International Journal of Synthetic Emotions
Volume 9 • Issue 1 • January-June 2018

Re-Broadcast AODV(reAODV) Based Routing Protocol Modification Over AODV for VANET In City Scenario

Soumen Saha, University of Calcutta, Kolkata, India
Utpal Roy, Visva-Bharati University, Santiniketan, India
D.D. Sinha, University of Calcutta, Kolkata, India

ABSTRACT

Vehicular ad-hoc networks or VANETs are a new method of training an ad-hoc network in traffic. The authors have numbers of routing algorithms on a MANET. But none of them works efficiently in a VANET with respect to being a safe and secure transport system. The authors have proposed a modification on an AODV routing algorithm for VANET with the introduction of the double-ended queue or dqAODV in a request packet header. A comparable good result was found in the throughput. In the present work, the authors introduce a modification of an original AODV by applying a partial re-broadcast of the request packet (RREQ) of an AODV. They found a comparable result in the throughput of the packet delivery aspect for this work with the original algorithm and dqAODV. This is compared to the complexity in the original AODV algorithm.

KEYWORDS

AODV, Broadcast, Dequeue, NCTUns, RREP, RREQ, VANET

1. INTRODUCTION

In present traffic, world traffic system is evolving with automation. Hence, we need some extra safety and it is much more complicated than usual traffic system. Taking consideration all these aspects, a new type of ad-hoc network communication is introduced. It is called VANET. This type of network communication is classified into three different way as shown in Figure 1.

VANET is modified to Mobile Ad-hoc Network or MANET. It is a self-regulatory and automatic wireless communication system of the network. We required some better identification, road traffic condition safety, etc., of each node or vehicle to drive this network. In this approach, the vehicles move on client-server approach and they need to exchange data or information with each other. We have several routing protocols (Figure 2) to perform this operation.

1.1. Proactive Routing Protocol

This is a table-driven approach it needs to keep all routing information before actual transmission starts. But, it is the worst approach for a dynamic structure. This also produces large space and time complexity. We have some well-known Proactive routing protocol such as FSR, OLSR, DSDV (Modak, Saha, Roy, & Sinha, 2014; Perkins, Belding-Royer & Das, 2003; Johnson, Hu & Maltz, 2007; Gerla, Hong & Pei, 2002; Clausen & Jacquet, 2003).

DOI: 10.4018/IJSE.2018010105

Figure 1. Type of VANET

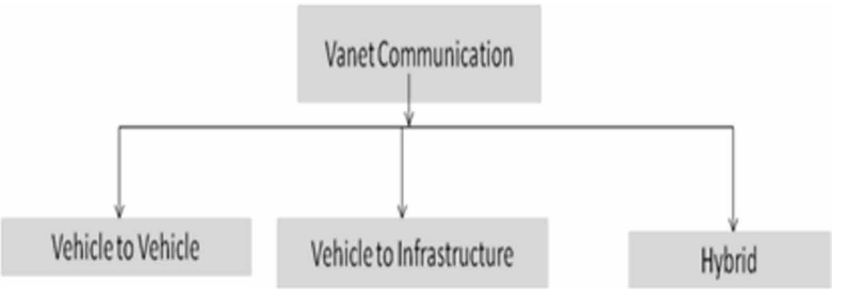
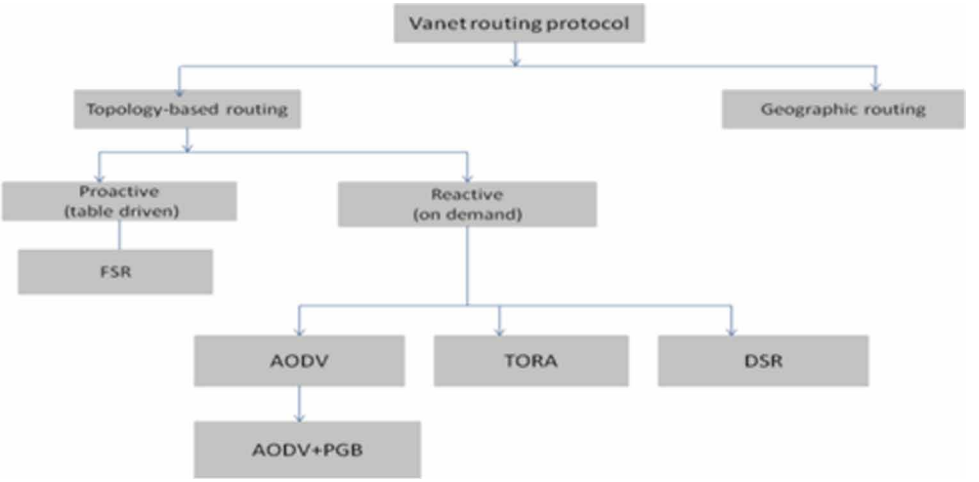


Figure 2. VANET routing algorithm classification



1.2. Reactive Routing Protocol

In this approach, it works on hop forwarding approach. It builds dynamic routing information. Therefore, it is more suitable for VANET structure. It works on the principle of broadcast mechanism until destination node reached. Some examples of In Reactive routing protocol are reactive routing protocols are DSR, AODV, and TORA (Temporally-Ordered Routing Algorithm, n.d.).

1.2.1. Ad-Hoc On-Demand Distance Vector (AODV)

AODV or Ad hoc On-demand Distance Vector routing protocol popular and supposed to be the best performance efficient routing protocol in VANET communication. It is dynamic and self-starting with multi-hop routing algorithm. It is also suitable for highly dynamic environment (Perkins, Belding-Royer & Das, 2003; Johnson, Hu & Maltz, 2007; Gerla, Hong & Pei, 2002; Clausen & Jacquet, 2003). This AODV first broadcast request packet(RREQ) to its neighbor (Figure 3) next, it waits for reply packet (RREP) as unicast from the destination within time limit. Once it receives RREP, it starts communication.

1.2.2. Control Messages of AODV

AODV has three types of the message as control and it is used to discovering and maintain the path. It works with 3 types packets (Perkins, Belding-Royer & Das, 2003; Johnson, Hu & Maltz, 2007;

Flexible and Hybrid Action Selection Process for the Control of Highly Dynamic Multi-Robot Systems

Lounis Adouane (2016). *Handbook of Research on Design, Control, and Modeling of Swarm Robotics (pp. 565-595).*

www.irma-international.org/chapter/flexible-and-hybrid-action-selection-process-for-the-control-of-highly-dynamic-multi-robot-systems/142018