ABSTRACT

On this era digital technology has been rapidly developed as human needs for technology is rapidly rising. One of that needs is in medical fields, especially for cell observation process for human. One of those advanced technology that are used for the process is PET Scan. But those technology still has couple of drawbacks, one of them is the poor quality of the image that was produced. This research is conducted for fixing the poor quality image that was produced by PET Scan. By converting PET images, which have low resolution into an image that has a super resolution using Enhanced Deep Residual Networks for Single Image Super-Resolution or EDSR and Wide Activation for Efficient and Accurate Image Super-Resolution or WDSR.

This final assignment was made to fix the digital image quality that are produced by PET Scan procedure by making it as an input into the super resolution network model, which is EDSR and WDSR model. WDSR was developed from EDSR by widening it's activation function from EDSR model. Those model then trained using PET Y-90 dataset. The training process done with 300.000 steps and the batch size each steps is 16 with scalling for each model is 4 to get the best results.

Output from the training process then analyzed to see effectiveness of the image restoration process from EDSR and WDSR model, by comparing PSNR and SSIM that are generated from those model to see how good the images that were produced. EDSR and WDSR have a little difference in the best PSNR and SSIM result, with it's PSNR from EDSR and WDSR, each have 44,1168 dB and 42,1730 dB, and SSIM results from EDSR and WDS, each have 0,9779 and 0.9777. After the dataset have been trained, then the image with low esolution from PET Scan procedure can be converted into an image that have super resolution.

Keyword : *EDSR,WDSR,Super-Resolution,Deep Learning.*