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Tracking and Positioning of Non-GPS Phones Using Bluetooth

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ABSTRACT- The Bluetooth Server is deployed at different Areas and it's ID is transmitted to the Server. GPS Enabled will also roam around the City everywhere. If Non GPS Mobile User is available within the Limit of Bluetooth Accessibility, then User's Location is easily tracked. If User is out of Bluetooth Coverage area, then GPS Enabled Users will communicate with Non GPS Users via Bluetooth and the location is communicated to the Server. User can download a File from the Server without GPS Connection through Bluetooth Communication from Rest of the Users. GSM and WiFi communication networks where fixed reference points are densely deployed positioning and tracking techniques in a sparse disruption tolerant network (DTN) have not been well addressed. I propose a decentralized cooperative method called Pulse Counting for DTN localization and a probabilistic tracking method called Protracting to confront this challenge.

KEYWORDS: Disruption tolerant network, positioning, tracking, cooperation.

I. INTRODUCTION

Disruption tolerant networks (DTNs) are sparse mobile ad hoc networks where nodes connect with each other intermittently. Since DTNs allow people to communicate without network infrastructure, they are widely used in battlefields, wildlife tracking, and vehicular communications. Location information is extremely important to enable context-aware and location-based applications. However, due to the lack of fixed infrastructure and continuous network connection in DTNs, identifying the location of mobile users and tracking their movement trajectories are challenging. The following scenario illustrates the localization problems in DTNs. Assume a DTN is formed by a set of wireless nodes (e.g., cell phones) moving within a field. Each node has a communication range of distance r ($r > 0$). Two nodes can communicate when they move into each other's communication range, which is called an encounter of nodes. Since DTNs are sparse and highly dynamic, a constant communication path does not exist between any pair of nodes. As illustrated in The positioning and tracking problem in TNs is twofold: the common-nodes (without GPS module) need to determine their locations based on the limited number of reference points (APs or GPS nodes) they encountered; and the info-station needs to track the trajectories of the common-nodes with the partial information collected by the APs opportunistically. Accelerometer augmented mobile phone localization (AAMPL) introduces a location estimation method using accelerometer and compass. It can estimate rough physical coordinates of mobile phones augmenting with context-aware logical localization. To improve location accuracy, CompAcc uses the similar estimation method like AAMPL, and refines the location estimation by matching it against possible path signatures generated from a local map. It achieves a locationaccuracy of less than 11 meters. However, it needs to construct path signatures from electronic maps beforehand, which is complex and time-consuming.

II. RELATED WORKS

A routing protocol for intermittently connected networks called Epidemic Routing. This protocol relies on the theory of epidemic algorithms by doing pair-wise information of messages between nodes as they get contact with each other to eventually deliver messages to their destination. Hosts buffer Messages even if it there is currently no path to the destination available. An index of these messages called a summary vector is kept by the nodes, and when two nodes

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meet they exchange summary vectors. After this exchange, each node can determine if the other node has some message that was previously unseen to this node. In that case, the node requests the messages from the other node. This means that as long as buffer space is available, messages will spread like an epidemic of some disease through the network as nodes meet and "infect" each other. Each message must contain a globally unique message ID to determine if it has been previously seen. Besides the obvious fields of source and destination addresses, messages also contain a hop count field. Disruption tolerant networks have been widely studied in the last decade. Most existing works focus on the fundamental problem of data routing in DTNs. To achieve data transmission without the need of end-to-end communication paths, several mobility-assisted routing strategies have been proposed to reduce the number of hops, the delivery delay and energy consumption the aim is to detect the non-GPS mobile user location via blue tooth and also find out the intruder based on primary key using fast randomized algorithm. Although it identifies the best access point using ranking process. ln [1] a decentralized cooperative method called PulseCounting for DTN localization and a probabilistic tracking method called Protracting to confront this challenge. Pulse Counting evaluates the user walking steps and movement orientations using accelerometer and electronic compass equipped in cell phones are proposed. In [3] the impacts of distributed content sharing (Wikipedia, Blogger), social networks (Face book, MySpace), sensor networks and pervasive computing. It is believed that significant more impact is latent in the convergence of these ideas on the mobile phone platform. Phones can be envisioned as people-centric sensors capable of aggregating participatory as well as sensory inputs from
Local surroundings.

III. PROPOSED SYSTEM

First find out the intruder based on generating secret key for registered mobile user's using fast randomized algorithm. So each user request, server verify the secret key using access point for identify the intruder. Although it can provide secure data transmission. I propose is to identify the best access point using ranking process based on number of data transmission to server through access point. The objective is to detect the non-GPS mobile user location via blue tooth and also find out the intruder based on primary key using fast randomized algorithm. Although it identifies the best access point using ranking process. The following techniques are used as shown below,

FAST RANDOMIZED ALGORITHM

This is an algorithm which gives excellent results when detect and verify on both source location as well as destination location via the server in the networks and is much faster, typically thousands of times faster, than localized algorithms. It gives a new randomized algorithm for achieving consensus among asynchronous processes that communicate by monitoring for every node in the entire network advantages of this system 1. High security 2.Increase download speed 3.Less time consuming process

Maximum Sat algorithm:

1. We want to maximize Z1+…+Zm.
2. We have some inequalities:
3. ∑ yi (if Xi is in Zj and is uncomplemented)
4. ∑ (1-yi) (if Xi is in Zj and is complemented).
5. This inequality must be hold:
6. ∑ yi + ∑ (1-yi) >= Zj
7. This problem could be solved using integer linear programming.
8. We have to use linear programming
9. Solve the problem using linear programming.
10. You get a real number for each yi or zi.
11. Assign Xi true with the probability yi.
12. The expected number of clauses that are satisfied is (1- 1/e) of the best answer
13. Using both algorithms and choosing the better answer gives us an answer which is at least ¾ of the best answer!!! Which is better than ½ and 1- 1/e.

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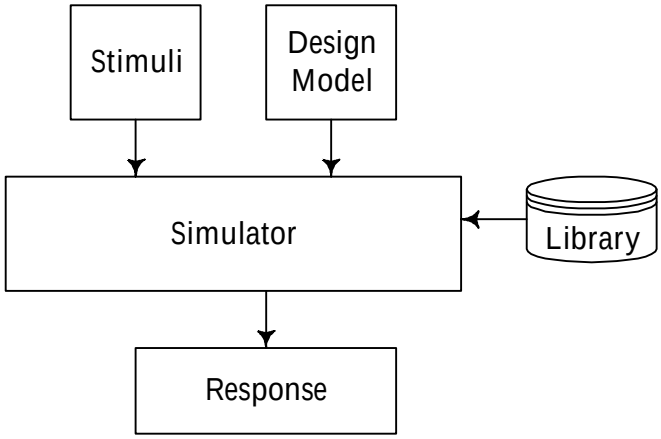
NETWORK SIMULATOR

Network simulator is an object-oriented discrete event simulator. It is also a package of tools that simulates behaviour of networks. It is primarily UNIX based. It creates network topologies. It is written in C++ and OTCL formats (TCL scripting with object-oriented extensions). NS is primarily useful for simulating local and wide area networks. It can be used to simulate a variety of IP networks. It implements network protocols such as TCP and UPD, traffic source behaviour such as FTP, Telnet, Web, CBR and VBR, router queue management mechanism such as Drop Tail, RED and CBQ, routing algorithms such as Djikstra, and more. NS also implements multicasting and some of the MAC layer protocols for LAN simulations.



NETWORK ANIMATOR

NAM is a TCL based animation tool for viewing network simulation traces and real world packet trace data. The design theory behind NAM was to create an animator that is able to read large animation data sets and be extensible enough so that it could be used indifferent network visualization situations.

DISRUPTION TOLERANT NETWORKS

Disruption tolerant networks (DTNs) are sparse mobile ad hoc networks where nodes connect with each other intermittently. Since DTNs allow people to communicate without network infrastructure, they are widely used in battlefields, wildlife tracking, and vehicular communications. Location information is extremely important to enable context-aware and location-based applications. However, due to the lack of fixed infrastructure and continuous network connection in DTNs, identifying the location of mobile users and tracking their movement trajectories are challenging. The following scenario illustrates the localization problems in DTNs. Assume a DTN is formed by a set of wireless nodes (e.g., cell phones) moving within a field. Each node has a communication range of distance r ($r > 0$). Two nodes can communicate when they move into each other's communication range, which is called an encounter of nodes. Since DTNs are sparse and highly dynamic, a constant communication path does not exist between any pair of nodes. As illustrated in The positioning and tracking problem in TNs is twofold: the common-nodes (without GPS module) need to determine their locations based on the limited number of reference points (APs or GPS nodes) they encountered; and the info-station needs to track the trajectories of the common-nodes with the partial information collected by the APs opportunistically. Delay-tolerant networking (DTN) is an approach to computer network architecture that seeks to address the technical issues in heterogeneous networks that may lack continuous network connectivity. Examples of such networks are those operating in mobile or extreme terrestrial environments, or planned networks in space. Recently, the term disruption-tolerant networking has gained currency in the United States due to support from DARPA, which has funded many DTN projects

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IV. SIMULATION RESULT

Modularity is the single attribute of software that allows a program to be intellectually manageable. The six important criteria that enable us to evaluate a design method with respect to its ability to define an effective modular design are: 1.Modular decomposability 2. Modular Comps ability 3. Modular 4.Understand ability 5. Modular continuity 6. Modular Protection. The following are the modules of the project, which is planned in aid to complete the project with respect to the proposed system, while overcoming existing system and also providing the support for the future enhancement. The below given table and graph shows the simulation result of my project

The Accuracy of Directions with Different Users

Methods	User a	User b	User c
Compass Reading	80.12%	59.34%	71.43%
Direction Mapping	90.03%	75.12%	87.89%

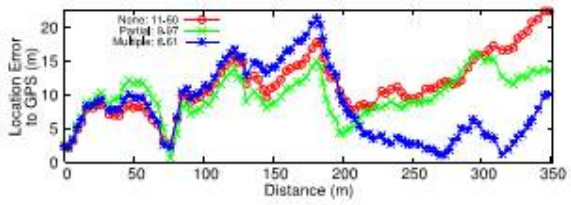

Fig 1.Instantaneous deviation compared to GPS.

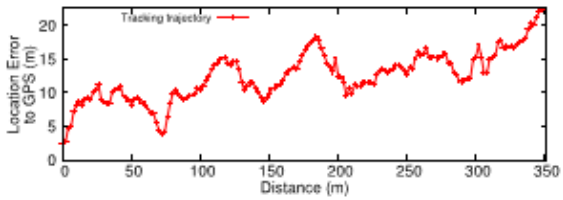

Fig 2. Deviation of the tracking system.

V. CONCLUSION AND FUTURE ENHANCEMENT

Localization in DTNs faces two major difficulties: the mobile node can only use sparse reference points to estimate its location, and the tracking server needs to determine and predict movement trajectories with partial location information. To overcome these difficulties, we propose Pulse Counting and Prob-Tracking for positioning and tracking in DTNs. We implement the system in Android phones and evaluate its performance in a test-bed in the NJU campus. Extensive experiments show that the proposed system achieves an average deviation less than 9m compared to GPS.

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BIOGRAPHY

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