

## ABSTRACT

Currently the image or image component is a very important component. Thanks to pictures, you can find information that is difficult or difficult to describe in words. Previous studies have succeeded in producing representative and distinctive traits. This makes the task of classifying scenes even easier. However, there are still some misclassifications in some scenes with a lot of similarities between classes.

In this final project, digital image quality improvement has been made using Residual Dense Network (RDN) which is made in six layers and with the number of Resblock Looping as much as 20 times. And RDN AE 1 with the same six layer arrangement and Resblock Looping as the original RDN, but added an encoder and decoder layer. Then RDN AE 2 which is composed of six layers and Resblock Looping 10 times, and also added layers of encoder and decoder.

The results obtained in this final project are that the RDN Autoencoder still does not have enough effect on the results of PSNR and SSIM compared to the original method and still needs further research. The highest average PSNR from the RDN AE 1 scenario obtained in the Set14 dataset is 13.87 dB and the highest average SSIM obtained from the Set5 dataset is 0.4136 in the RDNAE 2 scenario.

**Keywords:** *image super resolution, convolutional neural network, autoencoder, Residual Dense Network, RDN, RMSE, SSIM. Residual Dense Block, RDB.*