





CHAPTER 4

ANALYSIS AND DESIGN

4.1 Analysis

This Project using Bilinear Interpolation and Bicubic interpolation method for image enlargement, with different enlarge scale, 2x, 4x, 6x. After interpolation processed, use PSNR value as the parameter to find out the quality of an enlarge image.

Table 4.1: Example for Image Enlargement

		
Original Image	Downsize Image	Bilinear Interpolation
		
Bicubic Interpolation		

In Table 4.1 explain the result from Original Image that will be downsize first, according to the scale of enlargement to be performed. After the image is downsized, the image will be enlarged using 2 interpolation methods that is Bilinear and Bicubic Interpolation.

Table 4.2: Computed PSNR for the Enlarge Image

Picture	scale	PSNR (dB)	
		Bilinear	Bicubic
Senpu.jpg	2x	27,8	31,7
	4x	24,3	26,7
	6x	23,5	24,8

In table 4.2 explain the result of PSNR calculation. The calculation of PSNR is comparing the original image (not downsize) with the output image after enlarging process.

4.2 Desain

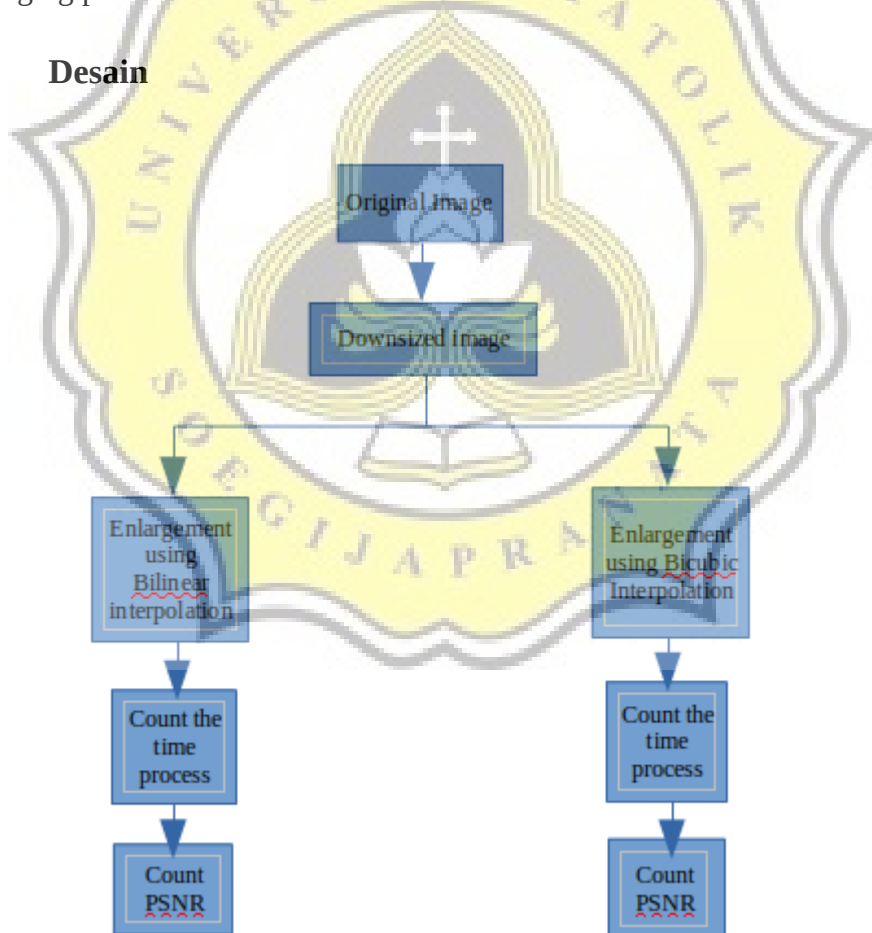


Illustration 4.1: Data Flow Diagram

In Illustration 4.1 explain the process this project, The object are 30 images, the images will be downsize using tools (paint) according to the enlargement scale (2x, 4x, 6x), after downsizing the original image, the downsize image processed with Bilinear Interpolation and Bicubic Interpolation to Enlarge the image for (2x, 4x, 6x) scales, and count the time process for each method. After get the output images. then count the PSNR value of each enlarged image..

After know the PSNR value we comparing the PSNR value of enlarged image between Bilinear Interpolation and Bicubic Interpolation. The higher PSNR value, the better method it has.

4.2.1 Bilinear Interpolation

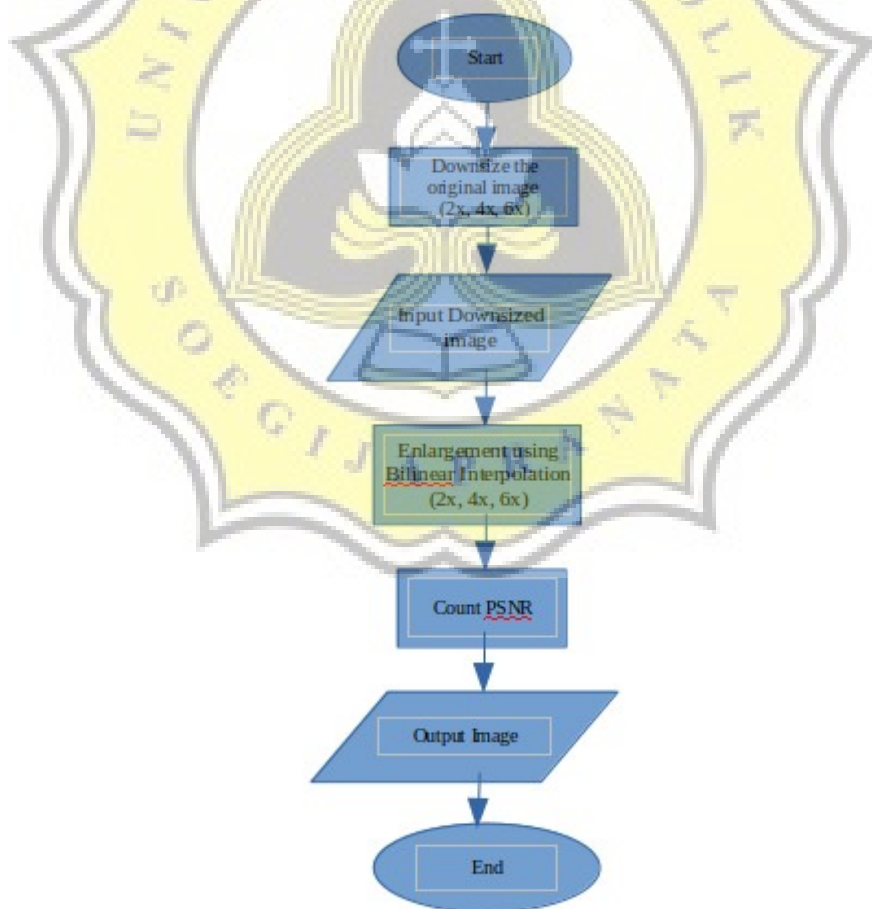


Illustration 4.2.1: Bilinear Interpolation Flowchart

In Illustration 4.2.1 explain the Bilinear Interpolation process, we must downsized the original image first according to the enlargement scale, after getting result of the downsize image we proceed to the enlargement process using Bilinear Interpolation. After getting the output image, PSNR value calculated by comparing the original image (not downsize) with the output image.

4.2.2 Bicubic Interpolation

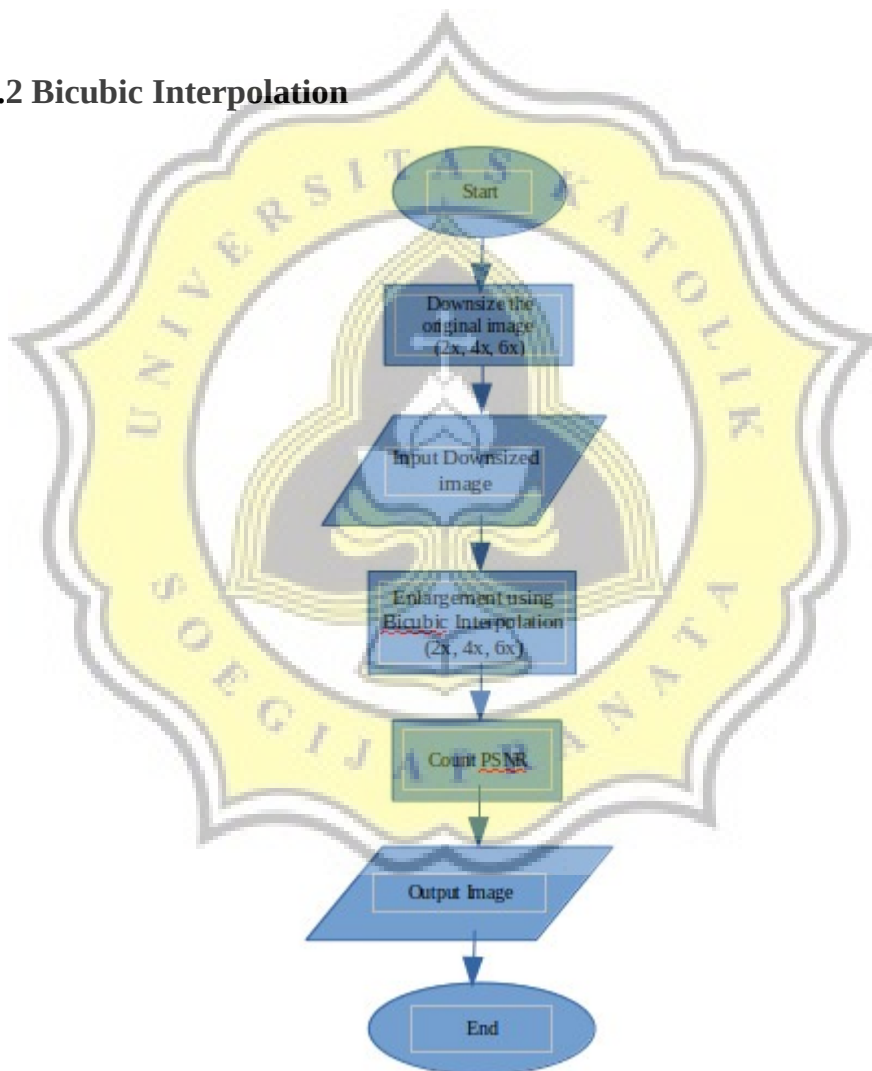


Illustration 4.2.2: Bicubic Interpolation Flowchart

In Illustration 4.2.2 explain about Bicubic Interpolation process, this project use 30 images, we must downsized the original image first according to the enlargemen scale, after getting result of the downsize image we proceed to the enlargement process using Bilcubic Interpolation. After getting the output image, PSNR value calculated by comparing the original image (not downsize) with the output image.

4.2.3 PSNR

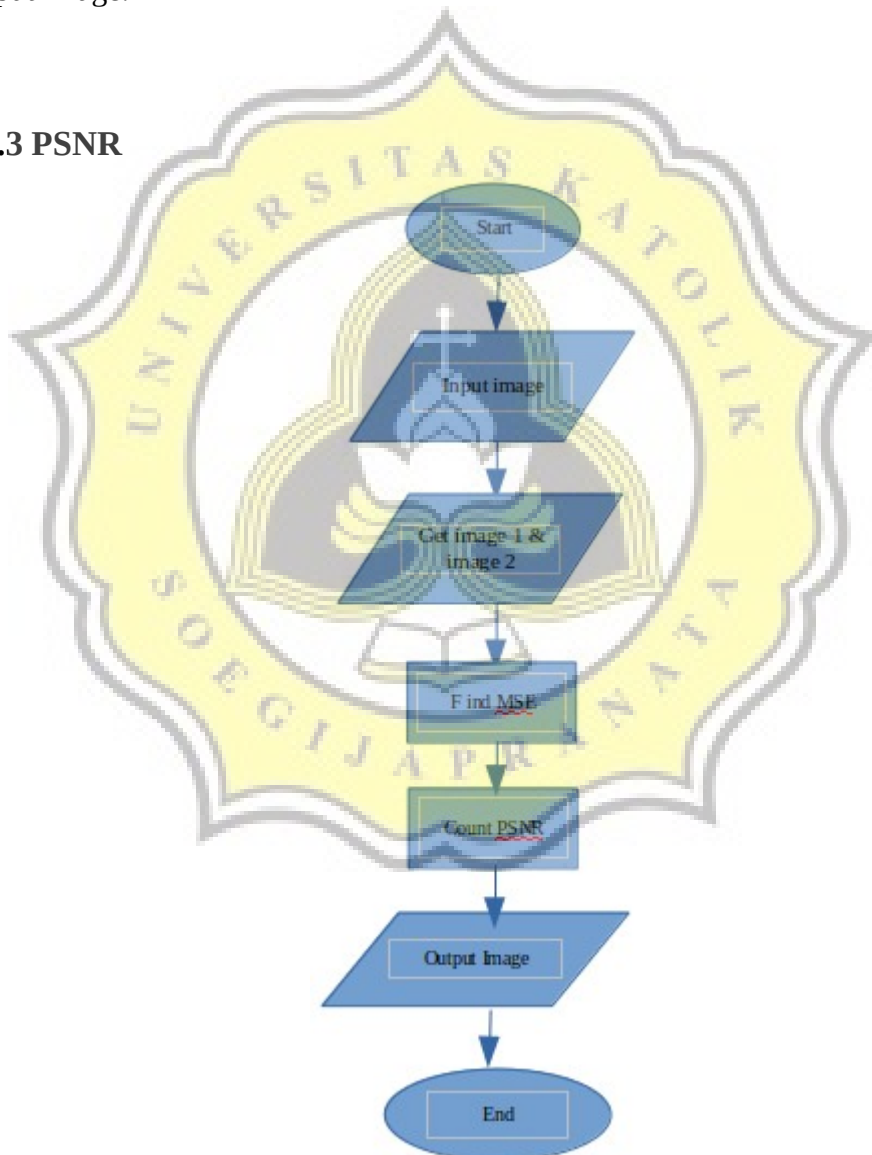


Illustration 4.2.3: PSNR flowchart

In Illustration 4.2.3 shows the process of PSNR calculation. To find a PSNR value requires 2 image input, that is original image and result image. First we must find MSE value, after get the MSE value then we count the PSNR formula and get the PSNR value (dB).

