**A Synopsis on**

**Efficient Routing Algorithm in VANET’s**

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**Methodology/Planning of Work:**

## Routing Protocols for VANETs

The routing protocols proposed for WSNs are classified considering several architectural factors.

**Ad Hoc Routing**

VANET and MANET share the same principle: not relying on fixed infrastructure for communication, and have many similarities, *e.g.*, self-organization, self-management, low bandwidth and short radio transmission range. Thus, most ad hoc routing protocols are still

applicable, such as AODV (Ad-hoc On-demand Distance Vector) and DSR (Dynamic Source Routing). AODV and DSR are designed for general purpose mobile ad hoc networks and do not maintain routes unless they are needed. Hence, they can reduce overhead, especially in scenarios with a small number of network flows.

However, VANET differs from MANET by its highly dynamic topology. A number of studies have been done to simulate and compare the performance of routing protocols in various traffic conditions in VANETs. The simulation results showed that most ad hoc routing protocols (*e.g.*, AODV and DSR) suffer from highly dynamic nature of node mobility because they tend to have poor route convergence and low communication throughput.

**Position-Based Routing**

Position-based routing bases forwarding decisions on position information. Thus, there are several requirements on the availability of position information: first of all, position-based routing requires position-awareness of all participating nodes. Node movement in VANETs is usually restricted in just bidirectional movements constrained along roads and streets. So routing strategies that use geographical location information obtained from street maps, traffic models or even more prevalent navigational systems on-board the vehicles make sense. This fact receives support from a number of studies that compare the performance of topology-based routing (such as AODV and DSR) [18] against position-based routing strategies in urban as well highway traffic scenarios Therefore, geographic

routing (position-based routing) has been identified as a more promising routing paradigm

for VANETs. Most position based routing algorithms base forwarding decisions on location information.

**Geographic Source Routing**

(GSR) that assumes the aid of a street map in city environments. GSR essentially uses a Reactive Location Service (RLS) to get the destination position. The algorithm needs global knowledge of the city topology as it is provided by a static street map. Given this information, the sender determines the junctions that have to be traversed

by the packet using the Dijkstra’s shortest path algorithm. Forwarding between junctions is then done in a position-based fashion. By combining the geographic routing and topological knowledge from street maps, GSR proposes a promising routing strategy for VANETs in city environments.The simulation results demonstrate that GSR has better average delivery rate, smaller total bandwidth consumption, similar latency of first

delivered packet with DSR and AODV.

**Broadcast Routing**

Broadcast is a frequently used routing method in VANETs, such as sharing traffic, weather, emergency, road condition among vehicles, and delivering advertisements and announcements. Broadcast is also used in unicast routing protocols (routing discovery phase) to find an efficient route to the destination. When the message needs to be disseminated to the vehicles beyond the transmission range, multi-hop is used. The

simplest way to implement a broadcast service is flooding in which each node re-broadcasts messages to all of its neighbors except the one it got this message from. Flooding guarantees the message will eventually reach all nodes in the network [9], [14]. Flooding performs relatively well for a limited small number of nodes and is easy to be implemented. But when the number of nodes in the network increases, the performance

drops quickly. The bandwidth requested for one broadcast message transmission can increase exponentially. As each node receives and broadcasts the message almost at the same time, this causes contentions and collisions, broadcast storms and high bandwidth consumption. Flooding may have a very significant overhead and selective

forwarding can be used to avoid network congestion.

We will try to enhance the efficiency of existing algorithms or will make a new algorithm combining the various advantages of different pre existing algorithms.

**References:**

[1]. V. Namboodiri, M. Agarwal, and L. Gao, ―A study on the feasibility of mobile gateways for vehicular adhoc networks,‖ in Proceedings of the First International

Workshop on Vehicular Ad Hoc Networks, pp. 66–75, 2004.

[2] S. S. Manvi, M. S. Kakkasageri, ―Issues in mobile adhoc networks for vehicular communication‖, IETE Technical Review, volume 25, No. 2, pp. 59-72, March- April, 2008

[3] C.E. Perkins and E.M. Royer, ―Ad-hoc on demand distance vector routing,‖ in Proceedings of the 2nd IEEE Workshop on Mobile Computing Systems and Applications,pp. 90–100, Feb. 1999.

[4] D.B. Johnson and D.A. Maltz, ―Dynamic source routing in ad hoc wireless networks,‖ in Mobile Computing, vol. 353.

[5] F. Akyildiz, W. Su, Y. S. Subramaniam, and E. Cayirci, ―A Survey on Sensor Networks,‖ IEEE Communications Magazine, vol. 40, no. 8, pp. 102-114, August 2002.