论文

SAR图像压缩采样恢复的GPU并行实现

陈帅[①②] 李刚[*①] 张颢[①] 孟华东[①] 王希勤[①]*

[①](清华大学电子工程系 北京 100084) [②](西安电子工程研究所 西安 710100)

A GPU-based Parallel Implementation of Compressive Sampling Reconstruction for SAR Image Compression

Chen Shuai[①②]   Li Gang[①]   Zhang Hao[①]   Meng Hua-dong[①]   Wang Xi-qin[①]*

[①](Department of Electronic Engineering, Tsinghua University, Beijing 100084, China)
[②](Xi'an Electronic Engineering Research Institute, Xi'an 710100, China)

摘要	参考文献	相关文章

Download: PDF (490KB)   HTML 1KB   Export: BibTeX or EndNote (RIS)   Supporting Info

摘要 压缩采样(CS)技术被尝试应用于合成孔径雷达(SAR)图像的压缩。然而，高分辨SAR图像数据量大，导致压缩采样后的恢复过程计算量大，传统的中央处理器(CPU)无法实时成像。为解决这一问题，该文在图形处理器(GPU)平台上设计了CS的并行方法，并实现了SAR图像压缩。实验结果表明，在保证SAR图像压缩性能的前提下，该文设计的GPU并行处理速度能够提高到CPU串行处理的8.8倍。

关键词： 合成孔径雷达(SAR) 压缩采样(CS) 并行计算 图形处理器(GPU)

Abstract： Compressive Sampling (CS) technique has been adopted to compress Synthetic Aperture Radar (SAR) images. However, due to the mass data of high resolution SAR images, the reconstruction of compressive sampling generates huge computational load, making it impossible to run on traditional CPU at real time. To solve this problem, this paper attempts to implement the reconstruction produce in parallel based on Graphics Processing Unit (GPU) device. The results show that the GPU-based implementation is faster (up to 8.8 times) than the CPU-based implementation.

Keywords： Synthetic Aperture Radar (SAR)   Compressive Sampling (CS)   Parallel computation   Graphic Processing Unit (GPU)

引用本文：

陈帅, 李刚, 张颢, 孟华东, 王希勤.SAR图像压缩采样恢复的GPU并行实现[J] 电子与信息学报, 2011,V33(3): 610-615

Chen Shuai, Li Gang, Zhang Hao, Meng Hua-Dong, Wang Xi-Qin.A GPU-based Parallel Implementation of Compressive Sampling Reconstruction for SAR Image Compression[J] , 2011,V33(3): 610-615

链接本文：

http://jeit.ie.ac.cn/CN/10.3724/SP.J.1146.2010.00461   或   http://jeit.ie.ac.cn/CN/Y2011/V33/I3/610

Service
- 把本文推荐给朋友
- 加入我的书架
- 加入引用管理器
- Email Alert
- RSS

作者相关文章
- 陈帅
- 李刚
- 张颢
- 孟华东
- 王希勤