed security properties. Note that the intricate matching counts are completely led in RSU side.

Scheme	PATF	IBOOS
Computation cost(RSU)	13.5174 ms	6.8363
Computation cost(vehicle)	5.5695	2.4416



V. CONCLUSION

This paper proposes the concept of location-based spatial queries for mobile computing environments. When a client issues such a query, the server returns, in addition to the result, a validity region for which this result is valid. Thus, before the client issues a new query at another location, it checks whether it is still in the validity region of a previous query; if yes, it can re-use the result. The experimental evaluation confirms the applicability of the proposed approach and shows that the computational and network overhead with respect to traditional queries is small. We believe that this work is a first but important step towards an important research area. Although spatial queries have been extensively studied, to the best of our knowledge, there exists no previous work that studies validity regions. This concept can be extended to other types queries; for instance, region queries (e.g., find all restaurants within a 5km radius). In this case, the problem is more complex, conceptually and computationally, since the validity region is defined by arcs resulting from cycle intersections. The incremental computation of the query result based on validity regions is another interesting topic for future work. Consider that a mobile client sends a query to the server immediately after it exits the validity region. It is likely that the new result has significant overlap with the previous one. The incremental computation of the query results and the transfer of the delta (i.e., the new objects added into the result and the objects removed from it) can dramatically reduce the transmission overhead. In summary, location-based queries will play a central role in numerous mobile computing applications. We expect that research interest in such queries will grow as the number of mobile devices and related services continue to increase.

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