信号处理 2013, 29(11) 1560-1567 DOI: ISSN: 1003-0530 CN: 11-2406/TN

短文与研究通讯

无线传感器网络中的分布式压缩感知技术

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摘要：

本文对无线传感器网络中分布式压缩感知的几个关键技术进行了详细阐述。首先，简要论述了压缩感知方法的基本原理；其次，分析了无线传感器网络中的分布式压缩感知技术与单个信号的压缩感知技术的区别，针对无线传感器网络中联合稀疏模型的建立、分布式信源编码以及联合稀疏信号的重构技术等问题进行了详细讨论；分析了在无线传感器网络的实际应用中，联合稀疏模型、分布式信源编码方式及联合稀疏信号重构方法的性能。最后，对无线传感器网络中分布式压缩感知技术的未来研究方向进行了展望。

关键词： 无线传感器网络；压缩感知；信源编码；信号重构

Distributed Compressive Sensing for Wireless Sensor Networks

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Abstract:

This paper presents some key problems of the distributed compressive sensing for wireless sensor network (WSN) in detail. The compressive sensing technique has been becoming a hot spot all over the world because of its excellent performance for signal processing. In this paper, we firstly present the original compressive sensing technique for single signal in brief. Secondly, we discuss the application of compressive sensing in WSN. It analysises the difference between distributed compressive sensing technique and compressive sensing technique for single signal. The Joint sparsity models, distributed source coding and recovery of joint sparsity signals are also discussed in detail for wireless sensor networks. We discusses several popular joint sparsity models for WSN and explains their applications in practice and analyse the performance and efficiency of distributed source coding and recovery of joint sparsity signals. At last, we introduce the future challenges of distributed compressive sensing technique.

Keywords: WSN Compressed Sensing Source Coding Signal Recovery

收稿日期 2013-04-30 修回日期 2013-08-12 网络版发布日期 2013-11-25

DOI:

基金项目:

总装预研项目（*******0602）；国家科技支撑计划（2011bah24b12）；高等学校博士学科点专项科研基金（20124408110002）

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