

Journal Pre-proof

Power efficient Memetic Optimized and Adjacent Exponentially Distributed Routing in Mobile Ad Hoc Networks

P. Thiagarajan, S. SenthilKumar

PII: S0140-3664(19)31182-X

DOI: <https://doi.org/10.1016/j.comcom.2019.11.025>

Reference: COMCOM 6027

To appear in: *Computer Communications*

Received date: 14 September 2019

Revised date: 15 November 2019

Accepted date: 18 November 2019

Please cite this article as: P. Thiagarajan and S. SenthilKumar, Power efficient Memetic Optimized and Adjacent Exponentially Distributed Routing in Mobile Ad Hoc Networks, *Computer Communications* (2019), doi: <https://doi.org/10.1016/j.comcom.2019.11.025>.

This is a PDF file of an article that has undergone enhancements after acceptance, such as the addition of a cover page and metadata, and formatting for readability, but it is not yet the definitive version of record. This version will undergo additional copyediting, typesetting and review before it is published in its final form, but we are providing this version to give early visibility of the article. Please note that, during the production process, errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

© 2019 Published by Elsevier B.V.



POWER EFFICIENT MEMETIC OPTIMIZED AND ADJACENT EXPONENTIALLY DISTRIBUTED ROUTING IN MOBILE AD HOC NETWORKS

P.Thiyagarajan¹, S.SenthilKumar^{2*}

1. Full time Research Scholar, Department of CSE, University College of Engineering, Pattukkottai, Tamilnadu, India1, Email id: tvn210@gmail.com

**2. Assistant Professor, Department of CSE, University College of Engineering, Pattukkottai, Tamilnadu, India, Email id : senthilucepkt@gmail.com*

Abstract

Mobile Ad Hoc Networks (MANETs) are self-organizing, infrastructure less, possessing constrained power, linked through wireless links without any centralized controller. Optimal selection of routes with minimum end-to-end delay and maximum packet delivery ratio was ensured using learning-based routing protocol, however power factor was not analyzed and therefore increasing the routing overhead. This paper employs the Adjacent Exponentially Distributed Route Maintenance mechanism to include an energy awareness feature with mean data packet arrival rate and link breakage rate to the identified route discovery mechanism. The proposed technique considers routes distance and power during route selection and includes routes energy consumption in its calculations. Besides, route discovery as an optimization is formulated employing Adjacent Exponential Distribution to choose a route that optimizes weighted function of route distance and energy. The simulation results show that the Memetic Optimized Adjacent Exponentially Distributed Routing (MO-AEDR) improves the packet delivery ratio with minimum end-to-end delay and routing overhead.

Keywords: Mobile Ad Hoc Networks, learning-based routing protocol, Memetic Optimized, Route Discovery, Adjacent Exponential Distribution

1. Introduction

MANET consists of set of mobile nodes, possessing self-organizing and self-configuring structure. Several researchers have contributed their works in this regard. Stable and Energy-Efficient Routing Algorithm Based on Learning Automata (LASEERA) [1]. However, power consumed during routing was not focused. Link stability was analyzed in Multipath Battery and Mobility- Aware routing scheme Optimized Link State Routing protocol (MBMA-OLSR) [2] via link assessment function. But, energy consumption remained unaddressed. Our contributions are summarized as below.

- Energy efficient optimized routing technique is designed for identifying optimal route with maximum packet delivery ratio in MANET. In our technique, we use Memetic Fitness Function as the power efficient optimization mechanism and Adjacent Exponential Distribution functions as the energy efficient mechanism.
- Use of Memetic Optimized Route Discovery which considers the procurement of optimal route while route discovery, helps in reducing the power being consumed for a longer time. Thus, it helps to increase the packet delivery ratio with lesser routing overhead.

Download English Version:

<https://daneshyari.com/en/article/13431956>

Download Persian Version:

<https://daneshyari.com/article/13431956>

[Daneshyari.com](https://daneshyari.com)