Abstract

The growth of technology and the entry of the digital era occurring today, representation of an image need high memory and big transimision. One of the technology in processing image that can relieve data storage is the compression process. The process of compression involves process to minimize the size of the image to produce solid digital representation but still can represents the quality of the information that contained in that image. It is also reduces the time required for sending image over the internet nor downloads image from a web page. Among the various types of digital image compression that exist at this time, the JPEG compression is most commonly used and standardized. Techniques used by the JPEG compression standard is DCT (Discrete Cosine Transform) as a method of transformation. DCT has a very good level of density for the data. However, despite the advantages of DCT transformation, DCT has low performance at low correlated image and have high computation time. In this final project will be designed a method of digital image compression with a graph-based quantization and arithmetic coding that based combination of Discrete Cosine Transform (DCT) and Singular Value Decomposition (SVD). DCT performed at subblock image that shows high correlation between pixels, and otherwise, SVD performed on subblock image that shows low correlation. Although SVD is a transformation technique which has good performance for all types of images but have the disadvantage of high complexity. Analysis conducted by testing the performance from result of image recontruction using compression ratio and value of PSNR as the parameter.

Keywords: graph based quantization, arithmetic coding, PSNR, compression ratio, SVD, DCT.