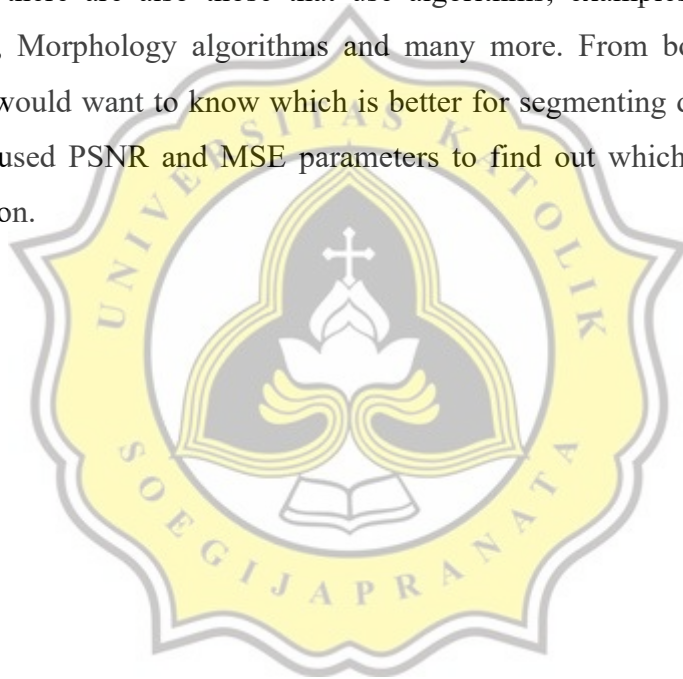


## **CHAPTER 4**

### **ANALYSIS AND DESIGN**

#### **4.1 Analysis**

The digital image consists of the object you want as well as the background. To separate the two must be needed the name segmentation. This segmentation itself can be done by using applications such as photoshop, but in addition to using photoshop there are also those that use algorithms, examples of Thresholding algorithms, Morphology algorithms and many more. From both examples this algorithm would want to know which is better for segmenting digital imagery. In this test I used PSNR and MSE parameters to find out which one is better for segmentation.



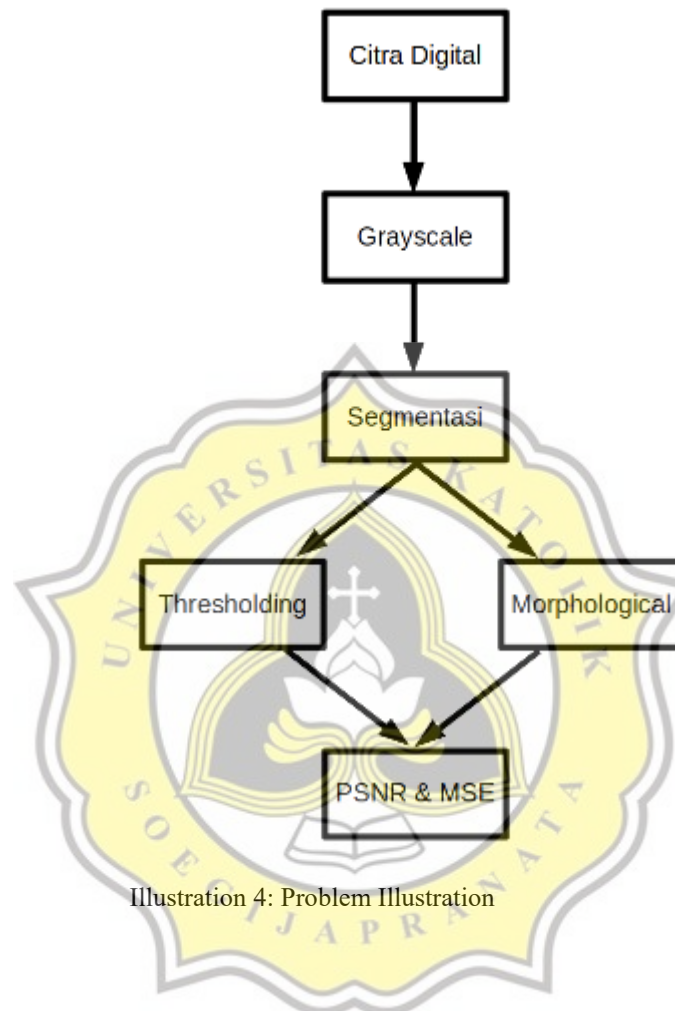


Illustration 4: Problem Illustration

## 4.2 Desain

### 1. Thresholding Process

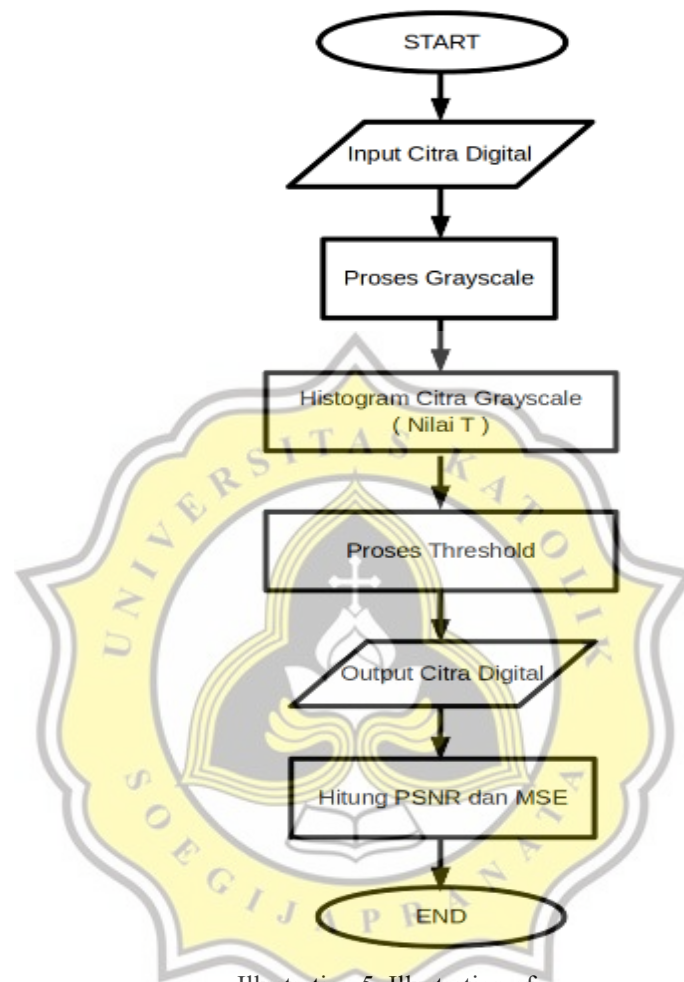


Illustration 5: Illustration of Thresholding

In flowchart above starts from digital image input in the form of leaf photos, and then enters the grayscale process by taking the colors Red, Green and Blue in each pixel and red pixel \* 0,299, Green pixel \* 0,587 and Blue pixel \* 0,114. When you're done, the colors of each pixel are summed up to get a new color. For the next process of entry into the histogram is useful to get threshold value ( degree of grayness) that is useful for the boundary between the object and the background. After obtaining threshold value, it will be the separator limit, so that each pixel RGB is selected if the pixel RGB is less than the Threshold value then it will turn black while the more than threshold value will turn white or so-called binary

imagery. After the RGB pixel is selected to finish, the digital image will come out with a new composition in accordance with the selection results. To get PSNR and MSE values it will be compared to the original image with thresholding output image.



## 2. Morphological Closing Process

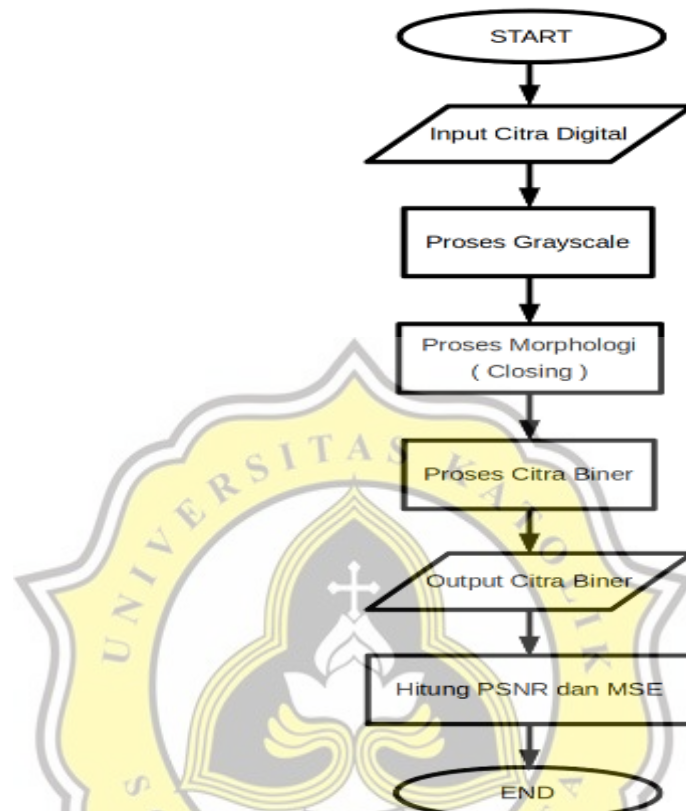


Illustration 6: Illustration of Morphological (Closing)

The process in this Morphology begins with the input of digital image leaves ( Original image ) after that take Red, Green and Blue from the original image to then enter the grayscale process by means  $\text{red pixel} \times 0,299$ ,  $\text{Green pixel} \times 0,587$  and  $\text{Blue pixel} \times 0,114$ . When you're done, the colors of each pixel are summed up to get a new color. If it is finished per pixel then enter the Morphological Closing algorithm. Morphological Closing combines between Morphological Dilasi (Widening segments of objects) then Morphological Erosion (Minimize object segments) process in morphological closing is useful for closing small holes in objects and combining adjacent objects. After the process in morphology is complete, the object will be changed to binary imagery or change it to black and white which will then come out with a new composition that will then be compared

with the original image to find out how much PSNR and MSE using morphology algorithm ( Closing).

