ABSTRACT

THE COMPARISON OF EDGE DETECTION IN DIGITAL IMAGE PROCESSING USING FREI CHEN AND SUSAN (SMALLEST UNIVALUE SEGMENT ASSIMILATING NUCLEUS) ALGORITHM

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The eyes are one of the five senses used by human to see, but the human eyes have limitations to capture the electromagnetic signals. Therefore, a computer or image processor was designed to capture entirely most electromagnetic signals. The image processor could analyze the images which could not be captured by human eyes and the images from unfitted or unmatched sources.

One of the image processing techniques which are well known is the edge detection method. Edge detection is commonly applied in digital image processing particularly in the image segmentation step. This method is used for identifying the boundary of an object from its overlapping background. Then the segmentation aims to portray the objects that contained within the image. These recent days, there are several edge detection methods, such as the Sobel, Canny, Prewitt, frei-chen and SUSAN (Smallest Univalue Segment Assimilating Nucleus). In this study two methods were used and compared; they are the frei-chen and SUSAN algorithm.

The results show that both of algorithms did well in detecting edges in an image. Frei-chen algorithm is better than SUSAN algorithm in edge detection of images that contain noises. Objectively, frei-chen algorithm PSNR (Peak Signals Noise Ratio) values are higher than SUSAN algorithm.

Keywords: digital image processing, edge detection, MSE, PSNR.