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ANALYSIS OF AN IEEE 802.11 BROADCAST SCHEME IN VEHICULAR AD HOC NETWORKS.

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***Abstract*— This paper proposes another structure is proposed for inspecting the power outage execution of a discontinuously convey advantage in vehicular frameworks. Using this structure we can learn higher-Managed bits of knowledge of various discretionary variables related with the framework, including message delay and the amount of some groups from neighborhood center points.. We also give numerical results to consider the power outage execution of IEEE 802.11 medium get the opportunity to control with an essential ALOHA like tradition.**

Keywords-broacast; medium access control; performance; reliability; wireless ad hoc networks

I. INTRODUCTION

Vehicular-2-Vehicular (V2V) correspondence is a promising advance for upgrading activity proficiency and moving forward wellbeing conditions for drivers out and about. In particular, V2V correspondence assumes an essential part in dynamic security applications that expansion the level of a driver's situational mindfulness. To guarantee that dynamic wellbeing applications effectively enhance wellbeing conditions, the hidden correspondence innovation must empower quick and dependable trade of data between neighboring vehicles in a situation described by high portability and high thickness. Devoted short range correspondences (DSRC), authorized at 5.9 GHz, is a remote innovation that has the potential to meet the fundamental correspondence prerequisites of different vehicular security (and non-wellbeing) applications [1]. Table I contains a few cases of security applications with their correspondence prerequisites. From this table, we can see that one key component of trading status data in security applications is beaconing, which is based upon the occasional communicate of status messages containing no less than a vehicle's positional and kinematics information. Thus, describing beaconing execution is a key stride simultaneously of outlining and enhancing correspondence innovations for vehicular security application .

Significant work has been done on analyzing saturated performance and unsaturated performance of broadcast scheme using a 1-D Markov chain model, discrete time M/G/1 queueing model or their combination[1], [2], [3]. In [2], saturation performance of the broadcast scheme in IEEE 802.11 is studied by constructing an analytical model to characterize the operation of the backoff counter for broadcast service. They point out that analytical models for saturation performance evaluation of IEEE 802.11 unicast communication cannot simply be reduced for the analysis of broadcast service and give constructive suggestions to improve the performance of the broadcast service. Note that the above modeling and simulation are based on saturated traffic. In practice, network traffic conditions are not always saturated.

II. ROUTING PROTOCOL

A. Geographic Routing

This routing scheme is based on the location of the destination node and source node. By knowing the position of destination node through GPS or by sending beacon messages and by knowing own position, the message can be directly routed. There is no need to know the topology of the network.

B. Topology based Routing

This routing scheme considers that how the route is selected for transferring the data from source to destination.

C. Cluster based Routing

This routing scheme is based on the selection of the node which can be considered as the cluster head and all other nodes other than the cluster head are known as cluster member. When any node fails to make connection with other clusters then that node is called as border node.

D. Hybrid Routing

This routing scheme basically takes the best of topological and positional based routing schemes.

E. Data fusion based Routing

This routing scheme is based on sending the information which is of interest or important, it reduces data from the redundant nodes. From cooperative nodes to achieve a complete view it fuses the information from complementary nodes.

III. CHALLENGES IN VANETS

A. **Routing Protocols**

Researchers have utilized many routing protocols to effectively route the data but the problem is not yet solved. Adaptation of certain effective routing protocols is needed.

B. Connectivity

To achieve the maximum performance out of the network, there should be a good connection between the vehicles and the infrastructure. For this, design the network effectively so that the repeated disconnection problems can be solved.

***C.* Mobility**

Due to high mobility of vehicles, the connection breaks down and the information gets dissipated. There is a need to check the performance of the network after considering certain parameters.

D. Security and Privacy

No private information of user is passed among the vehicles is a difficult challenge that has to be worked upon. Certain algorithms are required which can work and give a solution for it.

E. Validation

Before checking the performance of VANETs in real time, the critical system properties have to be checked. To validate it earlier, field operational test is to be conducted, but conducting this test is also a challenge.

IV. CHARACTERISTICS OF VANETS

A. Dynamic topology

Due to high speed of the vehicles, vehicular ad hoc network has a constantly changing topology.

***B.* Mobility models**

Due to frequent topology variation there is need of an accurate mobility model to implement vehicular ad hoc network efficiently.

***C.* Infinite energy supply**

As compared to another mobile ad hoc networks the nodes in vehicular ad hoc network having a longer battery life.

D. Localization functionality

Vehicles are outfitted with GPS and GALILEO (positioning systems) incorporated by electronics maps.

V. LITERAATURE SURVEY

Due to Traffic congestions we are facing many problems; few are (somehow) assured like blocking in between due to building blocks, time of day or bottle-necks and a few are unpredictable like mishaps, weather condition and human conduct. The more severe is the condition when congestion is, the longer it'll go for clear once the reason for its eliminated. The power for a driver to understand the traffic conditions over the road ahead can alter him/her to hunt another routes saving time and fuel. Once several drivers have this tact , traffic congestions, explicitly those associated with localized incidents like accidents or temporary distraction are going to be less severe and solely the vehicle within the immediate neighborhood of the incident, at the time of the incident, are going to be affected. This may result in a far a lot of economical use of our road infrastructure.
Some existing traffic congestion detection methods include:

A. **Detection coil**: the road vehicle through the wire embedded within the coil, magnetic flux lines through the interference of the coil and generates a voltage within the coil, the voltage is amplified by the high gain electro nice equipment for the detector relay to attain detect ion functions. However there's no directional coil detection technique, the detection space isn't clear, repair or install interrupting traffic, poignant pavement life, simply broken.

B. **Coil detection methods**: coil with one detector works identical, however it will give a lot of correct speed parameters. Coil detection ways ought to be repaired or put in interrupting traffic, and is probably going to have an effect on the lifetime of the road, simply broken, and costlier than single coil.

C. **Video detection method:** a picture pickup space of a camera close to the detection purpose, a computer program for image process, identification, thereby sleuthing the vehicle... Higher detection accuracy by the weather and therefore the value of video detection technique detects the brightness round the space affected.

D. **Microwave detection methods:** by transmittal microwave signals, vehicle radiolocation reflector Microwave, come back the detector relay antennas to attain detection functions. Microwave discovering Ways cannot detect a stationary or slow moving vehicle, susceptible to external influences, once the selection of domain values transmitted wave inappropriate inclined persons or things, leading to false consciousness. The existing traffic jam detection ways usually solely reach static, blurred traffic data detection, like data on the complete road

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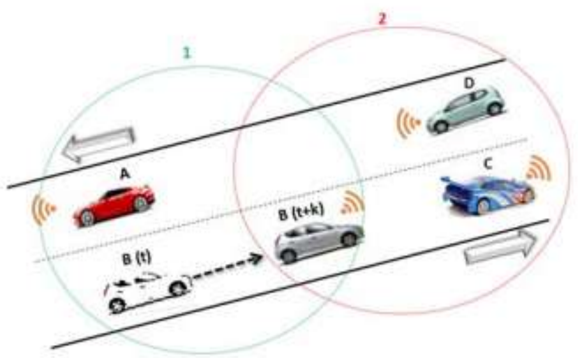
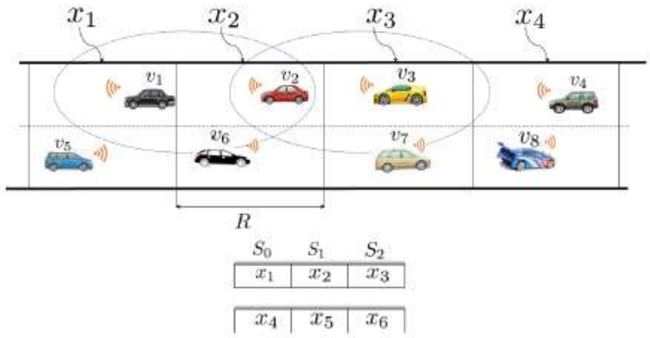
congestion, road traffic conditions can't be achieved for the detection data.

VI. TDMA PROBLEM STATEMENT

When a distributed scheme is used to allocate a time slot, two types of collision can occur [13]: access collision between vehicles trying to access the same available time slots, and merging collisions between vehicles using the same time slots. When the traffic density is high, the rate of access and merging collisions will increase rapidly, which will lead to inefficient channel utilization and high access delay for safety applications. An access collision problem occurs when two or more vehicles within the same two-hop neighborhood set attempt to access the same available time slot. This problem is likely to happen when a distributed scheme is used. On the other hand, merging collisions occur when two vehicles in different two-hop sets accessing the same time slot become members of the same two-hop set due to changes in their position. Generally, in VANETs, merging collisions are likely to occur in the following cases:
false cognizance. The current automobile overload recognition ways for the most part exclusively achieve static, obscured activity information discovery, similar to information on the total street clog, street movement conditions can't be accomplished for the identification information.
Vehicles moving at different speeds. ·
Vehicles moving in opposite directions. ·
There are RSUs installed along the road



To prevent collisions on the transmission channel, our TDMA scheduling mechanism requires that every packet transmitted by any vehicle must contain additional information, called Frame Information (FI). The FI consists of a set of ID Fields (IDFs) of size equal to the number of time slots per frame, τ . Each IDF is dedicated to the corresponding time slot of a frame. The basic FI structure is shown in Figure 3. Each time slot is dynamically reserved by an active vehicle (the vehicle whose communication device is transmitting) for collision-free delivery of safety messages or other control messages. The VC ID field contains the ID of the vehicle that is accessing this slot. Each vehicle is identified by its MAC address. The SLT STS field contains the status of each slot which indicates whether the slot is Idle, Busy or in Collision. Finally, the PKT TYP field indicates the type of packet transmitted by the vehicle, i.e. periodic information or event-driven safety messages.



TDMA slot scheduling mechanism Our distributed TDMA scheduling mechanism uses vehicles location and slot reuse concept to ensure that vehicles in adjacent areas have collision-free schedule. The channel time is partitioned into frames and each frame is further partitioned into three sets of time slots $S0$, $S1$, and $S2$ of size equal to $n1$, $n2$ and $n3$, respectively. These sets are associated with vehicles moving in the areas xi, xi+1, and xi+2, respectively. As shown in Figure 2, by dividing the time slots into three sets, vehicles $v1$ and $v3$ that are moving within the two areas $x1$ and $x3$, respectively, can not transmit simultaneously to vehicle $v2$ because they are accessing disjoint sets of time slots. Therefore, our TDMA scheduling mechanism can decrease the collisions rate caused by the hidden node problem in VeMAC. In each area, the vehicles access the time slots associated to their locations with the same probability. In the rest of the paper, we adopt the following notations: · Sj (v): The set of time slots associated to the area in which the vehicle v is traveling. · N(v): The set of neighbors1 of vehicle v on the transmission channel. Every active vehicle in the network should be allocated a fixed slot in the frame for safety messages or other control packet transmissions. It is obvious that a vehicle's slot cannot be used by any neighboring vehicles within the same area or in adjacent areas, otherwise collisions will occur. The goal of this work is to propose an efficient slot reuse algorithm without having to use expensive spectrum and complex broadband mechanisms such as FDMA or CDMA. In fact, the three subsets of time slots will be reused between neighboring areas in such a way no vehicle in different adjacent areas can access the channel at the same time, and thus no interference will occur.

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