



A rough set calibration scheme for energy effective routing protocol in mobile ad hoc networks

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Abstract

The mobile ad hoc networks are a set of the autonomous nodes which arbitrarily moves out due to their autonomous nature. The topology of the network differs very often. Each and every autonomous node are powered by batteries with inadequate abilities and due to which the nodes fail to communicate the information packets from source to the target. The purpose is to design an energy efficient routing scheme in mobile ad hoc network with the aid of rough set calibration scheme. The rough set calibration scheme ultimately makes use of episodic based association where each and every metric like energy and distance are employed as the entity of rough set. Furthermore, the scheme aids in deciding the energy efficient routing. The analysis reveals that the scheme attempts for energy efficient routing with the aid of rough sets. The results of the simulation make use of the designed protocol with the aid of NS2 and estimate it with other conventional schemes based on which the designed scheme performs better in terms of energy efficiency.

Keywords Mobile ad hoc networks · Energy · Throughput · Routing and packet loss

1 Introduction

The mobile ad hoc networks (MANETs) are a fresh standard of wireless communication. Here the network does not possess any fixed infrastructure like base stations or the mobile exchanging stations. Each and every autonomous node remains within the communication range of one another straightforward using wireless links. These autonomous nodes are arranged in either homogeneous or heterogeneous way and it normally shifts in preferred locations due to the dynamic nature. The growth of

inexpensive, reduced and more influential mobile device makes the MANETs as the rapidly rising networks [1–3]. The device in the MANETs should be capable of identifying the presence of other devices and it accomplishes adequate initialization to simplify communication and distribution of information and facilities. The ad hoc network permits the devices to preserve links to the network along with the effortless inclusion removal of devices to and from the network [4, 5]. The autonomous node is extremely lively and scattered in nature since the nodes are operated with the aid of batteries with restricted abilities. There are several possible ways of energy consumption in MANETs which might be due to broadcasting of data packets, collection of data packets during idle state of the network which is possible during the inactive state of wireless interface of the nodes. The depletion of energy within the node does not only bother itself but also it holds the capability of sending information packets on behalf of the other nodes throughout the entire lifetime of the network. Moreover, for enhancing the behavior of the network the node must choose an optimal path based on the residual energy. These features influence the lifetime of the network since they are changeable, the residual lifetime of the network is quite impossible to predict. The condition could

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