

SELF-REGULATING CLUSTER WITH HEAD SELECTION INSPIRED BY SRTS-ABC
ALGORITHM [SRCHSR (2)]

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Abstract:

Dynamic network topology and the mobile existence of nodes can trigger connectivity and routing challenges. Mobile ad-hoc network clustering (MANETs) is one of the powerful ways to structure a network according to the topological changes of the network. In this paper, in order to boost the scalability and reliability of the overall network, this paper propose a Self-Regulating based MANET clustering scheme using cluster group mobility. For the creation and maintenance of clusters in MANETs, this proposed algorithm utilizes the nature-inspired behaviour of bees. In order to minimize network congestion and boost the efficiency of MANETs in group mobility, the dynamic framework for cluster size management will be taken into account. An algorithm to manage the isolated nodes is also suggested for proper use of resources and to reduce extra energy consumption. The outcome of the simulation shows that the proposed algorithm decreases energy consumption and increases the lifespan of the network along with greater robustness.

Keywords: MANET, SRTS-ABC, NIR, RSSI+F, ADAPTIVE-LIMIT.

1. INTRODUCTION

Mobile Ad-hoc Networks (MANETs) have opened new doors to gain considerable exposure and popularity with the recent development of network-based wireless technologies. With various applications, MANET has considerable potential in multiple fields. In several civilian and military real-time scenarios, it is increasingly developing and evolving for realistic implementation. In the event of other networks crashing in any disaster, MANET has the ability to serve as a backup network to facilitate users. In MANETs, optimal CH selection, network topology management and improvement of network efficiency in the presence of mobility, along with minimization of energy consumption at each node, are the key challenges for clustering algorithms.

Head Selection: Another main problem in MANET is Head node selection. Selecting good head node is very crucial task in MANET because the task of the head node is very high and important. Every activity in the cluster group will be managed by cluster head. Availability of Head node should be important one because sometime head failure causes heavy loss of data and lack of control. The energy fails of head node causes not only make head to fail but also entire cluster failed in the network. So, head node selection and maintains should be very important task in MANET.

A head selection algorithm should follow/ satisfy the following criteria

- In cluster, every node should agree to select the single node as a head node for the particular cluster (After selection, Head node gets control over the network).
- Single node will not act as leader for two cluster groups.
- Every node in the cluster will get rights to elect a head node at particular period of time.

The proposed algorithm makes try to solve stability of the clusters including cluster head and member nodes in MANET.

In proposed approach the following things are taken into account

- Three different Cases are taken for Cluster Head selection in MANET.