嵌入式FBG图像解调系统噪声特性分析及处理*

作　者：鲍吉龙1 吴都健1 2　郑德春1　何仲昆1

单　位：1 宁波工程学院电子与信息工程学院，宁波315016 2 华东理工大学信息科学与工程学院，上海200237

基金项目：

摘　要：

随着嵌入式技术的迅猛发展，利用嵌入式处理器构建FBG图像解调系统实现大量传感数据的实时、实地快速处理成为可能。分析了嵌入式FBG图像解调系统光斑图像特性，提出基于邻域平均与距离变换相结合的二次空域去噪算法，实验结果表明，二次去噪算法继承了邻域平均和距离变换的优点，用该算法对FBG解调系统光斑图像去噪，并联立光斑定位算法解调FBG光斑，解调精度不超过0.2像素，解调结果十分理想。

关键词：FBG解调，嵌入式系统，图像去噪，邻域平均，距离变换

The analysis and processing of noise based on the embedded Fiber Bragg Grating image demodulate system

Author's Name: BAO Ji-Long11 WU Du-Jian1 2 ZHENG De-Chun1 HE Zhong-Kun1

Institution: 1 Ningbo University of Technology, College of Electronic and Information Engineering,Ningbo 315016,China; 2 East China University of Science and Technology, School of Information Science and Engineering, Shanghai 200237, China;

Abstract:

With the fast development of embedded technology, the Fiber Bragg Grating (FBG) image demodulate system designed through the embedded microprocessor make it possible to implement real-time and fast processing of a large number of sensory data. This article analyzing the characteristics of FBG image captured by the embedded Fiber Bragg Grating (FBG) image demodulate system, presents a second-denoising algorithm unified neighborhood average and distance transform in spatial domain. The experimental results show that using this second-de-noising algorithm inheriting the advantages of neighborhood average and distance transform in image de-noising, error of location between light spots would be less than 0.2 pixels, and the demodulate results are satisfactory in the embedded Fiber Bragg Grating image demodulate system.

Keywords: demodulation of Fiber Bragg Grating, embedded system, image de-noising, neighborhood average, distance transforms

投稿时间：**2010-03-29**

查看pdf文件