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SELECTED PAPERS FROM
ICOM'01, ICOM'05 AND
ICOM'08

Editors

Asan G. A. Muthalif
Amir A. Shafie
Momoh J.E. Salami



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REVIEW OF IMAGE PROCESSING IN INDUSTRIAL INSPECTION AND QUALITY CONTROL

Othman O. Khalifa and Sheroz Khan

International Islamic University Malaysia
Electrical & Computer Department, Kulliyah of Engineering,
Jalan Gombak, 53100, Kuala Lumpur, Malaysia
Fax: +603 2056 4853, Email: khalifa@iiu.edu.my

ABSTRACT

Image processing Methods and processes have been successfully developed to permit automated quality control in the industry. Automated inspection is the process of taking camera pictures of a manufactured component and automatically ascertains whether or not the component contains any manufacturing flaws or defects. To replace Manual inspection which is an inefficient and often ineffective method of industrial quality control? Not only is it resource intensive, but it also allows certain defects to go undetected, and makes it difficult to introduce inspection standards. Automated systems increase the uniformity and reliability of quality control, and enhance the working environment. This paper review a developing applications platform for manufacturing process quality control capable of showing range images in various and user-desired formats.

Keywords: Computer Vision, Image Processing, Quality Control, Quality Inspection.

1 INTRODUCTION

Increased industrial automation plays a critical role in revitalizing manufacturing competitiveness. Automated inspection is increasingly being seen as an alternative to manual inspection for quality control in manufacturing industries. Image processing is a key technology due to its potential to allow automatic inspection, process monitoring, and advanced robot guidance. It is taking over more and more quality control processes that until now could only be carried out by human beings, where quality has become established as the form of control between the producer and the customer in profile extrusion. As a fast developing technology, computer vision has attracted much research work on applications in quality inspection of products. In today's industrial marketplace, quality and efficiency are key requirements for all businesses. Over the past few years there has been a dramatic increase in the use of imaging technologies in the industry. With significant advances in standard PC and digital signal processing, improved camera technology, combined with advanced software, have made image processing technology available to many new users.

To accommodate the full variety of circumstances encountered in an operational environment, however, such systems need to be able to learn and adapt to particular situations. Today's high-speed, complex manufacturing systems require the development of automation technologies that can efficiently collect data, use historical information to provide context, and generate process knowledge. Visual intelligently designed systems can use this knowledge for automatic characterization and control of product quality and the manufacturing process. In this regard, image processing technology continues to provide new and innovative opportunities to automate manufacturing systems. The semiconductor and electronic industries are excellent examples of the successful application of image technology today [1, 2]. Almost all semiconductor and electronic manufacturing equipment include machine vision systems to perform essential tasks such as alignment and positioning, and information gathering tasks such as automatic defect and signature classification for yield management. Many other industries are witnessing a rapid adoption of this technology including aluminum, forest products, textiles, food, glass, steel, metal casting, and the list continue [2, 3, 4]. On Line X ray inspection is the most complete inspection systems available, it can analyze products for contamination by metal, glass, stone, bone, hard plastics, Teflon and PVC. It can inspect products size, weight, shape, count,