

论文

基于机器视觉的小型金属部件表面缺陷检测方法研究与系统开发

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摘要:

本文针对以Nd-Fe-B永磁体工件为代表的小型金属部件, 研究了一种基于机器视觉技术的表面缺陷检测方法。其要点是利用模板匹配算法, 通过求模板和子图像的互相关函数的最大值来确定目标的中心位置; 再在目标的感兴趣区域内 (ROI) 进行基于最大类间方差 (OSTU) 算法的自适应阈值分割, 以检出并统计缺陷; 进而判别其合格与否。基于该方法设计了适用的光源系统, 并利用V C++ 6.0完成了原型系统开发。通过实验证明了本文方法和系统的有效性。

关键词:

On Machine Vision Based Surface Flaw Detection Technique for Minitype Metal Parts

Abstract:

For minitype metal parts especially a kind of Nd-Fe-B permanent-magnet workpiece, an approach to detection of surface flaw was developed, which is based on machine vision techniques. Firstly it applies template matching to seeking exact center location of the object via maximizing the cross correlation functions of a template and sub-images. Secondly it detects flaws in the region of interest and counts them, mainly by carrying out OSTU-algorithm-based image segmentation with an adaptive threshold. Finally, it declares if the workpiece checked is qualified according to a predefined threshold. Corresponding to the above method, a suitable light system was designed and a prototype detecting system has been developed using Visual C++ 6.0. Both the method and the prototype system were validated by experiments.

Keywords:

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