

## Abstract

In many necessities, a digital image with higher resolution is preferable because objects' detail will visibly clearer. Bicubic algorithm as an interpolation technique is one of technique to improve image resolution if there is only a low-resolution image. However it is still have weakness, interpolated image has lost some its high frequency information. There is another technique to improve resolution named super-resolution, a technique that combine information from a set of low resolution image. At this time, high frequency information will recovered in improved resolution image.

This final project will implement super-resolution technique to see its performance in improving image resolution. Implemented super-resolution technique works in frequency domain both in registration and reconstruction using Fourier transform.

Based on performed experiment, super-resolution will have a better objective assessment than bicubic interpolation when using the same number input. Super-resolution will have a better result not only in objective assessment but visually when using multiple low resolution images as its input.

**Keywords:** Bicubic interpolation, super-resolution, frequency domain, Fourier transform