

ABSTRACT

Digital image technology has developed very rapidly. This is evidenced by the number of scientists who carry out observations and research to be able to increase image resolution. Poor image results can reduce image information. High image resolution can make it easier to recognize an object easily.

In this final project, one of the image quality improvements is used, namely the Fast-Super Resolution Convolutional Neural Network (FSRCNN) method which is inserted with a skip connection and has been tested and compared with the original FSRCNN method. FSRCNN has a speed in reconstructing high-resolution images so that it allows very large information loss, by inserting a skip connection can help to minimize information loss. FSRCNN modifications are divided into two, namely FSRCNN SC 1 by adding one skip connection and FSRCNN SC 2 by adding two skip connections to the original FSRCNN model. In this study, using DIV2K data as training data, Set5, Set14 and BSDS200 as testing data in each dataset, there will be five images as testing the upscaling factor x2, x3 and x4.

The final result that has been obtained on the modified model uses one skip connection. From the results obtained from the FSRCNN SC 2 model, it is higher than the FSRCNN SC 1 and FSRCNN models. The FSRCNN model has the highest PSNR 37.73dB, the FSRCNN SC 1 model has the highest PSNR 38.47dB and the FSRCNN SC 2 model has the highest value between the other two models, which is 40.66dB. From these results, it can be concluded that FSRCNN SC 2 has successfully reconstructed super resolution images well.

Keywords: *Super Resolution, FSRCNN, Skip Connection, Convolutional Neural Network, Image enhancement.*