



Document details

1 of 1

Export Download More... >

2019 7th International Conference on Mechatronics Engineering, ICOM 2019
October 2019, Article number 8952053
7th International Conference on Mechatronics Engineering, ICOM 2019; Putrajaya; Malaysia; 30 October
2019 through 31 October 2019; Category numberCFP1951N-ART; Code 156771

Energy-Efficient Scalable Routing Protocol Based on ACO for WSNs (Conference Paper)

Sharmin, A., Anwar, F., Motakabber, S.M.A.

View additional authors v

Save all to author list

International Islamic University Malaysia, Department of Electrical and Computer Engineering, Kuala Lumpur, Malaysia

View additional affiliations v

Abstract

Efficient routing is an essential requirement for the design of wireless sensor network (WSN) protocols to overcome inherent challenges and to meet hardware and resource constraints. An energy-efficient scalable routing algorithm based on ant colony optimization (ACO) for WSNs is presented here to find the optimal path of data transmission while consuming less energy leading to increase of network's lifetime. Most of the existing ACO based routing algorithms are designed on the assumption that the sensor nodes and the sinks are stationary and do not consider the overhead of mobility and the current node energy is not considered, which will prompt sudden passing of certain nodes. To overcome the existing problem of accommodating node mobility, reducing initialization time for ant based routing algorithm and to maintain scalability in WSN for time critical applications, an ACO based WSN routing algorithm has been proposed and analyzed in this paper. The proposed algorithm has been simulated and verified utilizing MATLAB. The evaluation results demonstrate that it has reduced energy consumption, almost 50% less consumed energy even with the increasing number of nodes, compared with the traditional ACO and an existing ant-based routing algorithm. Moreover, it increases the nodes' lifetime and lifetime of the network. © 2019 IEEE.

SciVal Topic Prominence ⓘ

Topic: Routing protocols | Mobile ad hoc networks | Colony optimization

Prominence percentile: 83.570 ⓘ

Author keywords

ACO Energy consumption IoT Network lifetime Routing algorithms WSN

Indexed keywords

Engineering controlled terms:

Ant colony optimization Artificial intelligence Energy efficiency Energy utilization Network routing Routing algorithms Routing protocols Sensor nodes

Engineering uncontrolled terms

Ant based routing Ant Colony Optimization (ACO) Efficient routing Evaluation results Existing problems Network lifetime Resource Constraint Time-critical applications

Cited by 0 documents

Inform me when this document is cited in Scopus:

Set citation alert > Set citation feed >

Related documents

Find more related documents in Scopus based on:

Authors > Keywords >

ISBN: 978-172812971-6

Source Type: Conference Proceeding

Original language: English

DOI: 10.1109/ICOM47790.2019.8952053

Document Type: Conference Paper

Sponsors: Inspilogix, ProStram Technologies

Publisher: Institute of Electrical and Electronics Engineers Inc.

© Copyright 2020 Elsevier B.V., All rights reserved.

About Scopus

[What is Scopus](#)

[Content coverage](#)

[Scopus blog](#)

[Scopus API](#)

[Privacy matters](#)

Language

[日本語に切り替える](#)

[切换到简体中文](#)

[切换到繁體中文](#)

[Русский язык](#)

Customer Service

[Help](#)

[Contact us](#)

ELSEVIER

[Terms and conditions ↗](#) [Privacy policy ↗](#)

Copyright © Elsevier B.V. ↗. All rights reserved. Scopus® is a registered trademark of Elsevier B.V.

We use cookies to help provide and enhance our service and tailor content. By continuing, you agree to the use of cookies.

 RELX