CHAPTER 1
INTRODUCTION

1.1.   Background

As modern technology is developing, especially artificial intelligence, many smartphones or other devices are equipped with artificial intelligence. By developing artificial intelligence, devices or the like are able to work effectively, and when viewed from the development of artificial intelligence becomes one of the modern technologies that we must be able to implement in the future. In this project, I tried to develop a virtual assistant in the form of voice commands on the laptop/PC so that the user can give commands to the laptop/PC and the command is done in accordance depends what the user said.

To develop speech recognition requires appropriate algorithms and datasets. Deep Neural Network Algorithm is the most suitable for the development of speech recognition system because the algorithm is able to recognize human voice into inputs that later produce output in the form of commands and run in accordance with the command. Little information why in this project I use Deep Neural Network algorithms, because according to the article that I have read the Deep Neural Network Algorithm is suitable algorithm in implementing speech recognition, because of better network architecture, can optimize many parameters, and faster in understanding language[1] . As for the dataset, taken from *kaggle.com.* The dataset contains a voice sample and is used to train the system to be able to recognize human voices and carry out commands that user said. So the system is trained repeatedly by entering datasets and training them using neural network algorithms to get maximum results.

The results of this project I work on depend on how accurate the system is in recognizing the human voice, and how speech recognition responds in answering or performing commands according to what is said by the user. The success rate of the algorithm used also becomes a benchmark as an algorithm that is suitable or not in the implementation of speech recognition. The success rate of the algorithm used will be explained and described in more detail in chapter 3, including the comparison algorithm.

1.2.   Problem Formulation

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

1. How to get high accuracy from both algorithms used?

2. What is the difference between Deep Neural Network and Convolutional Neural Network?

3. What is the success rate of both algorithms?

1.3.   Scope

The problem limit of this project regarding whether the developed system can respond and perform commands correctly. As described as follows :

1. Datasets used contain commands namely 'up', 'stop', 'no', 'right', 'left', 'down', 'go', 'yes'.

2. Dataset used in the form of samples of the human voice.

3. This project only develops system does not include the Graphic User Interface.

1.4.   Objective

The goal of this project is related to the development of virtual speech recognition-based assistants where this is a great opportunity to try to learn, create or develop artificial intelligence with the desired version and according to the needs. Moreover, the success of speech recognition to be able to perform the commands given, and also as a comparison beetwen deep neural network and convolutional neural network is which algorithm is the most suitable for speech recognition.