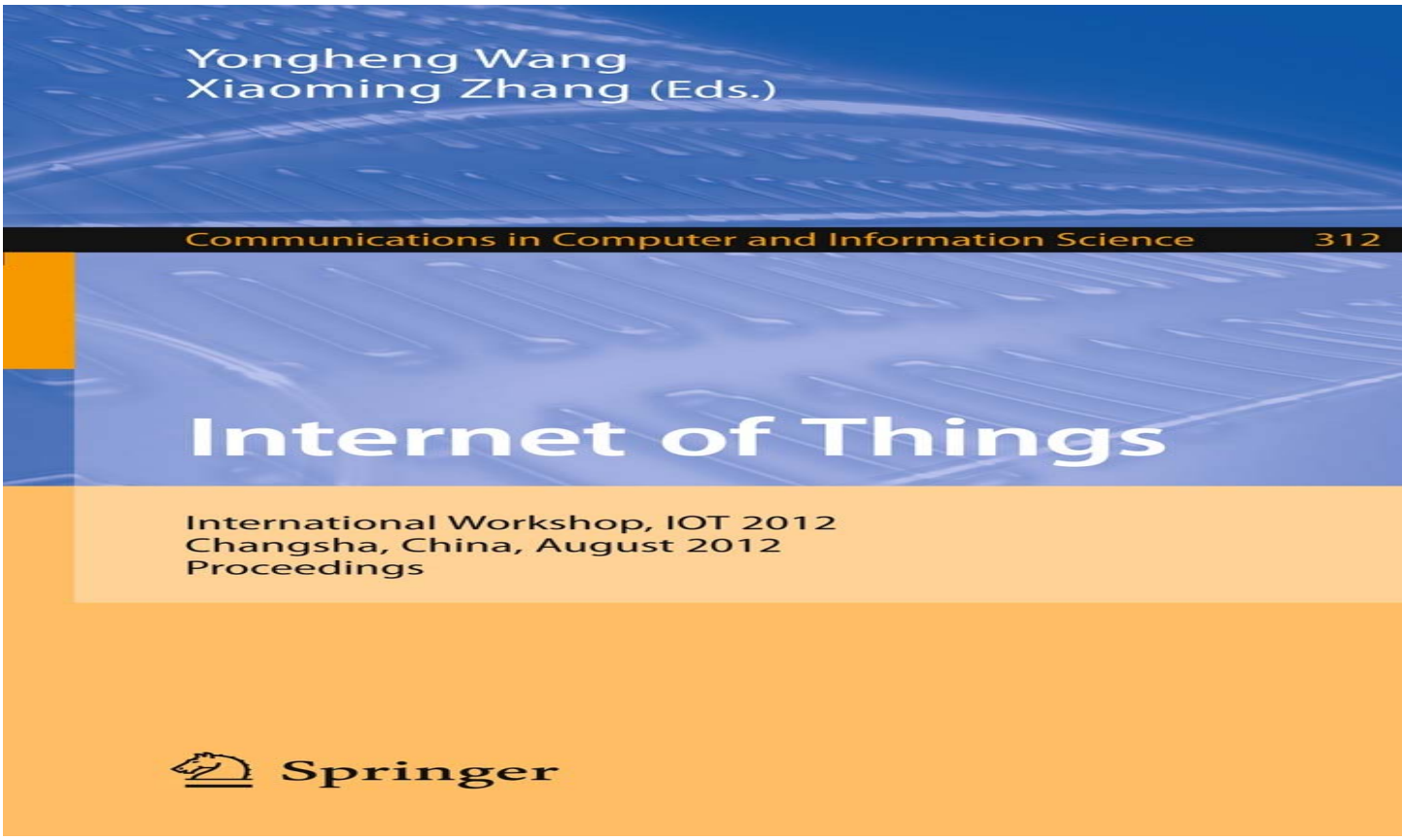

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Ant Intelligence Routing Algorithm for Wireless Sensor Networks

- Awudu Karim,
- Xiaoming Zhang,
- A. M. Oluyemi &
- T. Fitarikandro

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Part of the Communications in Computer and Information Science book series (CCIS,volume 312)

Abstract

In this paper, we present ant intelligence routing algorithm (AIRA), an adaptive, energy efficient and multiple-path protocol designed for wireless sensor networks. The primary goals of the protocol design are energy efficiency and self-organization without compromising throughput. AIRA reduces energy consumption by enabling low-duty-cycle operation and clocking neighbors to power of their radios to avoid unnecessary listening and interference during data transmission in a multihop network through adaptive sleeping technique. This greatly improves energy efficiency. It supports self-organization of individual nodes and reduces control overheads by using data packets themselves to maintain an established route for communication. Finally, AIRA applies synchronized sleeping technique to improve energy efficiency of the entire network. In an extensive set of simulations, we compare our routing algorithm with a state-of-the-art algorithm, and show that it gets better performance over a range of different scenarios.

Keywords

- **sensor networks**
- **energy efficiency**
- **ant colony based algorithms**

Preview

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Author information

Authors and Affiliations

1. **College of Information Science and Engineering, Hunan University, Lushan Road, Changsha, 410082, China**
   Awudu Karim, Xiaoming Zhang, A. M. Oluyemi & T. Fitarikandro

Editor information

Editors and Affiliations

1. **College of Information Science and Engineering, Hunan University, Lushan Road, 410082, Changsha, China**
Yongheng Wang & Xiaoming Zhang &

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About this paper

Cite this paper

Karim, A., Zhang, X., Oluyemi, A.M., Fitarikandro, T. (2012). Ant Intelligence Routing Algorithm for Wireless Sensor Networks. In: Wang, Y., Zhang, X. (eds) Internet of Things. Communications in Computer and Information Science, vol 312. Springer, Berlin, Heidelberg. https://doi.org/10.1007/978-3-642-32427-7_11

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- DOIhttps://doi.org/10.1007/978-3-642-32427-7_11
- Publisher NameSpringer, Berlin, Heidelberg
- Print ISBN978-3-642-32426-0
- Online ISBN978-3-642-32427-7
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