ICORMAN: Extended Version of CORMAN using Efficient Channel Reuse Method

Abstract

Mobile Ad-hoc Networks (MANETs) are wireless networks in which all nodes are moving freely in the network; also they can leave or enter into the network at any time. The nodes in these types of networks are communicating on-the-move without any base stations [1]. Due to this mobility, inter-node connectivity may change frequently during normal operation which imposes new problems in network control, particularly in the design of higher level protocols such as routing. Routing is the most critical issue in MANET due to mobility of the nodes [2]. The performance of MANET is basically depends upon routing protocol use by the network. Routing protocol is nothing but the rules and regulations of routing which governs the journey of message packets from source to destination in a network. There were different routing protocols proposed for improving performance of MANET, such as DSR, DSDV, AODV, CORMAN, etc. . . All these protocols are best suitable in different network scenarios. However, among all these protocols, Ad-hoc on demand distance vector (AODV) is one of the protocols which are good for most of the network scenarios and it is the good solution for most of the network problems. But, AODV have some limitations too. It is not suitable for the opportunistic data transfer. Recently, the importance of utilizing the broadcast nature of multi-hop wireless networks is being recognized and considered in network protocol design, known as opportunistic data forwarding. One solution for opportunistic data transfer in MANET is
CORMAN routing protocol. However, CORMAN does not give efficient performance during communication, because CORMAN does not make better channel reuse. By combining the better channel reuse method in CORMAN we can improve the performance of MANET. This paper focus on new proposed protocol called ICORMAN, the new protocol in MANET which makes the efficient channel reuse by using Ant colony optimization algorithm. Also better channel reuse method based on ACO is presented in this paper. The practical analysis of proposed work is possible using java in order to claim the efficiency of proposed routing protocol against the AODV & CORMAN routing protocol which shows that, ICORMAN improves the performance of MANET as compared to AODV & CORMAN routing protocols in terms of PDR, throughput, end to end delay and total PDR.

References

- Jeroen Hoebeke, Ingrid Moerman, Bart Dhoedt and Piet Demeester, "An overview of mobile ad-hoc networks: Applications and challenges".
- Donatas Sumyla, "Mobile ad-hoc networks".
- Magnus Frodigh, per Johansson and Peter Larsson, "Wireless ad-hoc networking: The art of networking without network".
- Kristoffer Karlsson, Billy Ho, "Ad hoc networks: Overview, applications and routing issues".
- Fengji Ye, Su Yi and Biplab Sikdar, "Improving Spatial Reuse of IEEE 802.11 Based Ad Hoc Networks".
- Mahboobeh Parsapoor, Urban Bilstrup, "Interference-Aware Clustering Algorithms for Mobile ad hoc Network Ant Colony optimization-based Algorithm".

Index Terms

Computer Science

Networks
**Keywords**

AODV  CORMAN  Channel reuse  Ant colony optimization  Delay  Packet delivery ratio  Throughput.