Retain Data In Mobile Disconnected Network Using Trajectory Approach

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ABSTRACT - VANET integrates on technologies such as WiFi, bluetooth etc. for easy, accurate, effective and simple communication between vehicles on mobility. Effective measures such as media communication between vehicles can be able to track the vehicles. VANET is a technology that uses moving cars as nodes in a network to create mobile network. The main challenging task is to retain the information in disconnected mobile network. In particular, the geo information can only be obtained if the geocache holder is present in the anchor location. In order to keep the geocache around the anchor location boomerang protocol is implemented . The holder can hand off the geocache to other candidates preferably those traveling toward the anchor location based on trajectory selection method.. For this purpose, each node maintains a trajectory segmentation stack. The geocache holder can initiate another handoff if it detects divergence. So that data can be retrieve whenever users needed in mobile disconnected networks as well as the system efficiently handles the location based queries.

Keywords – GPS, Geocache, mobile ad hoc networks, location-aware information.

I INTRODUCTION

Mobile computing and wireless communication are high-growth areas in the communications arena. An increasing wealth of compute capability is available in handheld systems, and improved support for wireless communication helps interconnect these mobile platforms with each other, as well as with tethered desktop computers or servers. The main focus of mobile computing has been on systems such as PDAs and telephones intended for direct human use. Research attention is increasingly focused, however, on systems with morelimited human intervention, wireless sensor networks are a key example. In general, sensor networks are systems in which numerous compute and sensing devices are distributed within an environment. Sensor networks have been proposed for a range of engineering, scientific and defense applications. Mobile ad hoc routing protocols can be classified into topology based and position based approaches. In topology based approach, use only information about existing neighborhood links, but not provide about geographical information. But in position based approach, it includes information about the geographical information. So, it is also referred as geographic approach. Wireless data connections used in mobile computing takes three general forms.Cellular data service uses technologies such as GSM, CDMA or GPRS, and more recently 3G networks such as W-CDMA, EDGE or CDMA2000. These networks are usually available within range of commercial cell towers. Wi-Fi connections offer higher performance, may be either on a private business network or accessed through public hotspots, and have a typical range of 100 feet indoors and up to 1000 feet outdoors. Satellite Internet access covers areas where cellular and Wi-Fi are not available, they may be set up anywhere the user has a line of sight to the satellite's location, which for satellites in geostationary orbit means having an unobstructed view of the southern sky.Some enterprise deployments combine networks from multiple cellular networks or use a mix of cellular, Wi-Fi and Satellite. When using a mix of networks, a mobile virtual private network (mobile VPN) not only handles the security concerns, but also performs the multiple network login functions automatically and keeps the application connections alive to prevent crashes or data loss during network transitions or coverage loss.

The boomerang protocol is to retain geocache around the anchor location through intervehicle communication. The two major challenges are returning the geocache to the anchor location with high probability if the carrier of the geocache becomes temporarily disconnected and minimizing the communication overhead for retaining the geocache near an anchor location. To reduce communication overhead, instead of each node sending the geocache over the wireless link as soon as it was received, ithave the node keep the geocache until it drives off the original trajectory.Here the number of users available in the particular location is called as anchor location and user is called as anchor node. Any information from anchor location are stored to geocache by the anchor nodes. So geocache acts as the place for storing any information about anchor location. Anchor nodes are away from the anchor location, the geocache send the information to particular anchor nodes by means of carrier node. The anchor nodes nearer to the anchor location act as a carrier node.

II EXISTING SYSTEM

2.1 Abiding Geocast

Abiding geocast is a time stable geocast delivered to all nodes that are inside a destination region within a certain period of time. For some applications, in particular safety-related applications to which class the virtual traffic sign service belongs to, reliable abiding geocast is bound to be desirable. An inherent question of the abiding geocast semantics is the duration of storage and delivery availability. We provide a best effort service without guarantees, which means that we cannot provide guarantees about the duration availability, i.e. we cannot guarantee toreach the full lifetime. For abiding geocast it would make sense to limit the number of deliveries or the total number of hops. If a virtual traffic sign is put up, say for example an accident warning sign, it is difficult to fix a lifetime since it is unknown when the crashed cars will be removed. Many vehicular information and safety applications profit from abiding geocast as it releases the applications from blind periodical retransmissions. The first approach is a server solution to store the messages. The second approach elects a node inside the geocast destination region to act temporarily as a server. The last approach uses local message storage inside the destination region, too, and complements the exchange of neighbor information necessary for many geographic unicast routing protocols with abiding geocast information.

2.2 Flooding-Based Geocasting

Static scheme uses a forwarding zone that is rectangular in shape. The forwarding zone is defined to be the smallest rectangle that includes current location of source S and the geocast region, such that the sides of the rectangle are parallel to the X and Y axes. The source node S can thus determine the four corners of the forwarding zone. Node S includes their coordinates in a geocast packet transmitted when initiating the geocast delivery. When a node receivesthe geocast packet, it simply discards the packet if the node is not within the forwarding zone specified by the four corners included in the packet. This scheme is said to be a "static zone scheme", since the forwarding zone specification included in the geocastpacket sent by the source node is not modified by any other node.

2.3 Matching Gps Observations

The problem of map matching based on GPS readings have been extensively studied. Some existing work include. Even though we share some similarities with the map matching problem when using GPS readings to identify road segments, we differ significantly with the general map matching problem in the use of road maps. Map matching solutions generally focus on matching anode's position to the nearest street presented in the map. This differs fundamentally from our work since we don't use street maps but only GPS readings of traversed paths. Therefore, the general map matching approach which involves searching and comparing nearby road segments could not be applied to our problem. Instead, we propose using absolute distances and heading differences with the recorded road segment to determine divergence.

III PROPOSED SYSTEM

The main challenge for implementing the boomerang protocol lies in the choice of a new carrier node at each handoff, especially if the first handoff occurs somewhere far away from the anchor location. The data may have traveled along a rather complicated route before the current carrier looks for a new carrier, In this case, a single carrier node may not be sufficient to bring back the data; instead nodes B, C, and D all needed to be involved in this returning process. Efficiently choosing a set of suitable carriers is thus the key to the success of the boomerang protocol. A set of poorly selected carriers may incur a long delay in bringing back the data. The task of choosing appropriate carrier nodes is particularly daunting because at each handoff, neither

the current carrier nor the nodes within the hand off range have knowledge beyond their current velocity and location, and the traversed trajectory. Another challenge is the handoff criteria. When to hand off is a tricky issue, especially at the first time. The first handoff can greatly impact the handoff frequency and return probability of the Geocache.

3.1 Geocache Information

The road map is created with two way trajectories. Then the mobile nodes are created with unique IDs. Anchor location is placed around and its boundary is defined. Some events like car accident, meeting etc is created. Then a moving node is chosen as default geocache holder. The geocache holder creates an empty log known as geocache. It is allowed to capture some events. Then for each captured event, an entry is added in geocache. Entries in geocache contains type of data, time at which the data is captured, size and ID of the holder.

3.2 Trajectory Stacks And Handoff Process

Geocache holder creates an empty trajectory segment stack. It creates a window of a GPS traces taken with in 20m .It finds out critical points in window. Combine two critical points as a segment and push it in the stack. The points that exceed the distance difference threshold (5) is known as critical point. The stack is continuously grown while the holder is moving. Meanwhile it checks whether it goes out of radio coverage. If it goes out of coverage it broadcasts a message including compressed and encrypted geocache with its trajectory stack. Candidate nodes with in radio range of geocache holder receives this, message .These nodes also prepare their own trajectory stack like geocache holder. The key component of RevTraj is trajectory recording: the aggregated path the pervious carriers have traveled so far. The trajectory grows when a carrier is moving away from the anchor location, andshrinks when it's moving toward the anchor location. Depending on the storage and processing power available on the mobile units, we can use either raw GPS traces or "segmented" trajectory which only consists of the critical points on the path. Next, let us look at the detailed handoff process in RevTraj. In the discussion below, we assume segmented trajectory is used instead of a continuous trace. Thetrajectory is implemented as a stack of end points, so that the latest segment is always on top of the stack. Every node within the radio range pops out the latest segments from the trajectory stack. We use a parameter, look ahead distance (LD), to limit how many recent segments we examine. These look

aheadsegments can be numbered as seg1; seg2: seg LD, with seg1 being the latest segment. If the node finds itself on one of these look ahead segments, it becomes a candidate node and proceeds to the next step. All the candidates are prioritized according to the following rules: a) nodes traveling on higher numbered segments are granted higher priority than those on lower numbered segments; b) for nodes traveling on the same segment, we give higher priority to those closer to the anchor location. The prioritization rules can be easily implemented if each candidate node calculates its ACK back off time using the following equation: where the definitions for d, d0, Tmax are the same as before, and the segment number. The node with the smallest ACK back off will send out the ACK earliest among all the candidates. To avoid hidden or exposed terminal problem, we suggest ACK be sent using higher transmission power to cover a wider range. Upon receiving the ACK, the old carrier as well as other candidates can decide whether to delete the Geocache, or keep it for some amount of time to increase the overall reliability. If the current carrier does not receive any ACK, it keeps the Geocache and initiates another handoff after a short interval. We further distinguish between prioritized RevTraj as described above, and no prioritized RevTraj, where all candidate nodes pick a random back off value from [0, Tmax] and the node with the smallest back off becomes the new carrier.

IV SYSTEM ARCHITECTURE

In this architecture, the mobile node M N1 is a geocache holder, which contains Geocache information. The Geocache information is transferred to the anchor location, where the information is gathered. In other case, when the MN1 is leaving from its location point it shows that it handoff the Geocache information to new candidate i.e, MN2. . It traces the moving points of the node which are moving towards anchor location. After find out the points the node which is closer to geocache and anchor location will get the geocache information from the old geocache holder. The information is encrypted and after receive by the receiver the message is get decrypted. These process is occur in anchor location boundary. In server side, the user send request and obtain detail information about the Geocache information. The sample architecture diagram to retain the information in mobile disconnected network is shown in fig 4.
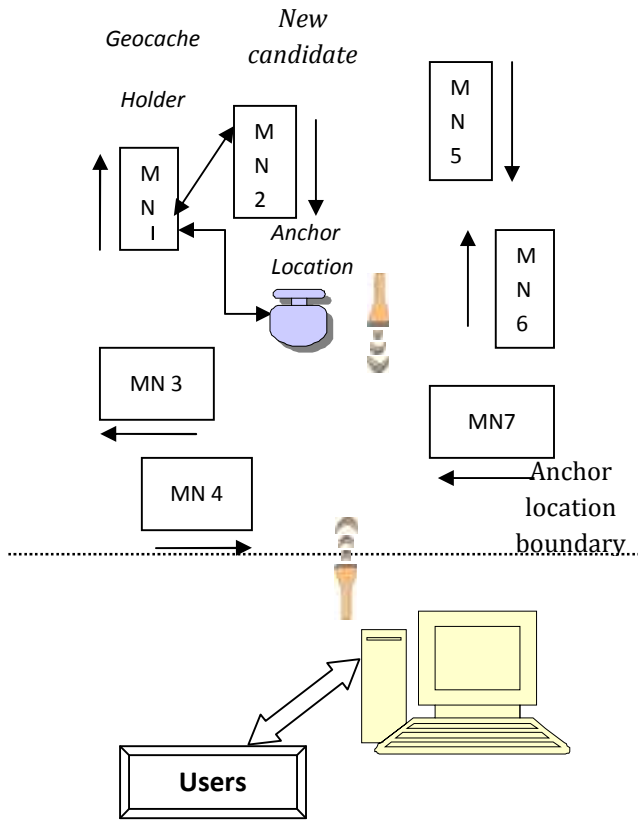
Geocache   *New candidate*
Holder

Anchor Location

Fig.4System Architecture

Simulated graph

V PERFORMANCE

The distance-based MaxProgress works better under fully or mostly connected road map topologies. We capture the connectivity characteristic using parameter .Our definition of is different from the general concept of road connectivity. Recall that in our definition, at a location is the ratio between the number of paths that pass this location and can reach the anchor location and the total number of paths that pass this location. For both the numerator and the denominator, we only consider shortestdistance paths, i.e., we do not backtrack once the map hits a dead end. According to this definition, road conditions such as dead ends will result in a relatively low value in the road map. The simulated graph is shown below:
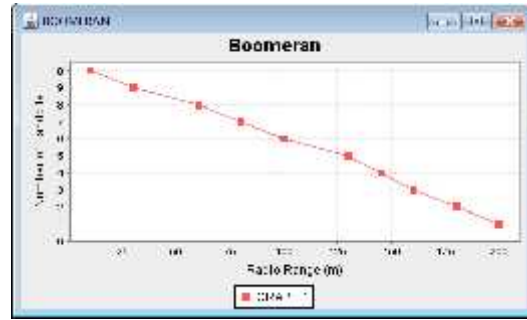
VI CONCLUSION

Thus the implemention of the trajectory-based boomerang protocol to periodically make available data at certain geographic locations in a highly mobile vehicular network. The boomerang protocol returns the Geo cache through nodes traveling toward the anchor location. To increase the probability of successful return, it records a node's trajectory while moving away from the anchor location then select nodes to return the Geo cache based on the trajectory. In addition, the geo cache information details are compressed and encrypted while initiating handoff procedure. After a new candidate is elected then the decryption key is issued to that candidate. Hence the project accounts for security as well as the successful maintenance of data around the location of interest.

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