IMPLEMENTATION OF IMPROVED CANNY EDGE DETECTION USING ANT COLONY OPTIMIZATION

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Abstract

In the field of digital image processing, one of the important information that can be obtained is the outline of image or edges. Outline of the image is the fundamental component in image processing, especially in the areas of detection and feature extraction. In order to obtain the image information that is being analyzed, it’s necessary to process the image using edge detection methods. Unfortunately, the known methods of image edge detections until now still not optimal. Those methods more likely produce incomplete, unclear, or disconnected image edges. Therefore, it’s necessary to develop improved methods using the known image edge detection methods. So that the intensity of the incomplete information retrieval due to the incompleteness of edges detection can be reduced.

The results of edge detection process can be used for advanced image processing, e.g. pattern recognition. The image outputs from the edge detection process can be used as input dataset for pattern recognition process. Better edge detection results which closer to the original object that could produce a better dataset. So that, better edge detection results can help produce better results pattern recognition or other advanced image processing better.
In this final project will develop software to detect edges in the image using Canny method which has been improved by Ant Colony Optimization (ACO). Input image is processed with Canny edge detection, then the original image and the image edge detection results are modeled into an ant colony. Results of the input image transformation to the ant colony will be optimized by ACO. Colonies transformed tersbut then transformed back into the output image. The images are tested its performance is evaluated using ground truth images. Performance of Canny edge detection and Combined method using Canny edge detection and ACO are evaluated based on the results of image processing compared to images’ truth ground.

Keywords: ACO, Canny, Edge Detection, Image Processing.