

## ABSTRACT

Low resolution images provide a limited discriminatory information to identify habitats in underwater ecosystems, making it difficult for scientists to observe and study underwater ecosystems. Thus, there was a process of improving underwater image, Which can do a super-resolution reconstruction in order to develop new technologies to enhance underwater image, sensitive to underwater objects.

Research on underwater image enhancement which is conducted in this final project uses new architecture, the Fast Super-Resolution Convolutional Neural Network (FSRCNN) method. Which is the development of the Super-Resolution Convolutional Neural Network (SRCNN) method. This method is designed so that the underwater image enhancement has better performance than the previous methods. This method is divided into 5 parts, feature extraction, shrinking, mapping, expanding and deconvolution.

The parameters examined for delta and epoch parameters, by analyzing the results of the measurements of the mse and PSNR values of charbonnier loss and huber loss. The data used is 110 images, consisting of 91 training images and 19 test images. The study gained a fine mse and PSNR score of 674, 43 and 19.87 dB with delta 0.1 on charbonnier loss and a quantity of epoch to 25.

Keywords: Image enhancement, Underwater, CNN, FSRCNN.