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Data Dissemination in VANET using DOVE

J.Nancy Jeba Paulin, R.Kavitha M.E

Infant jesus college of engineering &technology

Abstract:

The main objective of this project is the DOVE in VANET. DOVE is a processor scheduling that treats the road as processors to optimize the workload assignment and improve the efficiency of on-road dissemination. In first this project initializes all nodes in the network. The shortest tree routing applies for the network. This routing is use for finding the shortest path for data transmission. This project proposes the workload assignment. This workload assignment is used to improve efficiency of road dissemination. It has light overhead and low delay.

1. Introduction:

A vehicular ad hoc network (VANET) uses cars as mobile nodes in a MANET to create a mobile network. A VANET turns every participating car into a wireless router or node, allowing cars approximately 100 to 300 metres of each other to connect and, in turn, create a network with a wide range. As cars fall out of the signal range and drop out of the network, other cars can join in, connecting vehicles to one another so that a mobile Internet is created. VANET is a subgroup of MANET where the nodes refer to vehicles. Since the movement of Vehicles are restricted by roads, traffic regulations we can deploy fixed infrastructure at critical locations. The primary goal of VANET is to provide road safety measures where information about vehicle's current speed, location coordinates are passed with or without the deployment of Infrastructure. Apart from safety measures, VANET also provides value added services like email, audio/video sharing etc.

Dissemination takes on the theory of the traditional view of communication, which involves a sender and receiver. The traditional communication view point is broken down into a sender sending information, and receiver collecting the information processing it and sending information back, like a telephone line. With dissemination, only half of this communication model theory is applied. The information is sent out and received, but no reply is given. The message carrier sends out information, not to one individual, but many in a broadcasting system. Processor scheduling is the allocation of a computer's processor power to specific tasks. The practice uses the term "scheduling" because it assigns a specific percentage of time the processor is running to individual tasks. Processor scheduling is used to prevent specific tasks from monopolizing all of a computer's processor resources. Processor scheduling is also used to assign processors to different instances of Windows in virtual machines as well as to share CPU capacity with users connecting to a computer through remote desktop. The most basic form of processor scheduling is set by assigning each individual task a priority rating in increasing order of importance of low, below normal, normal, above normal, high and real-time. The higher the level of importance, the more processor time or usage Windows will assign to the task. Tasks that have more processing time assigned to them will run and complete faster. The process isn't a chronological schedule like appointments on a calendar but rather a hierarchy of importance.

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2. Related Work:

A. Treisman [1].This paper presents the feature integration theory of attention. First give the object. Then separate the perception of object such as color, shape orientation etc. Combine the features in object. Finally the perception is produced. The separable feature is called as pre-attentive. Combine the features process called as Focused-attention. In pre-attentive single features can be detected in parallel without attention limits. In focused attention conjunctions require focal attention of each object, resulting in serial search. X. Hou [2]This paper presents the spectral residual approach used for saliency detection. This method is based on the log spectra representation of images. Major contribution of this paper is the discovery of spectral residual and its general ability to detect proto-objects. And also this paper proposes a fast method to construct the corresponding saliency map in spatial domain. By analyzing the log-spectrum of an input image and extract the spectral residual of an image in spectral domain. R. Achanta [3] This paper presents the frequency-domain analysis on five state of the-art saliency methods and compared the spatial frequency content retained from the original image. It is used in the computation of the saliency maps. This paper presents the frequency tuned for detecting the saliency. The low level features of color and luminance used for this detection. This paper describes [4] a new type of context aware for saliency detection. It is used to detecting the image regions for the scens. Context aware detection based on four principles. There are 1. Local low-level considerations, 2. Global considerations, 3. Visual organization rules 4. High-level factors. The paper also presents an algorithm for computing this saliency. The idea of this algorithm salient region is distinctive with respect to both their local and global surroundings. The unique parts of the background, and not only the dominant bjects, would be marked salient by this algorithm.

In an existing on-road e-Ad dissemination system it provides incentives to ad forwarders based on the receipts generated by ad receivers. Past data dissemination schemes in VANET cannot support these applications since they do not control the number of receivers. Tailoring these schemes by merely adding number control cannot provide an efficient solution, considering that controlling the number of receivers in a distributed fashion when no central server is available is costly. To avoid the problem, this paper proposes a new scheme in VANET to reach the desired number of receivers in a particular area of interest. This project focuses on designing a distributed algorithm to disseminate data or a query to a desired number of receivers in a specific area of interest with high accuracy, small overhead, and low delay. The following chapter shows the methods and results of the proposed system.

3. Methodology:

3.1 System Architecture:

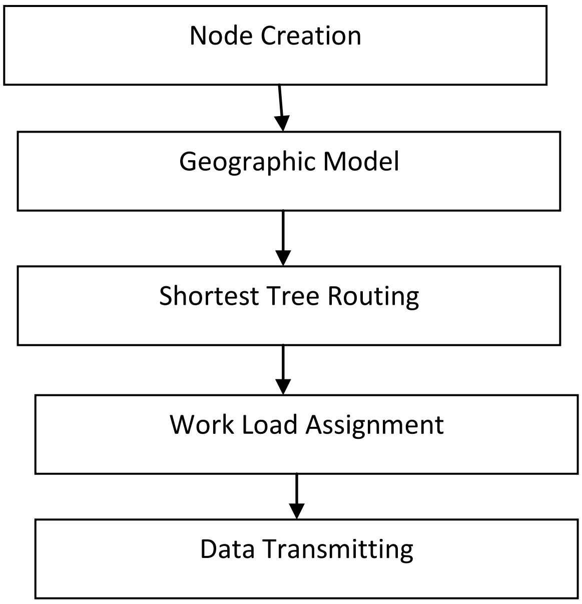

Fig: 1 Block Diagram

3.2 Modules

3.2.1. Node Creation:

A node network is a series of two or more connected nodes. Once a connection between two or more nodes has been defined, all searches produce listings of configured users and resources from both local and remote nodes. This basic information is maintained on each computer in the node network. All calendaring data for each user and resource, however, resides only on that entity's local node, thus eliminating the space and consistency problems created by replicated databases. All exchanges of this information between nodes are done in real-time, making the scheduling of meetings with people or resources on remote nodes completely transparent to the user. When setting up a node it is important to note that the node-ID cannot be changed once the node has been created. The node can be created with its node type, size and properties. Created node can be located in the network.

3.2.2. Geographic area Model:

This model tries to realize division of geographical area in the form of cluster (sub-area) with higher node density and paths in between lower node density. The cluster is recognize as a vertices of the area graph while path as edges. The movement of cluster node could be managed with random way point model. An energy-aware key distribution scheme, which uses geographical location information.

3.2.3. Shortest Tree Routing:

Given a connected, undirected graph G, a shortest-path tree rooted at vertex v is a spanning tree T of G, such that the path distance from root v to any other vertex u in T is the shortest path distance from v to u in G.

In connected graphs where shortest paths are well-defined (i.e. where there are no negative-length cycles), we may construct a shortest-path tree using the following algorithm:

1. Compute dist(u), the shortest-path distance from root v to vertex u in G using Dijkstra's algorithm or Bellman–Ford algorithm.
2. For all non-root vertices u, we can assign to u a parent vertex pu such that pu is connected to u, and that dist(pu) + edge_dist(pu,u) = dist(u). In case multiple choices for puexist, choose pu for which there exists a shortest path from v to pu with as few edges as possible; this tie-breaking rule is needed to prevent loops when there exist zero-length cycles.
3. Construct the shortest-path tree using the edges between each node and its parent.

The above algorithm guarantees the existence of shortest-path trees. Like minimum spanning trees, shortest-path trees in general are not unique.

In graphs for which all edges weights equal one, shortest path trees coincide with breadth-first search trees.

In graphs that have negative cycles, the set of shortest simple paths from v to all other vertices do not necessarily form a tree.

3.2.4.Work Load Assignment:

A disseminator of road A, vi sends a trial message, asking for workload delegation, toward intersection IAD of road D. Vehicles on the routing path forward the received messages toward IAD using geographic routing. Suppose that vehicle

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vj receives the message and detects that its distance to IAD is shorter than the communication range, then it can reach vehicles in the intersection. If vj itself turns onto road D at this intersection, then it accepts the workload. If not, vj records its previous hop vehicle vm. Searching for the workload receiver, considering that it can directly reach the intersection. vj broadcasts in the intersection looking for the workload receivers.

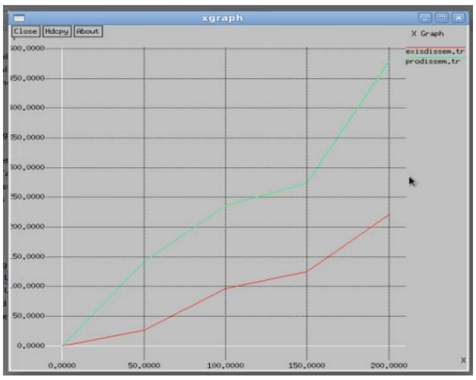
To reduce communication overhead in workload assignment, we let the disseminator pack the delegation messages according to the delegation tree. Before sending delegation messages, disseminator vi first classifies intersections according to their directions. Then, the delegation messages are routed to the intersections of the same directions together to avoid redundant forwarding.

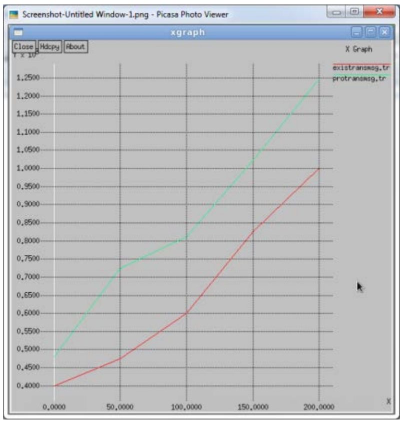
4. Results:

Performance Evaluation:

The total number of transmitted messages in a normal traffic scenario, which includes messages of broadcasting data, receiver acknowledgment, and workload delegation, under different dissemination intervals.

Transmitted Message = Number of Nodes/ Received Message





5. Conclusion:

This project proposed the DOVE in VANET. In first this project initialized all nodes in the network. The shortest tree routing applied for the network. This routing is used for finding the shortest path for data transmission. This project proposed the workload assignment. This workload assignment is used to improve efficiency of road dissemination. The results show the performance of the proposed system. It has light overhead and low delay.

Reference:

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