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CLUSTER BASED APPROACH USING SHUFFLED FROG LEAPING ALGORITHM IN VANET

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Abstract

A Vehicular network is an unstructured and self-organized network, where vehicles equipped with short-range wireless devices, communicate with each other to allow communications with road side infrastructure equipment or with other vehicles. Multicast routing is used to support such services. In existing vehicular ad-hoc network lower packet delivery ratio, lower throughput and packet loss has been identified. In the proposed system Shuffled Frog Leaping Algorithm serves as a host to reach the destination nodes. It stores a destination list inside the packet header, this destination list provides information on all multicast members to which this packet is targeted. If the Shuffled Frog Leaping Algorithm is used the drawbacks in the existing system can be avoided and a stable link may be provided.

Introduction

VANET is a new technology that integrates the potentials of new-generation wireless networks into vehicles. A Vehicular network is an unstructured and selforganized network, where vehicles equipped with short-range wireless devices. communicate with each other to allow communications with road side infrastructure equipment or with other vehicles. VANET provides a wireless communication between moving vehicles, dedicated using short range a communication(DSRC). It is essentially IEEE 802.11a amended for low overhead operation to 802.11p the IEEE then standardises the whole communication stack by the 1609 family of standards referring to wireless access in vehicular environments(WAVE). There are three types of communication in VANET such a Vehicle-to-Infrastructure(V2I). Vehicle-to-Vehicle(V2V), Infrastructure-to-Vehicle(I2V).Vehicle can communicate directly with other vehicle using vehicle to communication(V2V) vehicle or communicate with fixed equipment next to other road, refer to a roadside side unit(RSU) forming vehicle to infrastructure communication(V2I).

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Related works

[1] Jekishan K. Parmar And Paras P "Analysis of an improved energy balanced routing protocol for wireless sensor network", From Base Station (BS) Sensor node sends and receives data to or from wireless stations. Clustering schemes in WSN are two types homogeneous schemes heterogeneous schemes. and In Homogeneous scheme initial energy is same for each node but in heterogeneous scheme initial energy is different for each node. We analyse the different protocols and finally modified the exiting protocol called improved energy balanced routing protocol. This protocol sends more number of packets to BS and more energy consumption.[2]Ricardo Lent"Linear OoS Goals of Additive and Concave Metrics in Ad-Hoc Cognitive Packet Routing", This paper addresses two scalability problems related to the cognitive map of packets in ad hoc cognitive packet networks and proposes a solution. Previous works have included latency as part of the routing goal

of smart packets, which requires packets to collect their arrival time at each node in a path. Such a requirement resulted in a packet overhead proportional to the path length. The second problem is that the multiplicative form of path availability, which was employed to measure resources, loses accuracy in long paths.[3]G. Vijaya Kumar, Y. Vasudeva Reddy, and M. Nagendra "Current Research Work on Routing Protocols for MANET", This paper presents Linear/ Nonlinear Programming (LP/NLP) formulations to achieve demonstrate their superiority in terms of network life, energy consumption, dead sensor nodes and delivery of total data packets to the base station. Lifetime of the network is improved, perform better than the existing algorithms.[4] R. D. Joshi and P. P. Rege "Energy Aware Routing in Ad-Hoc Networks", About half of the 43000 accidents each year on U.S.Road or travelling unsafely through intersections. Thus Vehicular computing is one of the mostemerging research areas and extensive research isgoing on concentrating on

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different issues of thisfield.Focus on content distribution for vehicular network application.[5] Zaher Merhi, Oussama Tahan, Samih Abdul-Nabi, Amin Haj-Ali Bayoumi "Decentralized and Magdy Clustering in VANET Using Adaptive Theory", The Resonance increasing numbers of vehicles on the roads poses a challenge designing on an efficientcommunication protocol for VANETs. The clustering technique that createsmini clusters that are in the same communication range of thevehicles is used. These mini clusters are created based on speed where it categorizes thevehicle in one of three levels: high, medium or low speeds.

Research directions

- The existing system requires the use of routing table for forwarding the packets to the destination.
- Multicasting the messages leads to congestion when the messages are transferred in a bulk amount.
- When congestion occurs in a network it results in packet loss.
- The packet delivery ratio in congested network is considerably low.
- The overall performance of the network highly depends on the measure of throughput and Packet Deliver Ratio.
- The existing system fails to reach the expected throughput.

Discussion

- In the existing vehicular ad-hoc network the efficiency directly depends upon the protocol being used.
- It has been identified that the node in the vehicular ad-hoc network suffers from link instability at times of congestion.

- The congestion considerably reduces the packet delivery ratio, throughput and increases the packet loss.
- The proposed system presents an alternative based on the Shuffled Frog Leaping Algorithm to overcome the issues of the existing system.
- The proposed system increases the link stability and avoids loss of data packets in the network during transmission.
- The drawbacks of the existing system can be overcome by applying the Shuffled Frog Leaping Algorithm.

Conclusion

A generic method has been proposed for the creation of individual nodes and establishing a secure and stable link between the created nodes. By using a receiver based multicast routing the traffic between networks is highly reduced. Most importantly the usage of routing tables is eliminated. Throughput will be less when packets are send in multicast.

References

[1] Jekishan K. Parmar And Paras P "Analysis of an improved energy balanced routing protocol for wireless sensor network", Department of Computer and Communication Engineering, February 2014.

[2] Ricardo Lent"Linear QoS Goals of Additive and Concave Metrics in Ad-Hoc Cognitive Packet Routing", IEEE Transactions on Systems, Man and Cybernetics, vol. 36, no. 5, Dec. 2016.

[3] G. Vijaya Kumar, Y. Vasudeva Reddy, and M. Nagendra"Current Research Work on Routing Protocols for MANET", International Journal on Computer Science and Engineering, 2010. [4] R. D. Joshi and P. P. Rege "Energy Aware Routing in Ad-Hoc Networks", Journal of information science and engineering, Elsevier, 2014.

[5] Zaher Merhi, Oussama Tahan, Samih Abdul-Nabi, Amin Haj-Ali and Magdy Bayoumi"Decentralized Clustering in VANET Using Adaptive Resonance Theory", The Center for Advanced Computer Studies University of Louisiana at Lafayette, LA, 2015.