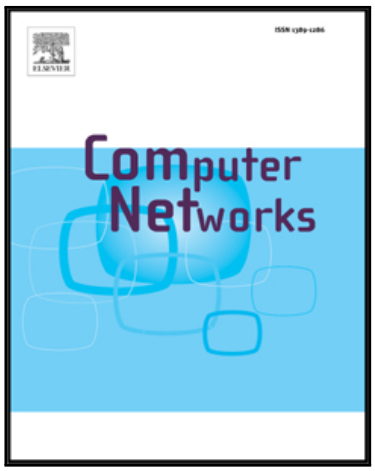

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Abstract

Sensing and communication are foundations of the Internet of Things(IoT). Although energy efficiency is an important issue in MAC protocol design for general energy limited sensor networks, throughput is non trivial for some specific sensor networks. In this paper, we propose a new duty cycling scheme called *MaxPut* that can maximize throughput without sacrificing energy efficiency through the appropriate combination of random and scheduled duty cycling schemes. *MaxPut* attempts to identify risky nodes and enables risky nodes to maximize the utilization of active periods of their neighbors such that *MaxPut* can avoid potential buffer overflow due to aggregation of bursty data. We obtain overall throughput in networks with homogeneous and heterogeneous event occurrence processes respectively. Further, we compare *MaxPut* against a fully random duty cycling scheme. The simulation results show that *MaxPut* outperforms prior work with respect to the network throughput, while energy consumption is almost equivalent to the existing duty cycling scheme.

Keywords: WSN, Energy Efficiency, Throughput, Duty Cycling

1. Introduction

Sensing application plays a vital role in many fields, such as underwater surveillance [1], environmental monitoring [2, 3, 4] and logistics tracking [5, 6].

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