

基于任务组合的无线传感器网络MAC协议框架

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基金项目: 无线传感器网络语义互联机制及网络技术研究

摘要:

基于无线传感器网络 (Wireless Sensor Network, WSN) 语义互连思想, 讨论了面向应用的WSN任务组合的基本概念、任务关系及任务组合递归算法。将任务组合方法与现行WSN一般性 MAC技术相结合, 提出了基于任务组合的通用的WSN MAC框架。将该框架应用于具有代表性的WSN MAC中, 具体分析了IEEE 802.11MAC和S-MAC在该框架中的实现方式。网络仿真结果显示, 基于语义互连采用任务组合方式的MAC协议框架, 能有效地改进一般MAC的能耗特性及时延特性, 尤其是对于多信息采集的WSN

关键词: WSN; 任务组合算法; 面向应用; MAC

A MAC Framework based on Task Composition Algorithm in WSN

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Abstract:

Based on the concept of semantic communication, a novel application-oriented task composition algorithm is proposed for Wireless Sensor Networks (WSNs). Combining this algorithm with current MAC techniques, a united framework for WSN MAC technology is given. Employing the framework to improve the popular WSN MAC protocols such as IEEE 802.11 MAC and S-MAC, simulation results demonstrate that the improved MAC protocols based on task composition MAC framework could effectively decrease the average energy consumption and time delay, especially for multi-information collection WSNs.

Keywords: WSN; task composition algorithm; application-oriented; MAC

投稿时间: 2012-06-15

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