

# 彩色濾光片表面瑕疵檢測

羅鵬飛, 施柄辰

機械工程學系

工學院

luo@chu.edu.tw

## 摘要

Color filter (CF) is one of the key components of the liquid crystal panel. Currently, the defect of color filters is inspected by artificial inspection in the final product stage. To insure the product quality of the color filter, it is necessary to induct the machine vision system to the inspection line to promote the inspection efficiency to avoid the mistake in the judgment of the defects. Since the defects have different state under the different light source form, both of the transmitted and reflected lights are used to acquire the image of the colors filter to highlight the defects in this research. The color filter panel involves regular grid texture consisting of vertical and horizontal lines. Fourier transform is first used to filter the response of these components out in frequency spectrum and the Gauss low pass filter is then used to retain the low frequency spectrum corresponding to the defect response so that the defects may be highlighted. Finally the trial control limits binary thresholding is applied to segment the defect from the CF image. By observing the energy distribution in the power spectrum, the optimum cutoff frequency of the Gauss low-pass filter is found. In the inspection of white defects, the trial control limits binary thresholding is directly used to examine white defects in the image acquired by the transmitted light. Experimental results indicate that the proposed method is effective for detecting surface defect of color filter panels.

關鍵字: color filter, defect, Fourier transform, frequency spectrum, Gauss low pass filter