

## Abstract

In the world of computing and multimedia lot of digital image compression standard is used, one of which is JPEG. This is because JPEG is able to meet the storage needs of both image quality and less storage space. This final project will be the analysis and implementation of the JPEG formation using Huffman Algorithm by addition of Selective Quantization.

In the process of the formation of JPEG, bitmap images as input. Color on bitmap image will be split into YCbCr then converted to Discrete Cosine Transform (DCT). After the DCT, quantization next process is performed that is sharing the stage with matrix DCT quantization matrices based on the quality standards desired. Next up is the zig-zag scan process, ie the process of sorting the results by quantization matrix in a zig-zag to determine the value of AC and DC. Before entering the stage with Huffman entropy coding results of zig-zag first processed with selective quantization. This process is the reduction of the level on each DC and AC coefficients are  $\pm 2^n$ . The end result of this process is the pixel value matrix that has been converted into binary form. Then the value of the binary decoding process is carried out to display the image (lossy) JPEG form.

From the test results obtained, by using selective quantization we can further shrink the existing matrix values, before entering the stage of entropy coding using Huffman. So that the aspect ratio in terms of the size of the stored image will require more storage space is relatively little, compared with the usual JPEG formation. However, not all image quantization effect on selective method, since the result will be the same size and only ratio although using this method. Therefore in this thesis also discussed the image of what criteria affect the selective quantization

**Keyword:** *ybcr, dct, quantization, zig zag, selective quantization, huffman*