

Comparison of Algorithm's for Congestion Control Network in Vehicular Adhoc Network Using NS-2 Simulator

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ABSTRACT

I propose a scattered, strong message action blockage control and spread figuring 'CCMDA' using ITS that impacts productive use of correspondence to channel, keeps up zone insurance, more secure voyaging and cool and gives drivers unflinching information on change hinders over long portions. Headway articles should support with each other by using vehicle-to-Infrastructure (V2I) and Vehicle-to-vehicle (V2V) correspondence approaches, as the correspondence information is the best unutilized altogether factor in ITS for reducing message movement blockages in correspondence channel (CCH), saving travel time, diminishing stack up, decreasing air pollutions, lowering centrality use and what's more giving asking for information in the midst of upgrades. Also, we exhibit a versatile reenactment and affirmation structure we engineered and made to help our system by demonstrating its achievability in various conditions and to help in the inventive work of this and future VANET applications. The fundamental inspiration driving this check reduce the auto collisions and road trafficking by the stop up control expecting that can ensure high consistent quality and perfect transport of scattering event driven security messages to one center point to various center core interests. In this recommendation we proposed an idea L-Routes, message transmissions obey astounding structures and they are required to help for execution of stop up control refreshes. L-Route is a predefined course to disseminate information cars and besides transports swiftly. Consequently, L-Routes should have an ability to join more versatile concentrations with the objective that system can be best used. This course fulfilling gift messages speedy one center point to various core interests.

Keywords

VANET, Networking, CCMDA, Congestion, L-Route, Broadcasting.

1. INTRODUCTION

The proposition adjusts the present impede control to the remote condition that is a minor piece at any given moment changing into a basic part of the vehicular remarkably assigned system. Today transportation thriving is a hero among the most essential businesses of vehicular structures. Vehicles can pass on data on activity, street mishaps, street trafficking and street conditions with each other, and also with settled structure focus focuses (RSU). The dispersal of crisis messages to all vehicles is a fundamental issue in flood hour gridlock conditions, for

example, for occasions if there should rise an occasion of mischance the spread of security messages may predict aide incidents and expect a basic part in the guarantee of individuals. It is along these lines fundamental to guarantee a solid telecom of caution and prepared messages, with low development delay. This thriving message is called occasion driven message. We have taken a based paper in this paper proposed TMDA estimation and in this paper, novel Vehicle Ad-hoc Network (VANET) working for city action correspondences is appeared. This structure will make an open passage for examination of the upsides of auto based acquisition and spread of change information and what's more age and drifted execution of improvement control. For arranging purposes, the structure applies another Traffic Message Delivery Algorithm (TMDA).[1] But in this paper there is no depict the level of vehicles for correspondence we have improved the blockage control issue and proposed the CCMDA estimation, given the favored result over TMDA. In the flood hour gridlock zone, differentiating and variable correspondence requesting and improvement issues can occur at whatever point. Along these lines, most phenomenal and flawless data are relied on to be joined into correspondence customs by many research and activities. Notwithstanding the route that there has not been any intensive and standard message transport figuring meeting the necessities yet, two or three scientists have proposed calculations with the prospect of specific advancement data, for instance, the circuit of the attestations into the irregular signs for high dependability [2] and the possibility of vehicles' status and encompassing data in [3], and so on. This work bases on the difference in a framework for deter control issues: Congestion Control Message Delivery Algorithm (CCMDA) is a novel improvement controlling calculation expected for enhancing correspondence execution of a specific VANET arrange. The capability when showed up contrastingly in connection to another controlling convention is that CCMDA does not just entire single telecom approach, for example, the fundamental flooding, likelihood based methodology, territory based framework and neighborhoods-based begin [4], yet besides gets canny planning strategies by using the past development data for message transport at any given minute and depict the district of the vehicles for pass on messages one vehicle to another. In this suggestion we utilize L-Route for scrambling messages one focus point to another inside. It prescribes that the figuring with the mix of progress course data will be presented in every correspondence adaptability focus point with current activated data change contraptions and give propel courses to messages between the source and the target.

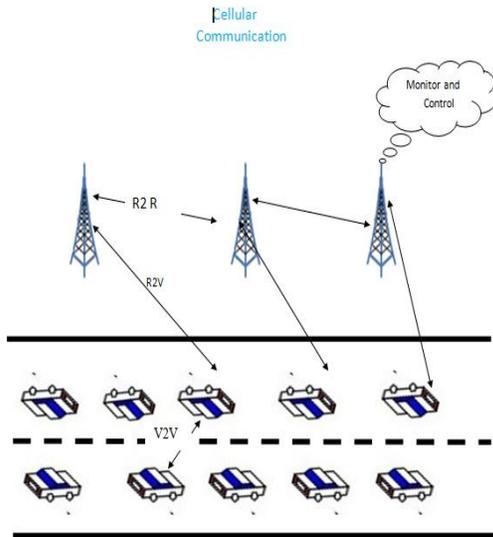


Fig 1: Vehicle to Infrastructure and Vehicle-to-Vehicle Communication

2. TRAFFIC CONGESTION CONTROL

Stop up control checks are wanted to discover zones of high activity thickness and low speeds. Every vehicle spreads the data it has gotten from its own specific rigging and from different sources and process the data got from different focuses in the system. Blockage control is just a singular of different vocations of ITS and it isn't proposed to be utilized as means for computerized driving yet rather as a mechanical get together to pass on data to the driver that will bolster him/her settle on choices to stay away from the developing improvement issues, for example, auto downpour and smart incident notice and whatnot. Quick and dependable predictable activity data is imperative gadget to gather guaranteed and skilled advancement condition. To accomplish this objective, activity things ought to compose with each other by utilizing Car-to-Infrastructure (C2I) and Car-to-Car (C2C) correspondence approaches, as the correspondence of data is the best unutilized absolutely factor in ITS for lessening improvement blockages, sparing travel time, diminishing auto accident, enhancing air contaminations, lowing significance utilization and in addition giving requesting data amidst advancements

3. PROPOSED SOLUTION

We proposed courses of action that depict the degree of vehicles in which high need messages would be send from source focus point to target focuses and we endorse a L-Route in high-way. This is a principal course, e.g. transport courses, used to pick next activities of focus focuses. Quickly, if messages achieve L-Routes, they will be speedier sent after the pre-made headings out of the L-Routes; else, they depend upon made telecom approaches in a way.

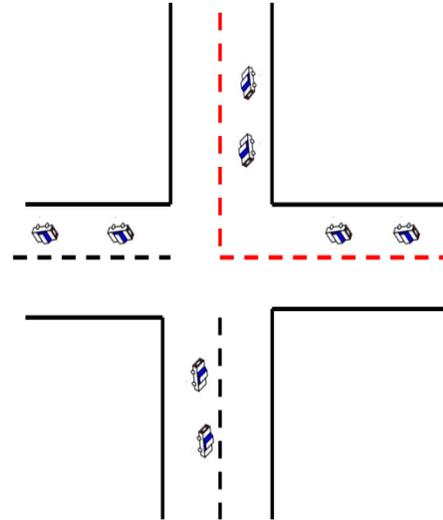


Fig 2: Show the traffic in High-Way in L-Route.

4. PROPOSED ALGORITHM

4.1 Pseudo Code of CCMDA in Broadcasting Messages

STEP 1: Event: Define the range between Ps and Pd

STEP 2: Finding the position of Pd, we calculate the $T(\text{avg.})$

STEP 3: $T(\text{avg.}) = (T_{d1} + T_{d2} + T_{d3} + \dots + T_{dn}) / n$

STEP 4: If $(T_{ack} < T_{avg})$ then

STEP 5: Add the node in the node list;

STEP 6: else

STEP 7: discard the node;

STEP 8: Event: the message received by the Pd

STEP 9: on the off chance that msg_id isn't in check_list at that point

STEP 10: gets the message;

STEP 11: else

STEP 12: dispose of the message;

STEP 13: Occasion: the message got from Neighbour or Ps

STEP 14: if $R = sr$ then

STEP 15: discard the msg;

STEP 16: else

STEP 17: if Pd = dst then

STEP 18: inform others to stop broadcasting;

STEP 19: else

STEP 20: if Ps is on L-Routes then

STEP 21: if Pd is on L-Routes then

- STEP 22:** when $T_c = T_{d1}$, farthest neighbor forward message;
- STEP 23:** Inform others between $\langle P_s \text{ to } P_d \rangle$ to stop broadcast;
- STEP 24:** Message is put away longer in this hub Pd;
- STEP 25:** else
- STEP 26:** if Direction of $P_d =$ Direction of S then
- STEP 27:** when $T_c = T_{d2}$, farthest neighbor forward message;
- STEP 28:** else
- STEP 29:** when $T_c = T_{d3}$, farthest neighbor forward message;
- STEP 30:** else
- STEP 31:** if Pdis on L-Routes then
- STEP 32:** when $T_c = T_{d1}$, farthest neighborforward message;
- STEP 33:** inform others between $\langle P_s \text{ to } P_d \rangle$ to stop broadcast;
- STEP 34:** message is stored longer in this node Pd;
- STEP 35:** else
- STEP 36:** when $T_c = T_{d1}$, farthest neighbor forward message;

4.2 CCMDA Overview

Clog Control Message Delivery Algorithm (CCMDA) is a novel change control figuring proposed for updating correspondence execution of a specific VANET manufacture. The refinement when wound from another organizing convention is that CCMDA does not just execute single telecom approach, for example, the key flooding, likelihood based structure, and neighborhood-based start, yet near gets depict the level of vehicles, tricky dealing with methods by using the prior change data for message transport at any given minute. In this figuring proposed the fragment to keep up a key separation from blockage issue in VANET. The calculation with the likelihood of activity course data will be implanted in every correspondence. Adaptability center point with current pushed information change contraptions and give streamlining courses to messages between the source and the objective obsession centers. CCMDA utilizes features of each kind of center concentrations for fit and strong advancement correspondences. For example, it doesn't simply abuse verbalization of auto center centers, yet furthermore misuse the upsides of controllable, booked, and anticipated transport centers; it doesn't simply allow clear telecom practices of vehicles, yet close to make occupations of higher point of confinement of transport center concentrations for truly mooring and sending the messages. In any case, these messages will be send predefine L-Routes and portray the level of vehicles.

4.3 Algorithm Details

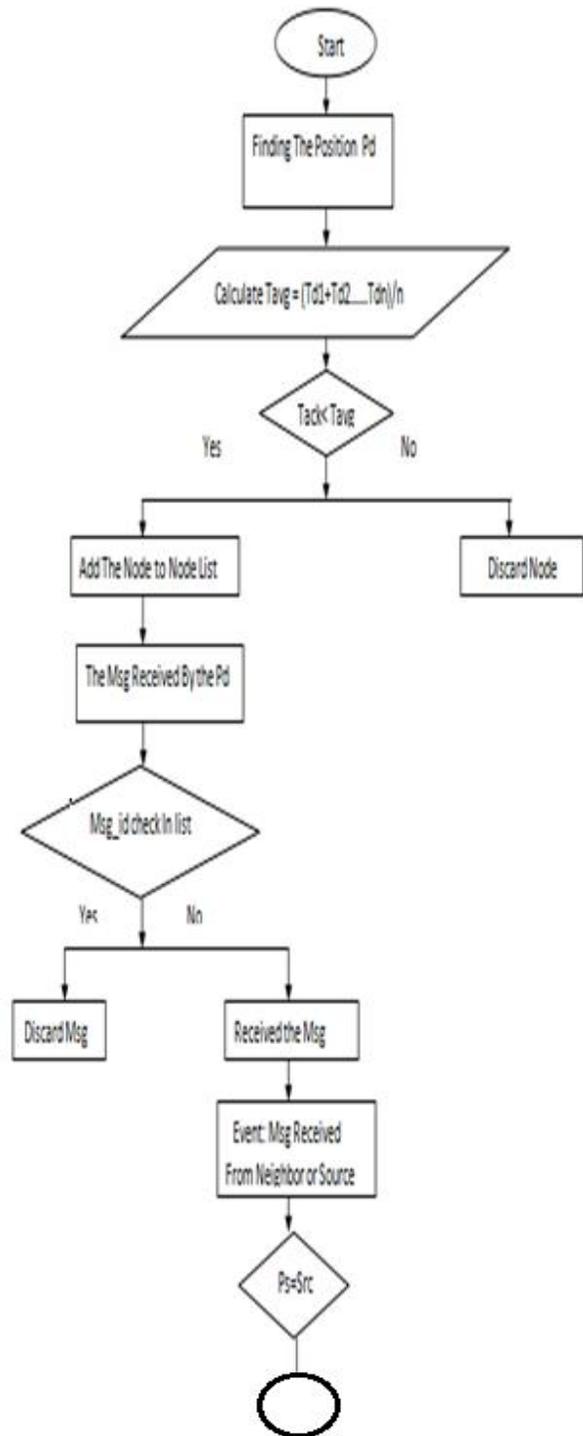
CCMDA could be restricted into two portions: (a) delineate the level of vehicles, and (b) getting of messages. In first district depict the level of vehicles for finding the circumstance of focal point of target. We take in the T_{avg} by the ordinary of timing to take the time accomplished messages of different center centers eg. There are $(1, 2, \dots, n)$ centers and the season of accomplished messages for different centers are $(T_{d1}, T_{d2}, \dots, T_{dn})$. To find T_{avg} to take the total of time of messages came to different center concentrations and confined by the total no. of center centers 'n' $T_{avg} = (T_{d1} + T_{d2} + T_{d3} + \dots + T_{dn}) / n$.

Estimation showing the pseudo-code of CCMDA for message persevering part. `Actually, above advances comprehend a particular sending instrument by utilizing additional roadway change related information. The general point is to address give storm issues. Two essential parts are associated with the structure. One is the likelihood of L-Route. This is a fundamental course, e.g., transport courses, used to pick next exercises of core interests. In case messages accomplish L-Routes, they will be speedier sent after the pre-spread out heading of the L-Routes; else, they rely on made telecom structures as is commonly said. Within centers around L-Route, despite the honest to goodness kind, are regulated as transports. In context of L-Route, another examination is about 'most emptied center point at first sends' (FNFS). Once a sender passes on a message to all neighbors, the most remote one inside the transmission range will deal with the message following the need over others. The need level is set by delays displayed in the running with pseudo-code of CCMDA. The musing is productive to control data effects to a particular degree. Message persevering purpose of repression is isolated into two events. From line 8 to 13, when a recipient Pd gets a message with the id msg_id , Pd should quickly check whether it gets an overabundance message. Each VANET center has a $check_list$ to store got msg_id . Thusly if the msg_id is found in the speedy review, Pd discards the message; for the most part, continues with the methodologies for another event (line 14 to 36). When Pd gets the message from its neighbors or source P_s , it needs to guarantee that the message does not glide back. By then if Pd is the objective center point, it in a general sense offers back to all neighbors with a stop run the show. Clearly, if Pd is an extensively captivating concentrate just, strides from line 13 to line 29 rely upon. To judge when to forward the message to neighbors, Pd needs to know neighbor's or P_s ' position (x, y) and its own specific position. This checks whether they are on L-Routes or not. In case both of P_s and Pd are on L-Routes, by then Pd moves the message at T_{d1} which incorporates current time (T_c) and a holding up delay d_1 . Inside the transmissions go, the delay d_1 will be diminished running with the expansion of partition between $\langle P_s, Pd \rangle$. That is, the most remote Pd will forward message at first. Furthermore, if P_s is on the L-Route regardless Pd isn't, the moving headings of Pd and P_s wind up basic. Same course of Pd and P_s ($D_r = D_s$) impacts the forward to occur at T_{d2} while the message is presented at T_{d3} for different presentation of Pd and P_s . The estimation of T_{d2} or T_{d3} is remarkable yet both contain a present time T_c , a deferral as appeared by the division d_1 and a pre-composed delay d_2 setup by the figuring. The regard organize is $T_{d1} < T_{d2} < T_{d3}$.

4.4. The Flow-Chart Of Proposed CCMDA Algorithm

The CCMDA check portray through flowchart which given underneath in flowchart first we discover the condition of focus purpose of goal 'Pd'. Position of Pd Calculate T_{avg} and check the estimation of this is more noteworthy than T_{ack} . In the event that T_{ack} isn't exactly to T_{avg} by then consolidate the middle in focus rundown generally dispose of the inside point. The message gotten by the Pd by then message id check under tight constraints list if no then dispose of the messages generally gets the messages. Message got from neighbors or source by then condition apply P_s is corresponding to source if yes by then dispose of the message generally Pd is objective if yes by then light up others focuses stop pass on the data. Here we consider the new thought of L-Route, this course predefine to data

broadcasting in which the blockage issue would not be happen and the message forward quick to another courses. In the event that Ps on L-Route if yes by then check position of Pd on L-Route if yes then current time Td1, the message forward to the most remote focus point first and no check the heading of Pd and Ps on the off chance that they same course then Tc is equivalent to Td2 most distant neighbor forward message generally Tc is equivalent to Td3 most remote neighbor forward message first. Check the condition of Pd on L-Route if yes then Tc is indistinguishable to Td1 most remote neighbor forward message first if this achieved by then stop confer the message source to objective generally.



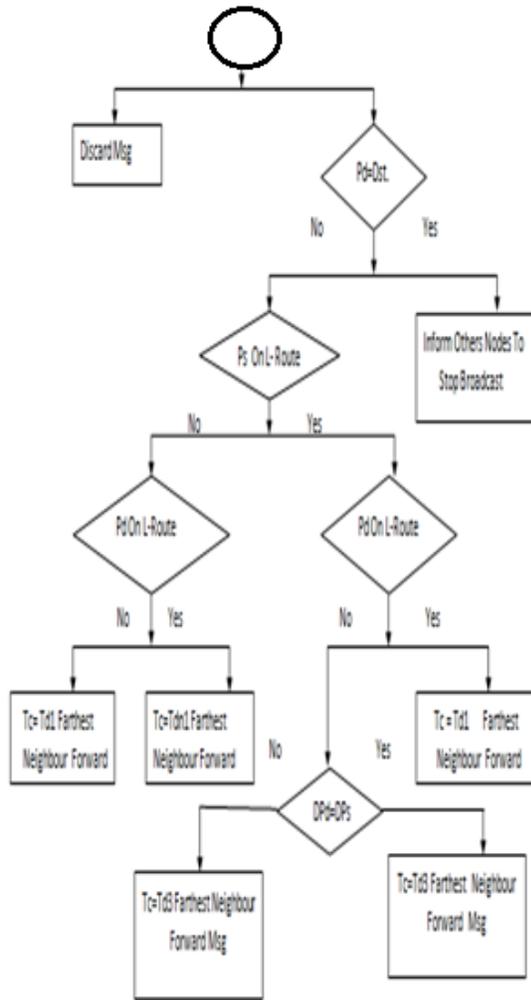


Fig 3: Flow-Chart of Proposed CCMDA Algorithm

4.5 Results Evaluation And Analysis

System correspondence execution examinations in perspective of two parameters one is end-to-end put off time (EDT) and another is message development rate (MDR).

- >End-to-End Delay Time (EDT)

It proposes the term of a message sent from source to objective over the system.

- >Message Delivery Rate (MDR)

It tends to a degree of great message transports source focus point to target focus.

5. THE COMPARISON OF ROUTING PROTOCOLS

5.1 AODV

Remote Ad hoc On-Demand Distance Vector (AODV) arranging custom weights on flexible astoundingly named structures (e.g., MANETs) nowadays. It is a responsive controlling tradition

which impacts a course for concentrates decisively when they to ask for it, being one of standard telecom sorting out traditions used start at now for both unicast and multicast arranging. The fundamental issue is the telecom storm, which endeavors to be kept up a key separation from and decreased in the proposed organizing custom CCMDA.

5.2 TMDA

Movement Message Delivery Algorithm passes on messages depending upon the possibility of pre-organized courses (I-Routes) in the city circumstances.

5.3 CCMDA

Movement Control Message Delivery Algorithm passes on messages relying on the likelihood of pre-arranged courses (L-Routes) in the high - way conditions. In light of general telecom approaches, CCMDA reduces pass on hurricanes and stop up issue in organize by techniques for specific sending structure, joined with geographic data.

6. RESULT IN VARIOUS DENSE NETWORK

Following figure look at EDT and MDR results by applying Congestion Control Message Delivery Algorithm (CCMDA), executing Ad hoc On-Demand Distance Vector (AODV) and Traffic Message Delivery Algorithm (TMDA) planning convention in low, medium and high thickness of systems self-governingly. There is a supposition in the examinations that the multiplication length 40 seconds and capricious source-to-target sets are permitted to trade particular proportion of messages (from 1 to 10) in low ,(from 1 to 50) in medium and (from 1 to 100) in high thickness organize. The general point is to examine whether CCMDA prompts less EDT and higher MDR in different conditions as opposed to an another present controlling custom; how degree the proportion of messages impact on correspondence execution; and how the case of EDT and MDR changes in various structure conditions e.g. low thickness coordinate, medium thickness structure and high thickness make.

6.1 LOW DENSITY NETWORK

Figure think about commonplace deferral of messages and conventional rate of messages, results by applying Congestion Control Message Delivery Algorithm (CCMDA), Traffic Message Delivery Algorithm (TMDA) and On-Demand Distance Vector (AODV) planning custom in low thickness sort out. As indicated by the graphs CCMDA demonstrates humblest deferral from 1 message to 10 messages for each testing time. So it is clearly appear in traces low common deferral and high normal rate of CCMDA superior to AODV and TMDA in low-thickness medium..

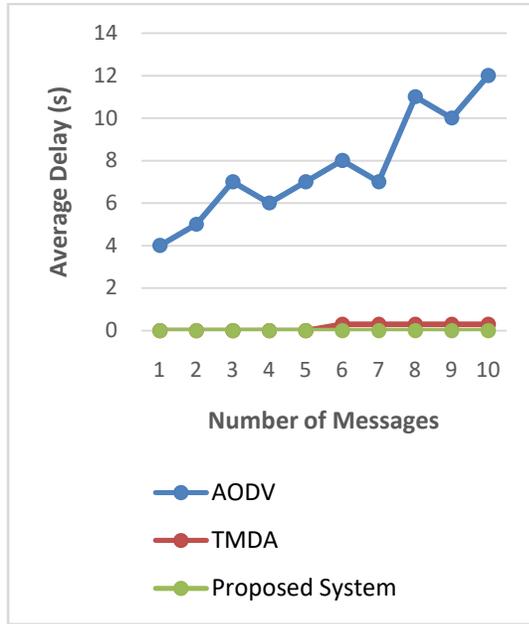


Fig 4: Delays in the low density of networks

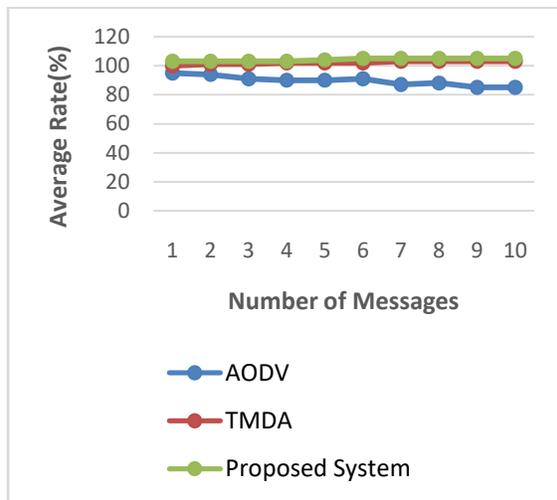


Fig 5: Rates in the low density networks

6.2 MEDIUM DENSITY NETWORK

Following figure think about average postponement of messages and customary rate of messages, results by applying Congestion Control Message Delivery Algorithm (CCMDA), Traffic Message Delivery Algorithm (TMDA) and On-Demand Distance Vector (AODV) planning convention in medium thickness engineer. As indicated by the outlines CCMDA demonstrates humblest deferral from 1 message to 50 messages for each testing time. So it is plainly appear in charts low customary suspension and high ordinary rate of CCMDA superior to AODV and TMDA in medium thickness medium.

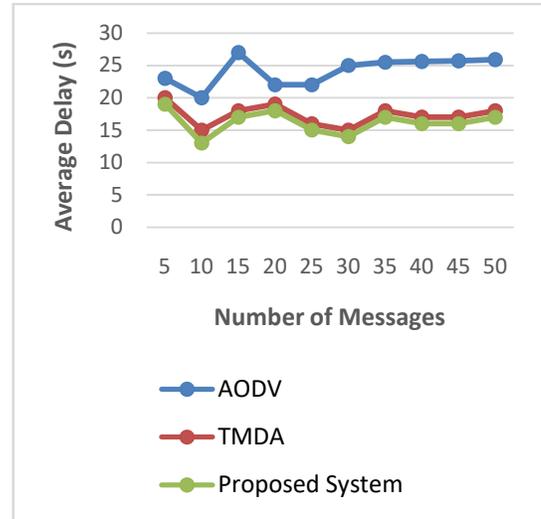


Fig 6: Average delays in medium Density network

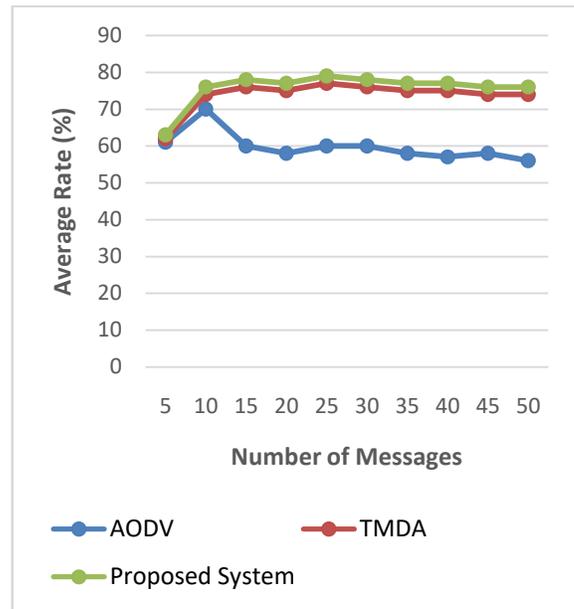


Fig 7: Average Rates in medium density network

6.3 HIGH DENSITY NETWORK

Following figure look at customary deferral of messages and run of the mill rate of messages, results by applying Congestion Control Message Delivery Algorithm (CCMDA), Traffic Message Delivery Algorithm (TMDA) and On-Demand Distance Vector (AODV) controlling convention in medium thickness compose. As appeared by the layouts CCMDA demonstrates humblest postponement from 1 message to 100 messages for each testing time, considering the roars lines run of the mill deferral and most lifted customary rate from the above lines than got from TMDA and AODV conventions. So it is obviously appear in plots low run of the mill suspension and high customary rate of CCMDA superior to AODV and TMDA in

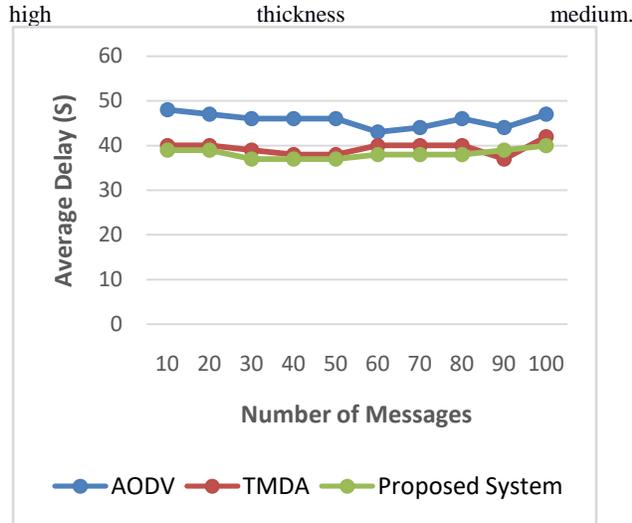


Fig 8: Average delays in the high density network

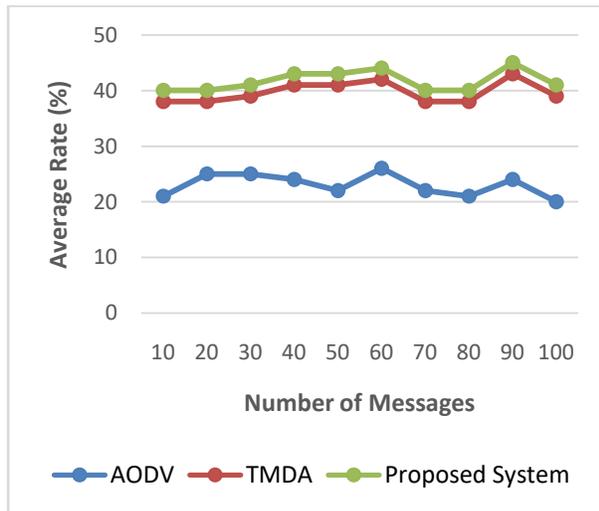


Fig 9: Average Rates in the high density network

7. CONCLUSION

This report kept an eye on the relationship of correspondence execution of typical deferral and ordinary rate of messages by using proposed figuring and undeniable arranging traditions (AODV and TMDA) in a novel VANET design. AODV and TMDA are coursed tradition used normally in with no planning framework, while, CCMMA is a beginning late proposed and upgraded of TMDA figuring. It not simply gets measures in setting of existing telecom figuring yet also high-way movement course information into the count, utilizing the probability of 'L-Route' open in vehicles and high-way. The inspiration driving these new controlling systems is to help the impact of the issues caused by past arranging traditions and also best relationship for the particular uses establishment. We plan a VANET outline, which contains two sorts of strikingly doled out correspondence objects – adaptable (automobiles), and static (road side units) ones.

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