

ABSTRACT

The problem that is often faced when managing remote sensing satellite data is the very limited information about the data received from satellite imagery which is presented in the form of low-resolution images. Low resolution images have low pixel density and limited information to identify natural phenomena on the earth's surface. For this reason, it is necessary to improve image quality using Super Resolution in order to produce high resolution images from low resolution images.

Improving the quality of satellite imagery is carried out using Convolutional Neural Network (CNN) modeling and the TensorFlow framework, then designed with a Deep CNN model with Skip Connection and Network-in-Network (DCSCN). DCSCN consists of Feature Extraction Network with skip connection feature to extract local and global features. Meanwhile, the Reconstruction Network uses the Network-in-Network (NIN) feature to reconstruct images based on the features that have been obtained from the Feature Extraction Network.

The Super Resolution program with the DCSCN model in this study succeeded in producing high-resolution satellite images, and obtained parameter values, namely scale factors 2, 3 and 4, 320 epoch, 14 layers, and 2000 datasets. This study also obtained quite good PSNR and SSIM scores, with scale factor 2 of 38,164 dB and 0.9564, scale factor 3 of 34,437 dB and 0.9209, and scale factor 4 of 32,360 dB and 0.8810.

Keywords: *satellite, super resolution, convolutional neural network (CNN), skip connection*