

CHAPTER 3

RESEARCH METHODOLOGY

This chapter describes the research methodology in detail to answer one of the questions in the problem formulations sub chapter.

3.1. Literature Study

This process is collecting and reading journals that relate to classification maturity of banana ripeness with various methods. All this journals as a references for this projects and programs.

3.2. Collecting Datasets

The dataset was searched on google with keyword “ripe bananas, green bananas, and overripe bananas” and download it one by one. The collected dataset 647 image except testing images consisting of 247 images for green bananas, 200 images for ripe bananas, 200 images for over ripe bananas, and 80 random images for testing.

3.3. Convolutinal Neural Network

In this next step, this research study how convolutional neural network work for classify banana maturity. Convolutinal neural network combines three architectural points, local receptive fields, shared weights, and the spatial subsampling in the form of pooling. Convolution is a matrix that serves to filter. In the process of filtering there are two matrices, namely matrix in the value input and matrix kernel. In Convolutional Neural network there are several layers that serve to perform filters that have been set during the training process namely Convolution layer, Pooling layer, and full Connected layer. This is architecture of Convolutional Neural Network.

3.4. Testing

The test will be done with data test as much as 80 images of banana fruits with difference in ripeness. Test will be done with different optimizer namely Adam, RMSprop, SGD, and with 75 epoch.

3.5. Analyze

Compare the final accuracy obtained with 3 different optimizer, to find out which optimizer is suitable for this project.

