Trust Aware Emergency Message Transmission Protocol for VANETS

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ABSTRACT- In cities, traffic signals are used to control traffic. Drivers of the vehicles need to follow the signals to protect themselves and others. Traffic signals work either clockwise or counterclockwise. The directional signal of one terminal will be green color and the signal of the remaining terminal will be red color. In the current methodologies, an emergency vehicle has to wait inside the terminal if its direction signal is red. I have proposed a new framework that allows an emergency vehicle to pass through the terminal by changing the signal color to green color. The framework is based on particle swarm optimization algorithm. The device implements a microscopic traffic simulation-based dynamic traffic assignment technique. The RSU terminals system has an authentication mechanism to ensure the safety of message sharing. The encrypted data storage will be added to the server.

I.INTRODUCTION

Cities became the identity for heavy traffic congestion. Cities have appreciable economic development when compared to the development in rural areas. When it is the matter of safety over the roads and the emergency situations like fire and health, high traffic causes a danger to the people .It is even difficult to allot a special lane for emergency vehicles. We utilize it to go to our work place, keep in touch with our family, and deliver our goods. But it can also bring disaster to us and even can kill us through accidents. The existing solutions face many problems. Intelligent management of traffic flows can reduce the negative impact of congestion .A VANET is formed by vehicles that are equipped with wireless communication devices, positioning systems, and digital maps. The unique characteristics of VANET are the high mobility and rapidly changing network topology caused by the high travelling speed of the nodes. The routing protocols in network are required to establish the connection in between sender and receiver. Vehicular mobility is actually related to cars, railways, bicycles, motor bikes and anything that moves on wheels in roads. Reactive routing protocols are ob demand routing protocols maintaining the connection if required and not maintaining the record of routes . Road Side Unit (RSU) and then share the data after thetravel out of the RSU's coverage A basic issue of proposed security scheme is how vehicles effectively work in presence of attacker. Vehicle Ad Hoc Networks (VANETs) within the framework of Intelligent Transportation Systems (ITS), emphasizing the role of safety applications in reducing accidents and congestion. These safety apps, such as Emergency Messages (EMs), are triggered by events detected on the road, allowing vehicles to notify nearby ones to prevent accidents. Given the limited communication range and dynamic network topology caused by vehicle movement, EMs are disseminated through multi-hop broadcasting to reach vehicles in the target area efficiently. The communication in Vehicular Ad Hoc Networks (VANETs) via Dedicated Short- Range Communication (DSRC). It mentions four main communication categories: V2V, V2I, V2R, and V2P, facilitating real-time communication. Traffic lights, intersections, and stop signs govern vehicle movement, resulting in uneven node distribution. The proposed position prediction mechanism aims to reduce the impact of vehicle motion by predicting the distance between source and

II.LITERATURE SURVEY

[1]At the same time, we introduce the improved link quality index. By calculating the actual transmission cost of the link between nodes, we set a limit on the number of link retransmissions to select the link with better quality.[2] The presented VCC to propose a model for data collection in ITS. Our model provides several benefits to drivers seeking traffic information for convenience purposes, by providing pull- based services on demand. In addition to design considerations, we describe a data collection service scenario that can involve our proposed model with low penetration rate.[3]This involved simulated models and allocations of resources where the module showed a predictable behaviour,since the protocol candidate vehicles, narrowing the candidate area, and screening out stable vehicles to mitigate link interruptions. Additionally, our relay forwarding node selection method relies on node trust, utilizing historical behavior to determine trust levels based on packet forwarding rates and neighbor recommendations. Dynamic weight coefficients balance direct observation and neighbor evaluation, enhancing protocol flexibility and compatibility with network dynamics. Furthermore, a handshake mechanism based on ACK message feedback addresses the hidden terminal problem. Evaluation of

this approach under varying vehicle quantities, speeds, and malicious node additions indicates suitability for both sparse and dense traffic conditions. The paper proceeds with an overview of related literature, followed by introductions to the proposed routing protocols. Simulation experiments and comparative analysis of results are presented, concluding with a summary and discussion of future work in section .

showed no sudden variation, even with the rise in vehicles or the increased use of resources.[4] The traffic data which is processed is then subjected to IoT and bigdata techniques and a framework namely s-ITS is obtained. The proposed framework helps in location tracking of vehicles, smart parking and applying bigdata technology for designing efficient transportation system. [5].In addition, our scheme supports the feature of public verification. Theoretical analysis and experiment results show that the new scheme is very efficient and practical. Our future work is to upgrade the scheme to support data dynamic and batch verification.

PROBLEM STATEMENT

In today's smart transportation systems, the transmission of vehicular emergency data over cloud infrastructure is critical to ensure timely response to critical incidents and enhance overall road safety. However, today's systems struggle to optimize emergency data transmission over cloud networks because of network congestion, different data priorities, and

ALGORITHM

The PSO algorithm finds the best value for a complex function by analyzing the particle movement and determining the best path based on the location/position of the particles and the velocity control of the particles. PSO has memory.However, if there is no selection operator, the PSOs will waste resources on the poor people. When a GA and a PSO are used together, the time required to find the best solution usually decreases. Different approaches are proposed and overlap the search process. The search process is split into two parts: one part is performed by GA and another part is performed by PSO (for example, GA for global search and PSO for local search). Another approach is to create a portion of population based on GA, while simultaneously creating a portion of population using PSO.

Block diagram

Onboard sensors detect anomalies and send data to the cloud via communication modules. Vehicle emergency cloud data transmission improves road safety and reduces response times, saving lives.Vehicle emergency cloud data transmission enhances the effectiveness of intelligent transportation systems in responding to emergency situations on the road. A cloud-based emergency response system analyzes incoming data to evaluate severity and coordinate appropriate action, such as dispatch emergency services.A user-friendly interface provides real-time notifications to stakeholders, and data reduce bandwidth availability .Therefore, a robust solution must be developed that can prioritize and deliver vehicular emergency data in real-time with minimum latency and maximum reliability.

WORKING

It describes a method for identifying forwarding sets of candidate nodes in vehicular ad hoc networks (VANETs) to ensure reliable message forwarding despite high node mobility. It suggests filtering stable nodes within the forwarding area using predicted node locations to narrow down candidate nodes. Candidate nodes whose predicted distance from the source vehicle remains within the communication range of the sender are considered valid and added to the forwarding candidate set. The predicted positions of vehicles are calculated based on their current positions, displacements, and speeds obtained from Hello messages. This prediction helps determine which nodes are still within communication range despite mobility changes. It discusses the importance of promptly transmitting emergency information to ensure reliability and low delay. It emphasizes selecting the closest node to the destination vehicle to minimize delay in forwarding the message. Three parameters are considered to evaluate node movement relative to the destination, indirectly reflecting the link's lifespan between nodes.

CONCLUSION

Thus the system can be used for efficient safety of user life. The ambulance transmitting high signal can be processed with the implemented system RSU units where the user will carry on the different impositions. The signal with the transmitting stops the other vehicle crosses the road and the interventions ,accidents occurs in the traffic signal. The patient can be get to hospital within the ideal time.

FUTURE ENHANCEMENT

The future enhancement can be done with the IOT based system where the ambulance can be made. The ambulance can be made with a higher signal transmitter and receiver system. implementing high-speed communication protocols to ensure immediate transmission of emergency data from vehicles to the cloud, allowing for faster response times during an emergency.

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