INTELLIGENCE TRANSPORTATION SYSTEM

Guided by

Ms.Suganya Devi K

ASSISTANT PROFESSOR (ECE)
DEPARTMENT OF ECE
SRI ESHWAR COLLEGE OF ENGINEERING.

Presented by

Karthick Raja R(722827106067)

Prasanth R (722817106111)

John Benniel M(722817106061)

Praveennandha M(722817106113)

Presentation Outline

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Introduction

Description:-

Intelligent Transportation System (ITS) are developing applications which, without embodying intelligence as such, target to provide innovative services relating to different modes of transport and traffic management.Vehicular Ad-Hoc Network (VANET) networks is usually developed as a part of ITS.The goal of VANET architecture is to allow the connection between vehicles or between vehicles and fixed road side units leading to the following three possibilities.Vehicle-to-Vehicle (V2V),Vehicle-to-Infrastructure,(V2I) network Hybrid architecture.The main goal of V2V communication is to avoid accidents by allowing vehicles in transit to send speed and position data to one another over an ad hoc mesh network.

DOMAIN : Wireless Network

Abstract

During the last decade Intelligent Transportation System (ITS) research and development, including its implementation in a real life going through the optimization in order to have the best and accurate results is growing exponentially. Many European countries and USA started to implement and use them. In the developing countries the infrastructure is not established well with a lot of challenges (ex. Infrastructure cost, …). Vehicle-to-Vehicle (V2V) implementation will be used as a standalone for ITS architecture in the developing countries to minimize the delay of response and dump. To do that, a full simulation for different Vehicular Ad-Hoc Network (VANET) routing protocols will be done using NS3 simulator to select the best protocol for V2V Implementation. Then the best V2V routing protocol based on the paper's Key Performance Indicators and point of view will be used to compare between existing architectures, other with proposed V2V implementation.

Literature Survey

Paper details	Journal details	Methodology	Advantages/ Disadvantages
1.Ahmad Yusri Dak ,Saadiah Yahya , Murizah Kassim (Universiti Teknologi MARA)-https://www.researchgate.net/publication/271302406_A_Literature_Survey_on_Security_Challenges_in_VANETs	A Literature Survey on Security Challenges in VANETs -2012	Vehicle ad-hoc networks (VANETs), mobile ad-hoc networks (MANETs), security, technique.	Advantages:- 1.Integrity 2.Authentication 3.Confidentiality DisAdvantages:- 1.Sending False Information 2. Node Impersonation 3.Non-Repudiation

Literature Survey

Paper details	Journal details	Methodology	Advantages/ Disadvantages
Aditya Upadhyay, Manoj Sindhwani (Lovely Professional University)-https://www.researchgate.net/publication/293633002_Literature_Survey_on_issues_and_challenges_of_clustering_in_VANET	Literature Survey on issues and challenges of clustering in VANET -2015	VANET, clustering, clustering issues, clustering based routing protocols, Issues and challenges of clustering in VANET.	Advantages:- 1.Collision Avoidance of Vehicles 2.Wireless Communication Scheme 3.Peer to peer application system DisAdvantages:- 1.Collision and Congestion 2.Impact of Environment 3.Social and Economic Challenges

Objective

- The main objective of this project is to make the connection between vehicles and fixed road side units and reducing the accidents,traffics etc
- Intelligent Transportation System (ITS) targets to provide innovative services relating to different modes of transport and traffic management .
- It enables different users to be better informed and make safer, more coordinated, and ‘smarter’ use of transport networks.

Execution Plan

- In the first Phase Installation of the software NS3(Network Simulator),Sumo(Simulation of Urban MObility),RoadMap Implemtaion
- In the Second phase, two scenarios were used(1st one with 20 vehicles and the 2nd one with 40 vehicles) with four different routing protocols (AODV, DSR, GRP, OLSR) as discussed in Section 3 (VANET routing protocol), the comparison is based on 6 KPIs as the following.
- In the third phase, the selected VANET routing protocol “AODV” will be used to compare between the V2V implementation (1st one with 20 vehicles and the 2nd one with 40 vehicles), the comparison is based on six KPIs(VANET Delay, VANET Throughput, VANET Retransmission Attempts, VANET Dropped Data, VANET Load and VANET Traffic Received)..

References

1. Balapgol, S., & Deshmukh, P. K. (2015, July). Broadcast protocol for V2V and V2RSU in VANET. *International Journal of Advanced Research in Computer and Communication Engineering, 4*(7). [Google Scholar]
2. Coutinho, B. V., Wille, E. C., & Del Monego, H. I. (2015, January). Performance of routing protocols for VANETs: A realistic analysis format. In *Proceedings of the 9th International Conference on Ubiquitous Information Management and Communication* (p. 1). ACM. [Google Scholar]
3. Da Cunha, F. D., Boukerche, A., Villas, L., Viana, A. C., & Loureiro, A. A. (2015, September). Data communication in VANETs: A survey, challenges and applications. [Google Scholar]

Thank you!