

CHAPTER 1

INTRODUCTION

1.1. Background

Potatoes and tomatoes are the staple food of humans. Apart from being the main raw material, these two plants are also used as complementary ingredients or seasonings to add flavor. It is undeniable that every plant must have diseases including both plants. So that if left unchecked, it can damage crop yields and reduce food production, therefore it is necessary to detect it appropriately and efficiently so that diseases in the two plants can be prevented and controlled. The diseases most often found in plants are late blight and early blight caused by cold and humid places.

In dealing with this problem in diseases of potato leaves and tomatoes has been widely practiced, not only in agriculture but also in the field of technology also contributed, one of which is the use of the field of informatics in identifying diseases that exist in potato and tomato plants using image processing or commonly called image processing digital. The use of image processing in identifying can help the farm managers to provide effective and efficient handling of crops that unhealthy or abnormal. With the development of technology today has been a lot of research who developed digital image processing in agriculture both for identifying diseases or identifying agricultural products. One of the uses of digital image research in solving problems in this research is for the identification of diseases on the leaves of potato and tomato crops.

In identifying diseases in plants, the authors use a convolutional neural network algorithm which later the accuracy produced in the developed program will detect whether the leaves have disease or not by collecting samples or datasets that are used as input from the program that has been designed. In this process all the datasets collected will become samples for detecting healthy and normal plants, after being successfully inputted through the developed program, the dataset in the form of images will be processed using the convolutional neural network algorithm with models and layers that are adjusted so that the resulting accuracy can be maximum. after that, the program will detect from the dataset that has been entered whether it matches the prediction or not.

1.2. Problem Formulation

Referring from the background above obtained some of the problem formulations used to get answers from the project that author did and in response to the conclusions about this thesis, then the following points are needed :

1. How to predict disease in plants according to the dataset used?
2. How are the prediction results against the samples that have been collected?
3. What makes the resulting accuracy can be maximized?

1.3. Scope

Problem limitations in this project are things outside or not made by the author related to the research conducted, as follows:

1. This project only develops system does not include the Graphic User Interface.
2. The dataset used is a sample of two plants, namely potatoes and tomatoes.

1.4. Objective

This research aims to create a system that can help farmers or farm managers in identifying diseases of potatoes and tomatoes by utilizing image data of potato leaves and tomatoes. Identification of leaves in these two plants is divided into three parts, namely plants with healthy or normal leaves, late blight, and early blight. Then, on this research will conduct identification using the Convolutional Neural Algorithm Network (CNN) which is one of the Deep Learning methods.