

CHAPTER 3

RESEARCH METHODOLOGY

3.1. Literature study

The first step to this research is by collecting and reviewing journals that are related to the author topic object detection. There are a lot of object detection journals that have various real life applications that can be reviewed and used by the author as a base for his research. After reviewing the journals, the author chose 10 journals as the base foundation for his research on the subject of object detection.

3.2. Data Acquisition

Fresh and rotten fruits dataset is used for this research, the dataset consists of a bundle of images of fresh and rotten apple, banana, and orange. Each category of fruits in the dataset have more than 1000 images. The dataset is already split between train and test by the author of the dataset. The dataset acquired from Kaggle by the name of 'Fruit fresh and rotten for classification'.

3.3. Data Processing

The fresh and rotten orange category are the only ones used in this dataset. The author takes 300 images from the train category that was already provided by the dataset itself, and takes 20 images from the test category of the dataset. Then the train data is normalized to 64x64 resolution to make the training process faster and less resource consuming. The normalized train data is used to train the CNN algorithm that will be the base of the object detection that the author is going to create.

3.4. Analysis

To evaluate the accuracy of the algorithm the author used Mean Average Precision, Mean Average Precision works by comparing the ground truth with the prediction, by doing this it can evaluate how good the algorithm is, high Mean Average Precision value mean the algorithm have a good accuracy and low mean average precision value mean the algorithm have a bad accuracy. To do this method the author needs to declare a ground truth, calculating intersection over union between ground truth and predicted result; finding true positive, false positive, and false negative; calculating precision and recall ; calculating average precision; and calculating mean average precision.