A Study on Mask Cloth Inspecting System Using Fractals

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ABSTRACT

This study employees fractals to inspect the defects of cloth masks. Since the surface textures of the cloth mask and its defects are different, the use of fractals is a suitable approach to detect defects on masks. The mask image is firstly captured by a CMOS vision system. Next, we develop image preprocessing techniques to filter out noises and search for the mask counter, including color space transformation, two-dimension Gaussian filter, region growing method and image thinning method. The color space transformation is used to obtain luminance of the mask image. The cooperation of the one-dimension Gaussian filter and the region growing method is used to make the mask counter smooth and continuous. The cooperation of the Otsu ’s two-level method and the image thinning method is employed to search for the coordinates of the mask counter. Based on the fractal geometric theory, we develop a differential box-counting method to detect the defects of cloth masks. Finally, experiments on practical masks show effectiveness of our proposed methods.

Keywords : Image process, defect inspection, Fractal theory, Differential box- counting method

Table of Contents

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