

基于无线传感器网络的细粒度电器能耗计量系统

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摘要：

自然能源保护和节省是当前人们所关注的一个热点，引发很多研究人员开发和设计相应的节能技术。电能的利用在家庭和商业中占有重要比例，因此如何提高电能的利用率具有重要意义，其中一个关键问题是需要找出电能消耗详细信息。然而，在当前的电能统计方法中，无法获取每台电器用电的详细数据。本文基于无线传感器网络技术开发一套电器能耗细粒度统计平台，包括电能采集节点、电能数据传输网络和存储与可视化等部分，能够统计出每一个电器的当前总的能耗、过去任意时段能耗，为未来实时电价提供有力工具。同时，基于该系统亦可对用户用电行为规律进行分析。

关键词：无线传感器网络；电器能耗；计量系统；细粒度；实时电价

A Fine Grained Power Auditing System based on Wireless Sensor Networks

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Abstract:

Natural resource preservation has recently become a significant concern, and has motivated research and development efforts to assist in both conservation and management. Electricity usage in residential and commercial buildings represents a significant fraction of total energy expenditure. A key prerequisite for energy conservation is knowing when and where energy is being spent. However, the current energy reporting devices only provide coarse grained information. This paper presents a fine grained power auditing system based on the sensor networks. This system can provide detailed information about the total energy consumption in any period for each appliance and thus will become an efficient tool for future real-time pricing. At the same, some behavior model can be drawn from the collected data based on the proposed system.

Keywords: Wireless sensor networks; Electricity consumption; Auditing system. Fine-grain; Real-time Pricing

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