Chapter 8

The Efficient Management of Renewable Energy Resources for Vanet-Cloud Communication

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ABSTRACT

Vehicular ad hoc networks (VANET) are networks that interconnect road and vehicles. The mobile nodes are used to connect themselves in self-organized manner. VANET is valuable that gives better performance and assures safe transportation system in prospect. Few of them are covered that helps in knowing the best protocol to be used in particular work. Initially, renewable energy is considered to be those sources that are derived either directly or indirectly from solar energy. Due to emission of harmful gases, in VANET, use of renewable resources come in existence. In another section of the chapter, various energy issues in VANET have been highlighted and added the concept of VANET-CLOUD. As cloud computing technologies have potential to improve the travelling experience and safety of roads by giving provision of various solutions like traffic lights synchronization, alternative routes, etc., VANET-CLOUD has been added at the end of the chapter.

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The Efficient Management of Renewable Energy Resources

INTRODUCTION

Vehicular Ad hoc Networks (VANETs) are networks that interconnect road and vehicles. The mobile nodes are used to connect themselves in self-organized and decentralized manner in case of mobile ad hoc network (MANET). Multi-hop routes may also be established by it. If mobile nodes are cars than it is called vehicular ad hoc network (Watfa et al, 2010). To create a mobile network moving cars are used as nodes in technology used by VANET. It turns every cars in a network act as wireless node or router allow to connect them in between the area of 100 to 300 meters or a network is created in a wide range. In order to create a mobile internet other cars can join in connecting vehicles to one another if any cars drop out of the network or can say it fall out of the signal range. Fixed equipment can belong to the government or private network operators or service providers (Khekare et al, 2012).

Firstly fire and police vehicles are integrated to this technology so that they can communicate with each other for safety purposes. Between vehicles and nearby fixed roadside equipment and between nearby vehicles a number of deployment architectures are allowed by advancing trends in ad hoc network scenarios. Dedicated short range communication (DSRC) like Wi-Fi type of wireless technology is expected to be implement by VANET. Satellite, WiMAX and Cellular are other wireless technologies. It can also be viewed as Intelligent Transportation Systems (ITS) component (Kumar et al, 2012). In VANETs several different applications include safety applications that are concern with making driving much safer, mobile commerce and other information services that helps driver in getting information about accidents, congestion, traffic jams and driving hazards.

As compared to MANETs, VANETs have several different aspects such as there is rapid change in topology due to high velocity movement of nodes. In case of VANETs security is indispensable because it is more prone to several attacks.

I: Infrastructure
V: Vehicle

The aim of this paper is to give brief details about VANET, their characteristics and various routing protocols related to it. VANET is not a new topic but still it provide new research challenges and problems and its main objective is to help group of vehicles in setting and maintaining a communication network among them without the use of any controller and central base station (Zeadally et al, 2010). Main motive of this survey paper is to check that which protocols has good performance. The other objective of this paper is to give review on renewable resources for VANET. Technologies used for supply of renewable energy and various energy routing protocol. An energy issue in VANET also has been highlighted. The next section of this paper covers the communication model of VANET-CLOUD then ended this work with various future applications of VANET (Yan et al, 2008).
Simulation of Stock Prediction System using Artificial Neural Networks
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