ABSTRACT

The development of photography now has increased since the introduction of digital cameras. But until now it has not found the optimal solution at a low cost to take images with a wide viewing angle, called the panoramic image. To overcome these problems, it can be used the process of merging the overlapping images or we can called image mosaic.

In designing an image mosaic in this thesis consists of several processes, namely: input image, preprocessing, global alignment method, homography projection, and image compositing. Input image is 2 pieces of overlapping image, which is part of the whole panorama image object. In the process of image preprocessing performed normalization process and grayscaling image. The next stage is the implementation of a global alignment method, to find the best parameter of image registration according to the constraints given by the image adjustment. With this method, the user only to input 2 image, and then the system will search for the feature and other processes automatically. Then with the homography projection the second image changed it's projection to resemble into the first image. Recently after the various processes in the previous stage, both of input image will be merged, or combined into a panoramic image. The advantage of this method is no longer visible gaps and on the result of image mosaic and then can build seamless image mosaic because it can minimize the errors that occurred. Beside that, this method can merge more than two image and then can merge image with horizontal and vertical orientation.

In this research has generated a simulated seamless aligned image mosaic in merging two overlapping images with the average result value of MSE is 0.0021, the average result value of PSNR is 77.22 dB, and the average result value of correlation is 0.98. And simultaneously can reduce the average error value are 0.167 pixel with an average computation time of 263.158 seconds.

Key words: panoramic image, image mosaic, global alignment