ABSTRACT

In the digital era as of today, digital image is very easy to obtain, with many technologies that support getting digital image. Digital image is generally taken using electronic devices such as DSLR cameras, webcam cameras and mobile cameras. The need for quality digital image is very much in various professional fields such as photography, animation industry, medical, research, as well as for personal needs. But not infrequently the resulting image of the digital camera is lacking in quality, because of the high level of noise that can be caused during the acquisition of image as a camera ISO setting is too high, low light and the transmission process. It can damage the information contained in an image and reduce the comfort seen by the eye. A common noise in digital image is the Additive White Gaussian Noise (AWGN) or commonly called Gaussian noise.

DnCNN is a common CNN method used to reduce noise on digital image. At this final task designed the model of the denoising system using DnCNN architecture with 4 training scenarios with variations in the hyperparameters of epoch and different learning rate configurations. Every model that has finished training is saved into the checkpoint.pth file, so that the model can be reused during testing without having to do the same training process. The Testing process is done using test data from Test Set of noise image with the noise level variation σ = 15, 35, and 50 standart deviation.

Analysis of the model of the denoising system was conducted by anlyzing variations of hyperparameter configuration used in training scenarios, the influence hyperparameter configuration to model performance of PSNR and the performance of the system denoising the testing using test data with different noise level. Testing process using Checkpoint models with the best configuration and obtained PSNR results based on test data with different level noise is, σ = 15 PSNR 26.109, σ = 35 PSNR 21.368, and σ = 50 PSNR 19.076.

Keyword: DnCNN, *Noise level, Gaussian Noise, Denoising, Hyperparameter, PSNR*