Coverage Measurement Of Data Dissemination In VANETs

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Abstract:

Vehicular ad hoc network (VANET) is an example of mobile ad hoc network (MANETs), one of application developed recently of ITS (Intelligent Transportation Systems). This network component mainly of vehicles and road infrastructure, connected each to other for exchange traffic data (V2V communication and V2I communication) .

Among the most treatment ideas in this field, the improved data traffic dissemination in VANET .In this presentation we choose a geocast method proposed for best information dissemination among mobile vehicles in VANETs. And we justify our results using the modeling and simulation techniques applied.

Key Words: Warning Information, Dissemination, VANETs, Simulation, Modeling.

Introduction:

Data dissemination is the fundamental operation in vehicular ad hoc networks (VANETs) which is characterized by rapidly dynamic topology, intermittent connectivity, and high mobility of vehicle nodes, most of the existing works take advantage of the inter-vehicle communication to ensure information dissemination

Our topic combines between two subdomains: vehicular ad hoc network and simulation. The first one Vehicular ad hoc networks (VANETs): it has an important role in ITS, now a day it is considered as one of the promising field of research.

VANETs are based generally on short-range wireless communication (e.g., IEEE 802.11) between vehicles, and do not require any investment besides the wireless network interfaces that will be a standard feature in the next generation of vehicles.

The second sub area offers analysis and technical design of the most effective complex systems it is the Simulation and Modelling field which offers a digital prototype of a model to predict its performance in the real world, and helps engineers understand, under what conditions, and in which ways a part could fail and what are the best requirements for the simulation model.

Our first contribution is to build a simulation model in order to identify the shortcomings of the approaches and mechanisms of VANETs networks in general .The second contribution is to propose an efficient algorithm for data dissemination approach. All this by using the modeling and simulation techniques applied in networks fields.

Methods and materials:

As noted before, our work is based on the simulation approach to study VANET network performance.

Among the various soft-wares in this domain we choose OMNET++ and other tools such as: SUMO, VEINS to achieve our results and to demonstrate the effectiveness of our approach.

We use OMNET++ because it offers many facilities comparing with other software like NS2, it is an object-oriented discrete event simulator based on C ++. It was designed to simulate the communication network systems, systems multi processors, and other distributed systems. OMNET ++ is an open source project.

The main advantage of OMNET ++ is its ease of learning, integration of new modules and the modification of those already implemented.

Results:

We have achieved a 45% in the drafting of the state of the art, by developing two main ideas

The first: an analysis of different approaches performances proposed previously which concern data dissemination in VANETs networks.

The second is the development of a simulation model, to improve previous approaches.

Conclusion:

We have improved a previous mechanism for disseminating warning messages in VANETs. We utilize the simulation to examine all the possible situation for more efficiency of disseminating.

We observed the performance of the model with respect to various parameter settings. Results show that this model can successfully inform affected vehicles in the network with few broadcasts.

The future research will include the prediction of vehicle mobility.

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