

ABSTRACT

Barcode is a method of encoding text information that tends to simple and cheap. At this time, barcode reading system applied in Indonesia is to use Infrared Scanner. This system is felt still less in terms of flexibility and efficiency. To answer these problems, in this thesis author tries to develop a bar code reading system based on digital image recognition.

Data used in this thesis were taken using a digital camera. Pre-processing is perform after getting the image, include: convert RGB images to grayscale images, and perform edge detection. After that, the system will perform skew detection and then image rotation to restore the image to position 0°. Then do the pre-processing 2, namely: the acquisition of pixels that passed Scanline, calculate the gradient of each pixel, LPF, and masking. Furthermore, the system recognition process of reading the composition of bars and spaces is passed by the Scanline. Then, from the reading process gained confidence value that determines the level of confidence in reading the barcode system. Readable bar code displayed on the screen.

Designed system is tested levels of performance on several different conditions, namely: distance shooting, the slope of the barcode, edge detection method is used, and type of the sample surface. Analysis parameters used are the percentage accuracy of rotation and the percentage accuracy of reading.

From the test results obtained edge detection method are best used in this system is the method of Sobel and Prewitt. For samples with flat surfaces this method produce the percentage approaches 100% accuracy of the rotation at various angles and distance shots. For accurate readings, the system can do the reading well on a flat surface with a shooting distance of 10 cm and 20 cm, 87.5% at a distance of 10 cm, and 83.3% at a distance of 20cm, but the accuracy of the reading system is very bad at a distance of 30 cm, ie close 0%, so also with samples which have curved and irregular surfaces.

Keywords: barcode, edge detection