1. LITERATURE REVIEW:

A lot of work has been carried out in VANET by researchers. This part of study briefly discuss on some of work done by those researchers. The work from various books, papers, articles, journals has been referred for this purpose. It is humble approach to thank those researchers whose work done will be referred in this research. Some of them are mentioned in this paper. Rest are enlisted in the reference section of this document.

**Boto Bako and Michael Weber (2011)**

In this paper, author’s analyzed and overview over VANET applications and showed different communication paradigms used for such applications. The importance of broadcast mechanisms for active safety applications is also studied. This was followed by an overview of the special network characteristics of VANETs. From that, a set of requirements is produced for broadcast protocols which have to be fulfilled for a successful deployment of VANET applications. Also a classification of broadcast protocols was introduced which enables a more systematic analysis of broadcast mechanisms. The main focus was on hybrid protocols, which combine positive properties of more protocol classes and offer thereby promising characteristics for broadcast applications in vehicular networks. It is shown that deterministic protocols are heavily affected by node mobility and network load, and they are therefore not suitable for VANET applications. Thus, with increasing node density and network load their performance drop significantly and they are therefore unfeasible for VANETs. On the other hand, the RAAG achieves very promising results in sparse as well as in dense networks. It is shown that the message loss avoidance mechanism yields a significant performance gain in sparse scenarios and increases the robustness of the protocol also in dense networks. Finally authors conclude that RAAG is predestinated for dynamic networks like VANETs and satisfies the requirements in such networks also in the presence of critical safety applications [4].

**Irshad Ahmed Sumra, Halabi Hasbullah, Iftikhar Ahmad, Jamalul-lail bin Ab Manan (2011)**

Authors analyze various existing approach and shows that confidentiality, authentication, availability, privacy and integrity are the basic requirements for safety and non safety applications. The role of integrity is prominent in vehicular environment and content of the message should not alter from sender to receiver. If the content of the message is changed then the network is no more reliable. Reducing death rate and avoiding congestion on roads is key objective of vehicular network. Security and trust are becoming increasingly key challenges in vehicular network. Author’s present a new model for chain of trust within vehicular to handle all types of attacks and maintain the integrity of safety messages. DAA scheme develop the chain of trust and also to solve the problem of privacy of users while communicating with other vehicles or with RSU [20].

**Chrysostomos Chrysostomou, Constantinos Djouvas, Lambros Lambrinos (2011)**

In this work, author’s proposed a adaptive access control mechanism for vehicular ad hoc networks. In this approach an efficient nonlinear control law is built based on fuzzy logic control principles, which can be easily adopted in different network environments. Proposed fuzzy control methodology offers inherent robustness with effective control of the system under dense
and dynamic conditions, without the need to tune any parameters. The proposed approach offers distinct differentiation among differently prioritized traffic types, thus providing adequate Quality of Service (QoS) in terms of throughput performance. This approach follows priority based mechanism for QoS aware application [9].

Hrishikesh Venkataraman and Gabriel-Miro Muntean (2011)

In this paper, an efficient time slot allocation method Dynamic Time Slot Partitioning (DTSP) algorithm based on statistical multiplexing is proposed. In DTSP, the available bandwidth resources are increased by partitioning each time slot into several mini slots. The DTSP algorithm is based on asynchronous time-division multiplexing, wherein users with variable number of packets in their buffers can transmit data sequentially without any loss in the overall available resources. The key advantage of DTSP is that it can flexibly adapt to different quality of service requirements, especially when combined with adaptive modulation. It has been observed that the system capacity achieved by the DTSP algorithm in the downlink mode using adaptive modulation is up to 41 percent higher than when existing solutions are employed. In addition, DTSP results in significantly lower time for data transmission than the state-of-the-art region and time partitioning techniques. Significantly, the DTSP algorithm works well for any kind of traffic asymmetry ratio between uplink and downlink mode in the cellular network. This is especially beneficial for multimedia streaming and video transmission in the downlink direction, the essential requirement for next generation wireless systems [18].

Dusit Niyato, Ekram Hossain and Ping Wang (2011)

In this paper, authors’ present a channel access management framework to support QoS for data transmission in cognitive vehicular networks. In such a network, two types of channels, namely, shared-use and exclusive-use channels are used for data communication among vehicular nodes. The vehicular nodes can form clusters to improve the efficiency of communication using the radio channels (i.e., the shared-use and exclusive-use channels). Although the shared-use channels are allocated to the licensed users, they can be opportunistically accessed by the vehicular nodes as long as the collision with the licensed users is maintained below the target level. In contrast, the vehicular nodes can reserve bandwidth in an exclusive-use channel for data transmission in a dedicated mode. The proposed channel access management framework has been designed which is composed of three components—queue-aware opportunistic channel access, exclusive-use channel reservation, and cluster size control. A hierarchical optimization model based on two constrained Markov decision process formulations has been developed to obtain the optimal decision for the vehicular cluster [12].

Saied M. Abd El-atty, Georgios K. Stamatiou (2010)

This paper investigates the performance of Multihop connectivity for inter-vehicle communication (IVC) systems in Vehicular Ad Hoc Network. The hop path connecting two or more vehicles is dedicated when a broadcast signaling for initiation connectivity is successfully guaranteed. In addition, the performance of vehicular connectivity is not only based on maximum transmission range, but also based on the optimal distance headway. A new analytical model is proposed in order to determine the failure probability of connectivity based on distance headway, false initiation connectivity probability and broadcast signaling delay. Also, the successful probability of message hopping and outage connectivity probability are provided in
Multihop vehicular ad hoc networks. The numerical results demonstrate the metrics performance of false and failure connectivity probability in terms of physical characteristics of the roadway, vehicular velocity, traffic density and broadcast signaling delay [33].

Cristiano Rezende, Richard W. Pazzi, Azzedine Boukerche (2010)

In this paper, author’s present an efficient path stability protocol, which refer to as PASTA, as an additional module to MAC layer protocols that aims at preventing path breaks between vehicles that are frequently within reach of each other but not necessarily on a continuous basis. When PASTA detects that a node is transmitting a packet to another node that is no longer within reach, a neighboring node is triggered to relay the packet to such destination Performance of protocols is discussed in wide range of realistic scenarios. Results show that proposed protocol decreases significantly the end-to-end latency as well as the network jitter. The presented approach had improved the performance of VANETs in two metrics that greatly influence the quality of multimedia services [11].

Gongjun Yan, Danda B. Rawat, Bhed B. Bista (2010)

In this paper, author’s presented scheme disseminates packets among the links which has longer expiration time calculated by using relative velocity vectors. The optimal routing path and a backup routing path are selected by balancing stability, cost and delay. Besides, the proposed scheme gracefully switches to a new optimal routing path before the current routing path is broken. The proposed protocol improves the bandwidth, routing duration, and response time. Quality of Service in vehicular networks is an open research area and an important research field. Author’s propose an improved scheme to provide QoS to vehicular Ad-hoc Networks on the basis of vehicular mobility. Wireless links are selected based on the expiration time of the link which is calculated based on the vehicular relative velocity vectors. The selection of the routing path also considers the balance among stability, delay and cost. One route and one backup route are selected. The backup route can be switched as the primary route when the current route is about broken. This switch does not require any extra route maintenance/repair. When both current route and the backup route are about breaking, local or global routing path repair will be activated. Finally author’s show that the proposed protocol improves the bandwidth, routing duration and response time [17].

Zhou zurong, Chen rongzhen (2010)

In this paper, author investigates the wireless communication technologies and the multimedia technology. The wireless internet multimedia transport of real-time becomes an important applications field. Author’s proposes a new algorithm LDA(Loss Detection Algorithm). The algorithm utilizes the delay from transmitting end to receiving end to distinguish the status of package loss. A new protocol stack is proposed which is named as RTP/RTCP to guarantee the real-time transport of video data and adjust the transmitting rate and video coding according to the status of internet [40].

Oliver Hoffmann and Ruediger Kays (2010)

In this paper, author’s evaluates the major MAC enhancement of IEEE 802.11n to realize high throughput, i.e. frame aggregation. Author’s analyze the efficiency instead of the mere performance in contrast to existing enhancement,. The results show significant efficiency
improvement by frame aggregation. Furthermore, the efficiency analysis leads to important conclusions for system configuration and adaptation and reveals effects. It is shown that the most feasible configuration is to apply maximum aggregation and to adapt the modulation and coding scheme (MCS) instead of the frame size. Furthermore, the efficiency analysis points out that in case the network is not saturated the 20 MHz mode is more efficient than the 40 MHz option [29].

Wantanee Viriyasitavat, Fan Bai, and Ozan K. Tonguz (2010)

In this work, a lightweight, zero-infrastructure support broadcast protocol is proposed that can support both well-connected and disconnected network for broadcast applications in urban areas. The proposed protocol utilizes both direct relays through multi-hop transmissions (i.e., spatial relay) and indirect packet relays through the “store carry forward” mechanism (i.e., temporal relay). The protocol has been extensively evaluated both in ideal Manhattan-like and real city scenarios. Our proposed protocol for urban vehicular network requires zero infrastructure support. Routing protocol design in urban area is much more challenging compare to highway scenario. Direction of nodes is very dynamically changing in urban scenario while they maintain their direction for a longer period in highway scenario. Author’s show that existing protocols for urban scenario not so much efficient. Finally authors show their protocol performance in terms of reach ability, received distance and network overload in a regular Manhattan Street scenario as well as in a real city (Pittsburgh, PA). Overall, the results show that the performance of the new UV-CAST protocol is excellent [35].

Kristoffer Lidstrom and Tony Larsson (2010)

Channel properties play very important role in deciding the QoS requirements for vehicular network. It must be decided that what channel properties is important and where there properties applied to provide QoS due to the VANET application shows high requirement variation. Author’s focuses on to specify the QoS requirements in order to adopt the system according to changes. Vehicular application are highly dependent on road geometry. Special coverage is required by these applications. Using set theoretic notation Author’s define two functions for selecting subsets of road links from a digital map, Flood and Trajectory. These subsets can be further composed using set theoretic concepts in order to create definitions of coverage that are context-dependent. The spatial definition is combined with an application level QoS measure proposed in the literature, T-Window reliability, tailored toward VANET applications. Authors exemplify how the QoS requirements format can be used with two applications, intersection collision-avoidance and emergency brake light [25].

J. Molina-Gil, P. Caballero-Gil, C. Caballero-Gil (2010)

Author’s proposed protocol uses two different schemes based on the type of packets. Nodes driving in the same direction with similar speed are joined together into groups. This idea reduces the number of packets in context of decision because one of the nodes into the group becomes leader and it will take decision on behalf of other nodes. Multiple retransmission is avoided inthis approach that enhances the performance of network. Author’s considers different cooperation tools and present some idea fro security mechanism. Proposed tools are ensuring communication by using incentive and payment schemes based on lottery and reward.
Contribution metrics and parameters correlated to characteristics of VANET is designed for enforcing cooperation among tools [24].

**Changsheng Zhu, Jianbo Liang, Xugang Miao, Wenyi Feng (2010)**

This paper defined a system that applies modular structure and network based design technology and has sufficient scalability and sustainable development. Author’s focus on designed and implementation of the public transportation vehicular terminal system including kinds of functions according to researching the existing technologies and studying the advanced system of other countries. Author’s analyze the latest audio and video compression/decompression techniques, digital mobile TV technology, network technology, GPS technology, GPRS wireless technology and so on and their impact on development of the intelligent public transport management system [10].

**Jimin Lin, Yi Wu (2010)**

In this paper, author’s studies and analyzed the real-time problem of CSMA mechanism and shows that it is not sufficient in context of application requirement in vehicular network. Author’s introduced introduce the distributed real-time MAC protocol, which is more suitable to be used in the VANET environment. Main problem in the ALOHA protocol is the nodes access wireless medium using the random contending method. The high mobility network would frequently encounter new nodes leading to the network topology changing and slots collision, which increase the risk of delay of retransmitting vital messages. Further directional characteristic of vehicle nodes is analyzed and propose a new slots scheduling strategy for nodes to contend slots based on TDMA mechanism. Author’s shows that their proposed approach largely reduce the probability of slots collision and improve the performance of distributed real time MAC protocol [23].

**Qing Yang, Alvin Lim, Shuang Li, Jian Fang, Prathima Agrawal (2010)**

Author’s proposes an adaptive connectivity aware routing (ACAR) protocol that adaptively selecting an optimal route with the best network transmission quality based on statistical and real-time density data that are gathered through an on-the-fly density collection process. This protocol is divided into two parts, first select optimal route with the best estimation transmission policy and second selects the most optimum multi-hop path to improve delivery ratio and throughput. To select optimal route this work proposes transmission quality model that works on vehicle densities and traffic light periods to estimate the probability of network connectivity and data delivery ratio for transmitting packets. Proposed protocol achieves a higher successful data delivery ratio and lower end-to-end delay compared to others. Moreover, since the route length can be calculated before forwarding packets, every next hop is selected by minimizing the packet error rate of the entire path. ACAR is much more suitable for VANET than other protocols because of its higher data delivery ratio, throughput and lower networking delay. In addition, it works very well even when the statistical data of road density is not accurate [31].

**Runhua Liu, Linfang Dong and Shang Liu (2010)**

In this work, Author’s propose an adaptive scheduling algorithm for real-time video streams in wireless local area networks (WLAN). The first work of protocol is to reduce the amount of data being transmitted on the network. This work proposes scheduling the video streams at the access
point to achieve the best quality of services. Authors have compared the deviation of two consecutive frames in the video stream and decide whether or not the follow-up frame should be transmitted. If the deviation of two consecutive frames not reach the threshold, the latter frame will be discarded, and the former will be keep in the server. Otherwise, it will be transmitted. This approach We adaptively adjust the threshold at server to reduce the traffic load over the wireless channel. Access Point uses different scheduling policy at different stage according to the wireless traffic. Author’s present adaptive wireless video transmission architecture. In this transmission, deviation of two consecutive frames compares in the video stream and decides whether or not the follow-up frame should be transmitted [32].

Abdul RAZZAQ, Ahmed MEHAOUA (2010)

In this paper, author’s proposed a scheme for scalable video based streaming over VANETs for multi-purpose including safe navigation support, using path diversity and network coding. The scheme calculates the quality of all candidate paths based on grey relational analysis and then assigns paths to different layers according to their importance. Highest priority data is transmitted through highest quality path and lowest priority data through lowest stable paths. Some nearby nodes are selected along the transmission path for recoding their received packets and store them in buffers for unit period of time. These network coded packets can be retransmitting to receivers for recovering lost packets. Finaly author’s show that the proposed scheme provides robust video streaming over VANETs with improved video quality at receiving end [3].

Kevin C. Lee and Mario Gerla (2010)

In this paper, authors have taken the problem of opportunistic routing in VANETs. Three domains offering ideal applications of opportunistic routing is identified: Delay Tolerant geo-inspired routing and real time video streaming/multicast of emergency multimedia streams. For each application area authors have introduced a representative example and have offered a solution approach. In the area of video streaming, a novel opportunistic multicast strategy is proposed that combines both diversity routing and network coding. The delivery of the video stream to convoys using vehicles in the opposite direction poses the well known “coupon collector” problem. Proposed approach solves the problem, outperforming the previously proposed schemes [26].

N.N. Qadri, M. Fleury M. Altaf, M. Ghanbari (2009)

In this paper, authors analyze the condition for multisource video streaming is feasible across a wireless vehicular ad hoc network in terms of mobility, network size, and wireless channel. To achieve video streaming over a VANET overlay, this study introduces a spatial partition of a video stream based on flexible macro block ordering. This can achieve a gain of over 5 dB in video quality (PSNR) depending on video content and packet loss rates. Routing of streamed services over multiple hops and multiple paths may lead to significant packet losses, resulting in unacceptable quality of service. The paper examines the impact of differing traffic densities and road layouts upon an overlay network’s performance. The work modeled the emerging IEEE 802.11p for wireless VANETs. The research demonstrates that the vehicles’ mobility pattern and their drivers’ behavior need to be carefully modeled to determine signal reception. The study
also considers the impact of the wireless channel, which also should be more realistically modeled [28].

**JUAN J. ALCARAZ, JAVIER VALES-ALONSO, AND JOAN GARCIA-HARO (2009)**

This paper is focused on data transmission scheduling in V2I communications, where a central station, the roadside beacon, decides how to allocate system resources among the vehicles under coverage. Non-safety applications are considered whose commercial appeal is expected to accelerate the deployment of VANETs. In this case, the main objective is to deliver as much information as possible during the connection lifetime of the vehicles, which is limited by their speed and the length of the road sections under coverage. In this environment, the contention-free poll-based access mechanism of the 802.11e standard included in current VANET specifications is especially suitable. The design of a scheduling mechanism is addressed in this paper from a control theory point of view with the additional novelty of using an optimal control formulation comprising resource constraints. This design strategy allows QoS differentiation, assuring a fixed amount of bandwidth for each QoS class. The resulting algorithm not only maximizes the amount of data delivered, but also reduces performance differences between users traveling along different roads. Finally, authors show through simulation results that, apart from increasing the amount of data delivered per vehicle, our scheduling algorithm reduces performance differences between users traveling along different roads [22].

**Peter Reaidi, Pierre Bou Abboud, Eliane Kabkab, and Hassan Artail (2009)**

In this work, authors proposed a system in which vehicular nodes willing to share a file generally broadcast their requests to all neighboring nodes in the grid. Few messages are unnecessarily sent and are lost after nodes lose connectivity with each other. A smarter broadcasting scheme is proposed to limit and better bandwidth utilization in the highly volatile VANET application by which reduce the amount of messages that are lost by forwarding messages to nodes that are most likely to stay in range and respond to requests. Since connectivity loss is the main reason behind lost messages, a smarter broadcast guideline improves on regular broadcasting techniques by taking node speeds and directions into consideration. Two nodes moving in opposite directions will maintain contact for a much lesser time than two nodes moving in the same direction. Obviously this increased time allows more communication to take place between the file sharing nodes and helps in reducing the volatility of the VANET.

**Azzedine Boukerche, Cristiano Rezende, Richard W. Pazzi (2009)**

This research work is divided into two parts. In first part, authors describes process of estimation link reliability. Links are classified into different categories having distinct quality by using this estimation approach. In the second part, links are inserted into queues based on expected transmission success ratio and divided into different quality levels depending the services under they have operated. Author’s proposed mechanism provides an effective quality of services support in vehicular networks. QoS support is provided to vehicular networks using proposed link reliability and unicast relay of packets. Authors describe how vehicular network nodes movement is not completely random but follow some certain patterns. This flow is identified and uses to provide longer and reliable connection among the vehicles. This work firstly defines an estimated link reliability model and uses it to packet forwarding into groups
based on distinct link reliability. Proposed link reliability models are having very low complexity and no overheads. Exchange of beacons is used to calculate availability of any link and this availability is used to identify the link reliability of model. Author’s proposed models define different level of QoS by define the queues of different reliability [2].

Brijesh Kadri Mohandas, Oliver W. W. Yang, and Ramiro Liscano (2009)

In this paper, author’s proposed adaptive PI rate controller. Which improve the QoS of data traffic in a VANET. The PI-rate congestion control algorithm calculates the window size based on the instantaneous queue length of the congested node and advertises it to the sources, hence this controller can dynamically adapt to the network conditions by controlling the source transmission rate based on the target queue length. The performance of the congestion controller has been evaluated in a city traffic mobility scenario This adaptive PI rate controller outperforms RED in terms of throughput, window size, queue size and loss rate. The controller is capable of providing a constant throughput at the source which is a basic requirement for most of the application services such as streaming video [5].

HyunJae Jung, SuKyoung Lee, Jun Pyo Kim (2009)

In this paper, authors propose a routing algorithm that finds optimal end-to-end paths in terms of both traffic density and distance in the urban VANET and selects the next hop with the minimum distance, while maintaining the minimum hop counts over the path. The proposed algorithm achieves higher throughput and smaller end-to-end delay than Greedy Perimeter Stateless Routing (GPSR) with message carrying. The algorithm selects the next hop with the minimum distance such that the minimum hop counts over the path, is maintained. Finally the algorithm is compared and results showed that the performance of proposed algorithm out performs GPSR algorithm in terms of the end-to-end delay and total throughput [19].

Paolo Bucciol, Federico Ridolfo and Juan Carlos De Martin (2008)

In this paper Author’s analyze the multicast voice streams in a Vehicular Ad hoc Network. The considered scenario focuses on the multicast transmission of multimedia signals (MP3 streams) between a static and a mobile node. Author’s examine various technical solutions to guarantee vehicle-to-infrastructure connectivity, such as software enhancements and directional antennas. To improve the performance of the transmission by reducing the average burst error length, block interleaving techniques are taken into consideration. The presented results show that a reasoned choice of the hardware and software parameters enables the transmission of multicast vocal messages by means of the standard 802.11b protocol. To make performance evaluation of the proposed solutions, an optimized client-server streaming software suite is developed and tested it in a real-world. Different vocal messages, recorded in various combinations of language and gender, have been transmitted. Results showed that hardware and software must be chosen accurately to successfully transmit multicast vocal messages with acceptable quality, and such choice strongly depends on the specific scenario (such as the presence of traffic) [30].

Ya-Chu Yang, Chien-Ming Cheng, Pei-Yun Lin, and Shiao-Li Tsao (2008)

In this work, two tier hierarchical decentralized P2P architecture is adopted in proposed traffic information system. Author’s uses IVC and infrastructure based wireless connection to propose a two tier hierarchical decentralized P2P real time road information system. In proposed system
network traffic conditioned information is broadcasted by vehicular nodes while moving. Vehicles are divided into clusters and some nodes are selected as super nodes. These super nodes outline an unstructured P2P overlay on top of ad-hoc network while having infrastructure based wireless connectivity. The unstructured P2P overlay exhibits properties such as short path length and highly clustered and adopts the small-world structure. In proposed approach, real time traffic reports can be retrieved by performing efficiently lookup in the P2P overlay [38].


Authors analyze that diversity of VANETs application result into a challenging task of providing a suitable communication mechanism. Further Author’s focuses on different ways of information is processed and related latency. Most application does not sustain on conventional communication scheme they require broadcast communication and or more advanced information processing scheme. In proposed approach application are classified into groups. Five type of communication pattern is proposed to satisfy the need of virtually all the application. The classification also reflects that the close coupling between applications and communication in VANETs shifts the focus to a more integrated system architecture which ultimately also includes information aggregation [13].

Fabio Soldo, Claudio Casetti, Carla-Fabiana Chiasserini (2008)

In this paper, streaming applications is analyzed and shows how they contribute a significant amount of traffic in the near future. Author’s addressed the support of video streaming in VANETs by providing a fully-distributed solution, SMUG, spanning several architectural layers, from the application to the MAC layer. SMUG leverages the properties of video coding to design a collision-resolution mechanism and the characteristics of VBR traffic to efficiently exploit radio resources. It also promotes best-effort traffic exchange in a VANET without infrastructure support. We compared the performance of SMUG against theoretical results for broadcast capacity and we tested it via simulation in a realistic vehicular environment [15].

Christoph Schroth, Robert Eigner, Stephan Eichler, Markus Strassberger (2006)

Authors worked on integration of network optimization to provide a better communication in very dense as well as scattered network area. For this author has proposed framework. Proposed framework is make a way in which messages is sent among the nodes. Application is solely work on when information is shred among all the nodes. Bandwidth utilization should be such that it is shred among all application according to their requirement. Fairness among network is very necessary in vehicular network. Message with safety or critically importance must be proceeds over other messages. Message is not so important but related to high utility must e processed with most likely approach. At last low critical and low utility message should be processed.

Application level information must provide importance in dynamic vehicular network. In vehicular network information usability is very limited in correlation to time. After time expired then information becomes outdated. Duplicate and retransmission of messages makes network resource exhausted and network life time is reduced. So it must be considered that this messages must be find out and remove as quickly as possible. Authors have defined a utility function that predicts the utility of messages. For this function considers message age, node position, heading, intended route of the node and connectivity. Messages are prioritized according to their utility
requirement. Nodes who have decided most relevant messages and scheduling must perform operation without any delay. Waiting time reduced for the messages having higher relevance [8].

Weihua Sun, Hirozumi Yamaguchi, Koji Yukimasa and Shinji Kusumoto (2006)

In this paper, author’s present a QoS routing protocol GVGrid for multi-hop mobile ad hoc networks. GVGrid constructs a route on demand from a source to vehicles that reside in or drive through a specified geographic region. The goal of GVGrid is to maintain a high quality route, i.e. a robust route for the vehicles’ movement. Such a route can be used for high quality communication and data transmission between roadsides and vehicles, or between vehicles. Author’s focuses on design of a protocol to build a high quality route from a fixed source such as a base station at roadside to vehicles in a specific region. Vehicles may need some local information about parking, local traffic jam, traffic accident and shops/restaurants nearby. Moreover, short range beacons such as DSRC stations will be located at road-side in future, which allows drivers to access information or connect to the Internet. Finally Author’s compare the proposed approach to existing approach and shows that proposed protocol provides routes with longer lifetime [36].


Authors study and analyze of mobility models and proposed a concept for mobility model that can be adapted to vehicular ad-hoc network. Mobility model requirement in vehicular network is find out and necessary missing figures are considered in proposed model. Authors try to adapt their proposed model as a framework so that it can be useful in context of real time vehicular network simulation. Two advance mobility models is proposed and compared to existing models in the aspect of proposed framework. Domain models are always preferred when mobility models came into the picture. In recent years, node motion modeling also caught attention in the context of mobility models in vehicular network. Authors also analyze real life pattern motion. Node individual motion plays very important roles. It is related not only to simulation domain as defined but depends on neighboring nodes behaviors. Considering neighboring nodes motion is motion should be considered in proposed approach in order to make it more real time model.

Random waypoint models is considered as most popular mobility models in vehicular network. Node select individual destination randomly within the simulation area as defined by researchers. Various nodes motion speed is applied on the nodes under the random way point models from a maximum to minimum limit. Once nodes reached to destination it will wait for a random period of time and again start its journey towards others nodes with random destination location and speed. This approach studies and modified this models to adapt the changes into their models. Authors propose a framework to cope with the real time mobility models from vehicular network inter vehicle communication. Existing models is being studied and key features is extracted and applied to proposed approach. As proper parameters is set proposed model is decides its own course of path. In proposed framework authors have described a general random mobility model that is fully cooperative. Authors focus on Mobility prediction, topological map and motion constraints in proposed mobility model [21].
Author’s shows that authentication services solve only the security related problems but do not target the quality of messages. Further author’s clarifies that reputation system somehow solve the problem of authentication as well as QoS. Distributed system such as vehicular network does not provide full security by using a conventional centralized trust establishment system. Now author’s proposes their system VARS as a complete distributed approach based on reputation system. In their approach, Author’s propose an architecture that enables VARS to operate in distributed environment. Further, VARS produced a most relevant algorithm and provide proof by simulation results. Author’s defines three areas into their approach, first event area where an event can be categorized, second decision area where trustworthiness of message must be defined and third distribution area where message dissemination area is defined and author’s assume these area as circular shape. Proposed reputation system is designed for very high mobility nodes in very large ad-hoc network. This Vehicle Ad-Hoc Reputation System (VARS) uses direct and indirect trust as opinion to make decision on confidence on event messages. When a message is being forwards VARS appends the trustworthiness of messages. The confidence decision thresholds are applied to define reputation levels in the system [16].