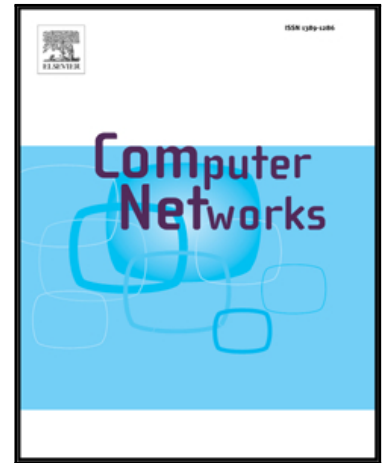


Accepted Manuscript

Congestion Control in Wireless Sensor Networks by Hybrid Multi-Objective Optimization Algorithm

Karishma Singh , Karan Singh , Le Hoang Son , Ahmed Aziz

PII: S1389-1286(18)30143-9
DOI: [10.1016/j.comnet.2018.03.023](https://doi.org/10.1016/j.comnet.2018.03.023)
Reference: COMPNW 6450



To appear in: *Computer Networks*

Received date: 25 August 2017
Revised date: 19 March 2018
Accepted date: 22 March 2018

Please cite this article as: Karishma Singh , Karan Singh , Le Hoang Son , Ahmed Aziz , Congestion Control in Wireless Sensor Networks by Hybrid Multi-Objective Optimization Algorithm, *Computer Networks* (2018), doi: [10.1016/j.comnet.2018.03.023](https://doi.org/10.1016/j.comnet.2018.03.023)

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. 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.

Congestion Control in Wireless Sensor Networks by Hybrid Multi-Objective Optimization Algorithm

Karishma Singh¹, Karan Singh¹, Le Hoang Son ^{2*}, Ahmed Aziz¹

¹School of Computer & Systems Sciences, Jawaharlal Nehru University, New Delhi, India
karishmasingh029@gmail.com, karan@mail.jnu.ac.in, ahmed.aziz@fci.bu.edu.eg

² VNU University of Science, Vietnam National University, Vietnam
sonlh@vnu.edu.vn

*: Corresponding author. Tel.: (+84) 904.171.284. Address: 334 Nguyen Trai, Thanh Xuan, Hanoi, Vietnam

Abstract: In this paper, a new congestion control algorithm for Wireless Sensor Networks is proposed. The existing algorithms for this problem have high complexity and power usage due to retransmission with congestion control being carried out by finding the optimal rate through a simple Poisson process. Retransmission of the colliding packets causes wastage of energy since wireless sensor network has limited battery. It has been realized that heuristic based methods offer better rate than the simple Poisson process. Besides, energy of the nodes was not considered in the fitness function of the related algorithms, which can lead to node failure when low energy nodes are used for sending high amount of packets. In order to handle those limitations, we propose a congestion control algorithm based on the multi-objective optimization algorithm named PSOGSA for rate optimization and regulating arrival rate of data from every child node to the parent node. A multi-objective optimization function taking into consideration the energy of the node in its fitness function is used. The priority based transmission is enabled as the optimization approach regulates the arrival rate on the basis of priority: output available bandwidth and energy of the child node. To mitigate the congestion, adjustment of rate to optimum value is used. The new algorithm is implemented in MATLAB R2016a and compared against the existing Cuckoo Search (CS) and Adaptive Cuckoo Search (ACS) algorithms. Simulation results prove that proposed mechanism has better results than the existing approaches.

Keywords: Wireless sensor networks; Congestion control; Congestion levels; PSOGSA; Optimization.

متن کامل مقاله

دریافت فوری ←

ISIArticles

مرجع مقالات تخصصی ایران

- ✓ امکان دانلود نسخه تمام متن مقالات انگلیسی
- ✓ امکان دانلود نسخه ترجمه شده مقالات
- ✓ پذیرش سفارش ترجمه تخصصی
- ✓ امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
- ✓ امکان دانلود رایگان ۲ صفحه اول هر مقاله
- ✓ امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
- ✓ دانلود فوری مقاله پس از پرداخت آنلاین
- ✓ پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات