基于**LBT**的无线传感器网络多节点协同图像压缩算法

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基金项目：

摘　要：

针对WMSNs能量、存储、处理能力严重受限的特点，一些学者提出了"在网计算"的思想，对实现WMSNs中大尺寸、高分辨率图像的压缩和传输极具指导意义。基于簇结构，本文提出一种基于LBT的多节点协同图像压缩算法（MCIC, Multi-node Cooperative Image Compression），即采用低复杂度、高压缩效能的LBT图像压缩算法，通过多个中继节点协作，共同完成图像的压缩编码和转发任务。实验及仿真结果表明，该多节点协同图像压缩算法在高压缩比情况下的重建图像质量远远优于JPEG2000；采用该方案能极大地缓解相机节点的能耗压力，进而延长网络生命周期。

关键词：多媒体传感器网络；LBT；多节点协同；图像压缩算法

LBT Based Multi-node Cooperative Image Compression Algorithm for WMSNs

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Abstract:

The main characteristic of Wireless Multimedia Sensor Networks (WMSNs) is nodes with limited energy, memory and computational power. Motivated by this, the concept of in-network processing has been proposed which greatly inspires the study of compression and transmission of big size and high resolution images in WMSNs. Based on the clustering architecture, the paper proposes a multi-node cooperative image compression algorithm based on LBT. In this algorithm, the low-complexity and high efficient LBT image compression algorithm is used, and multi-redirectors share the processing task of image compression and transmission. Simulation results show that the proposed image compression algorithm performs much better than JPEG2000 with higher PSNR and it greatly lightens the processing energy consumption burden on the camera-equipped node which leads to a longer network lifetime.

Keywords: Multimedia Sensor Networks; LBT; multi-node cooperation; image compression algorithm

投稿时间：**2010-04-27**

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