A study on Automatic Optical Inspection of Laser Diodes

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ABSTRACT

This essay is based on the structure of image vision to develop the auto inspection technique of LD ’ s defects. The LD ’ s images are firstly captured by a CCD system. Then, we develop image processing techniques to detect the defects of LD ’ s object lens. The developed image-processing techniques are based on the spatial domain and the frequency domain. On the spatial domain, the color-space transformation techniques are used to obtain distinct images. And the image preprocesses are used to filter noises and obtain the outlines of LD ’ s object lens. We then employee a circle to fit the object lens by the least square method. Finally, the defects of LD ’ s object lens are inspected throught two-valued and morphology techniques. On the frequency domain, the Haar wavelets are used to obtain features of object lens in different space scales. According to those features, we inspect the defects, including the small flaws and blots. Finally, experiments perfomed on a practical system demonstrate the effectiveness of the proposed methods.

Keywords : Least diode ; Defect inspection ; Image processes ; Machine vision

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