Indonesian Journal of Electrical Engineering and Computer Science
Vol. 9, No. 2, February 2018, pp. 265~266
ISSN: 2502-4752, DOI: 10.11591/ijeecs.v9.i2.pp265-266

Efficient and Energy Scheme for Wireless Rechargeable Sensor Network

S. V. Saravanan
Department of Electrical and Electronics Engineering (Marine), AMET University, Chennai

Article Info

Article history:

Received Oct 16, 2017
Revised Dec 23, 2017
Accepted Jan 11, 2018

Keywords:

Android Application
Energy Harvesting
Fuzzy C
Priority
WSN

ABSTRACT

The wireless rechargeable sensor network is attractive crucial and important in recent years for the advancement of wireless energy communication skill. The previous explore shown that not all of sensors can be recharged due to the limitation of power capacity to mobile chargers can carry. If a sensor playing a critical role in a sensing task cannot function as usual due to the exhausted energy, then the sensing task will be interrupted. Therefore, this paper proposes a novel recharging mechanism taking the priorities of sensors into consideration such that mobile chargers can recharge the sensor with a higher priority and the network lifetime can be efficiently sustained. The priority of each sensor depends on its contribution to the sensing task, including the coverage and connectivity capabilities. Based on the priority, the sensor with a higher priority will be properly recharged to extend the network lifetime. Simulation results show that the proposed mechanism performs better against the related work in network lifetime.

Copyright © 2018 Institute of Advanced Engineering and Science.
All rights reserved.

Corresponding Author:

S. V. Saravanan,
Department of Electrical and Electronics Engineering (Marine),
AMET University,
Chennai.
Email:

1. INTRODUCTION

Wireless sensor network has been widely deployed in numerous fields, such as military surveillance, health care monitoring, and so on. However, the network lifetime of a WSN is often limited by sensors' energy [1]-[3]. As a result, how to extend the network lifetime is becoming the most important issue in the system. In addition to power control or power saving approaches, which are two common ways to extending network lifetime, in previous research one of extending network lifetime schemes is to plan an effective wake-up/sleep schedule for sensors to achieve the purpose of extending the network lifetime [4]-[5]. In this kind of researches, sensors will automatically judge whether they are redundant. If the sensor enters a sleep mode, it can avoid unnecessary power consumption. Fuzzy C strange points clustering algorithm is assisted which reduces the power consumption considerably [6].

To find a set of sensors to cover the entire area with the minimum number of sensors is the goal of this kind of researches. However, no matter how to save the energy, the overall network lifetime is still limited by sensors' power. Android application based malware detection by rigorous analysis of decompiled source code is presented in [7].

Therefore, to get the more stable way of charging, using mobile chargers equipping with wireless energy transfer is the most promising way to provide sustainable energy and have high load efficiency than energy harvesting. There are many types of research in this field. In this paper, the sensors are classified into three levels by their contributions in coverage and connectivity to the sensing field [8]-[9]. According to the levels an effective and efficient charging scheme for mobile chargers to recharge sensors is proposed in this paper such that the necessary sensors in the sensing field can be restored to certain coverage and connectivity

of the sensing area this can be overcome by using genetic algorithms based enhanced K Strange points clustering algorithm [10].

2. RESEARCH METHOD

This can avoid the occurrence of the hole and sustain the network generation. The remaining energy of sensors at the end of the simulation, where the blue lines stand for the PERS and the red ones for the e-PERS. Obviously, and no sensor depletes its energy at the end of the simulation, no matter the replenishment scheme is PERS or e-PERS. Moreover, we can see that e-PERS maintain the effectiveness of power Performance comparison regarding network lifetime. Better than PERS, because e-PERS enables the action of mobile charger and this can reduce the energy consumption.

The authors assumed that the mobile charger has enough energy to recharge sensors. Based on the assumption, the author's study and optimization problem with the objective of maximizing the ratio of the vacation time of mobile charger over the renewable energy cycle time. Different from the studies mentioned above explores the recharging problem for the sensors capable of moving not stationary.

3. RESULTS AND ANALYSIS

Therefore, in addition to the traditional recharging problem to find an appropriate path for charging the paper also needs to discuss the rendezvous problem between a mobile charger and mobile sensors in order not to miss the recharging of the sensor. However, there is still some literatures explore how to select the appropriate point in the mobile charger, in the charging range and choose the number of low energy sensor load.

4. CONCLUSION

In the previous research, they also consider the remaining capacity of a sensor node, but they didn't recognize the importance of sensor in the scene. This discusses the remaining power of sensor but also added to the importance of Sensor in the scene. So we proposed PERS and e-PERS, two effective charging methods. Which permit of the network to maintain the coverage of empty sensor? In future, the mobile charging vehicle can also be multi-mobile and can cooperate and coordinate with high efficiency of charging more than single sensor load.

REFERENCES

[1] Oliveira L. M. and Rodrigues J. J., "Wireless Sensor Networks: A Survey on Environmental Monitoring," *JCM*, vol/issue: 6(2), pp. 143-151, 2011.
[2] Rawat P., *et al.*, "Wireless sensor networks: a survey on recent developments and potential synergies," *The Journal of supercomputing*, vol/issue: 68(1), pp. 1-48, 2014.
[3] Yick J., *et al.*, "Wireless sensor network survey," *Computer networks,* vol/issue: 52(12), pp. 2292-2330, 2008.
[4] Carbunar B., *et al.*, "Coverage preserving redundancy elimination in sensor networks," *International Conference In Sensor and Ad Hoc Communications and Networks*, pp. 377-386, 2004.
[5] Gupta H., *et al.*, "Connected sensor cover: Self-organization of sensor networks for efficient query execution," *IEEE/ACM Transactions on Networking (ToN),* vol/issue: 14(1), pp. 55-67, 2006.
[6] Johnson T. and Singh S. K., "Fuzzy C strange points clustering algorithm," *International Conference in Information Communication and Embedded Systems (ICICES)*, pp. 1-5, 2016.
[7] Tiwari P., *et al.*, "Malware detection in android application by rigorous analysis of decompiled source code," *International Conference in Computing Communication Control and automation (ICCUBEA),* pp. 1-6, 2016.
[8] Ganesh K. K. and Arivazhagan D., "New cryptography algorithm with for effective data communication," *Indian Journal of Science and Technology*, vol/issue: 9(48), pp. 108-970.
[9] Johnson T. and Singh S. K., "Genetic algorithms based enhanced K Strange points clustering algorithm," *International Conference in Computing and Network Communications (CoCoNet)*, pp. 737-741, 2015.
[10] O. Najah, *et al.*, "Packet Loss Rate Differentiation in slotted Optical Packet Switching OCDM/WDM," *TELKOMNIKA (Telecommunication Computing Electronics and Control)*, vol/issue: 15(3), 2017.