

# Improvised GPS using Information Centre traffic Control Management

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**ABSTRACT:** *Vehicular ad hoc network is universally viewed as a technology that moves cars as nodes to create a mobile network. In our paper we focus on collecting data efficiently using 3G/LTE communication network. To undergo this process, we introduce an algorithm called enhanced data collection technique (EDCT). It is based on hybrid protocol using variable polling periods depending on vehicle portion in network. Therefore the calculated travel time information and accurate traffic get stored in information centre maintained for traffic control Management (IC-TF). Finally we are focusing on threshold limit that simulates and evaluate data collection.*

## INTRODUCTION:

Vanetare created by applying the principle of Mobile ad hoc networks (MANET). It is a spontaneous creation of wireless network for data exchange. Their primary goal is to increase road safety. To achieve this, the vehicles act as sensor and exchanges the warning information that enables the drives to react early to abnormal and potentially dangerous situation. The key concepts we used to overcome this process are information centre maintained for traffic control (IC-TF), V2V concept (Vehicular-to-Vehicular)

## PROBLEM STATEMENT:

The method for overcoming the disadvantage of GPS we are introducing EDCT algorithm. The issues that happen while using GPS are signals would not be accurate due to obstacles and atmospheric condition such as geomagnetic magnetic storms. The major drawback GPS is it requires clear view of sky. GPS cannot be used large areas and bushy areas with ups and downs. In GPS chain surveying is not always accurate. Sometimes GPS may fail during climatic conditions. In that case we need to have a backup map and directions. If we are using on operated device, there may be battery failure. In such situation we need an external power supply. At time of

road name change and new roads appear, GPS may provide incorrect direction. For example: GPS may tell you to take right when you should turn left. These updates may come at financial cost depending on GPS. It is mainly affected by multipath issues. These delayed signals can cause inaccurate problems.

## RELATED WORK:

[1] In this paper, the ultrasound based TDOA (Time Difference of Arrival) using ultrasound to determine the location of mobile network. RF (Radio Frequency) signal is not suitable for fine grained localization. It distributes evenly the power cost among nodes in the network. It is less sensitive to physical effect.

[2] Here the author explains about the Shadow Fading Channel Model. It is known as communication channel. It is caused due to multipath propagation. This process called as multipath induced fading or shadowing from obstacles affecting the way propagation called as shadow fading. It is based on real measurement in highway and urban areas.

[3] The author uses the enhancement of global vehicle using navigable road map and dead reckoning. It is used to calculate one's position in the sea by direction and distance travelled rather than by using landmark or astrological observation. Using geometric dilution of precision GNSS (Global Navigation Satellite system) can be rejected.

[4] Here the author uses nodes considered as vehicles that move fast in street and highway. Therefore to have safe and fast transport system vehicles should know the traffic problems. All vehicles do not have GPS but vehicles that have GPS do not work in tunnels. To overcome this process we introduce ODAM (Optimized Disseminating Alarm Message).

## Proposed IC-TF Model:

In communication model, vehicles communicate together from Vehicular-to-Vehicular communication (or) Vehicular-to-

Infrastructure Communication using a source node. Normally the source node sends RREQ to the entire neighbor node and once the destination receives, it sends RREP to the source. In our proposed work, we modified the normal RREQ and included fields such as time gap in receiving updates to improve the effectiveness of receiving correct information.

**VEHICLE MONITORING:**

It is the form that focuses on disadvantages of GPS. While finding location sometimes GPS lose satellite signal and calculating wrong position because of signal Blocking, Reference, Interference, crowded metropolitan area, tall building and tunnels.Using this process we can state the vehicles with or without GPS it can self organize and exchange the location and reach destination safely.

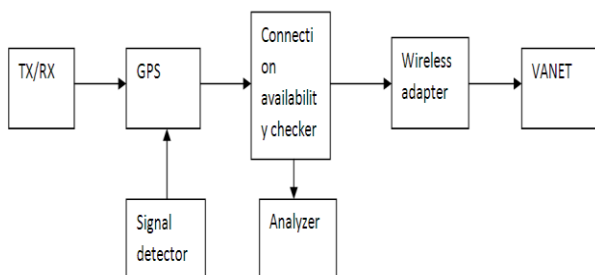
**EDCT:**

This algorithm shows that vehicle with or without GPS exchange location distance information and calculate accurate position for all vehicle inside the network to calculate the location, speed, fuel consumption, distance information we use Information center maintained for traffic control management to find the current information will be updated for the every 100meters.

**PROPOSED WORK:**

The concept we use in our project hybrid protocol and it is done using EDCT mechanism. It is considered when vehicle are configured with the parameters such as speed, heading, position, fuel consumption etc at each and every period of 100meters it updates to the Information Center Maintained for traffic control management that estimates travel time and calculate the position of vehicle. It is used to calculate the travel time which is used to stimulate the behavior of wired and wireless network.

**BLOCK DIAGRAM:**



**ALGORITHM:**

At beginning, each node is configured with position and time. Sends the modified Hello to share its node position to all the other nodes.

Node receiving Hello message,

Updates its neighbor table

It includes the MAC concept to find hidden and exposed nodes and near-far terminal nodes.

Finds the route with EDCT mechanism.

EDCT actually means expect departure clearance times.

Using the same concept Enhanced Data collection technique also works.

If route is not found, it sends beacon message and searches for the intermediate node. Break in path is predicted by the added field in Hello packet called (Tg) time gap in receiving packets.

Distance between two nodes is calculated by

$$D = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

If Time gap does not match with D in each node neighbor table, then its intermediate nodes intimate to the destination node through implicit signaling.

If each and every node satisfies the predicted time gap, it assumes each node receiving proper synchronization. In case of deviation EDCT works as follows:

If new time gap > estimated, then information center turns to find the node.

It estimates the vehicular network is with- in or out of range.

When node is with-in range,

It calculates the node using hop based protocol.

When node is in out of range/disturbance in receiving signal, It calculates last signal receiving spot and time interval between last signal (tl) and current time(ti)

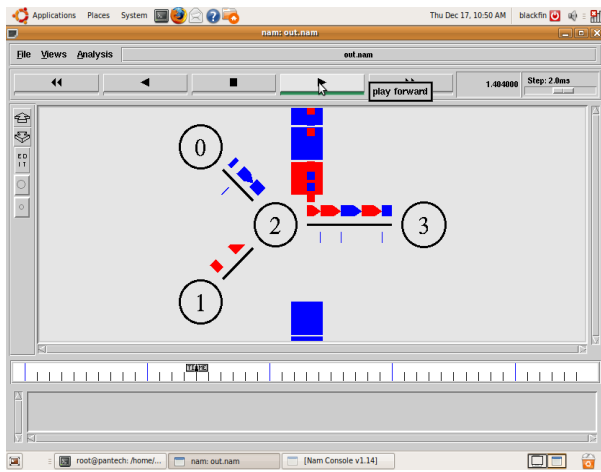
It is computed =  $t_l - t_i$ ,

When  $t_l - t_i = 1$ , predicts border range, else out of range.

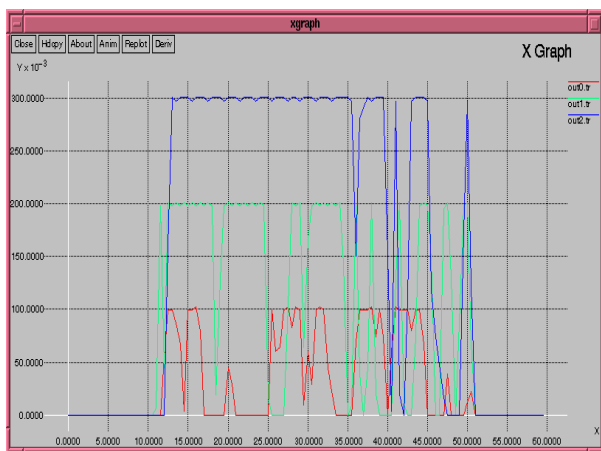
Interference in proper signal strength may occur due to reasons, such as weather, congestion in signals, change of existing or closed runways.

Air Control System should be configured with each GPS vehicle system to avoid weakening of signal.

Using air control system with EDCT, the deviated code can be identified with or without using GPS.



The figure shows how GPS signal travel through different nodes.



The above graph represents node signals in and out of GPS range.

Proposed work results in solving of signal attenuation problem, error propagation can be systematically analyzed and since all nodes are location aware, it is easy to track vehicle after the node moving away from range.

#### CONCLUSION AND FUTURE WORK:

In this paper, we study that when GPS have bad signal strength we can monitor the location using EDCT algorithm. This process even tracks the vehicle information without using GPS. These technologies enable the user to have confidence in the equipment. As far as GPS is becoming very important in large cities and its known as secured system. This technology can also help us to advance the transportation system. It can be used for security and tracking purpose. In future we will update the tracking device even in rural areas. This device will become a powerful tool to navigate the user even in jungle areas. Of course we can exchange the information with other people, in the exact place where the person have been located.

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