

CHAPTER 1

INTRODUCTION

1.1 Background

Today document is many kind of type. One of is text as documents, text contain of sentences and word and many kind of language. On this modern era you can save text documents in many ways for example you can save as soft copy and store at your computer, mobile phone, external hardisk, flashdisk, or cd. However in the past text documents was stored in the form of documents that was archived with print out paper or hard copy, to reduce paper today that methode is abandoned, therefore documents that were previously in the form paper or print out paper are better scanned and saved as document file.

Because documents in the form of files have many conveniences one of which is easy to carry and easy to open from computer or mobile phone. Use an image tool to turn documents text into an image that can be saved as an image file, but the image can not be changed and sometimes an image scanner cannot scan the documents optimally due several causes such as dust on the surface of the scan tool and affecting the result of image to be saved, another way is to retype each word or sentences of the text document using a word processing program and save it in editable file format this method is a bit hassle if the document has a lot of words and sentences so it take a lot of time to retype.

These problems make the processing of text document into document in file difficult, and requires an easier and more effective way. Using OCR (optical character recognition) is can converts text document in an image or image file format into a text format that can be read and edited by computer. In OCR (optical character recognition) using text detection and text extraction to processing text form document to file format and save it to edit or change.

With text detection and text extraction using LSTM (Long Short Term Memory) based on OCR can help to make file document from paper or book to document format file. LSTM need requires train data which is used to detect character letters, fonts and language.

In the way LSTM work for text detection is done using LSTM network in which the image data will be processed to detect letter and character. LSTM network uses the data train as benchmark for compatibility to find out character and letters. Text detection is also done by predicting the character of the letter in the pixel coordinate area that has a value and has the potential to contain letter character, by using the LSTM network current cell memory for calculating pixel coordinate that have a value and using them as comparison data between pixel coordinate that can predict the next character of the letter.

In this project OCR (optical character recognition) can help in text detection to create a text document as file format that has more advantages and has time efficiency. The final result is document in .txt format which is ready to be edited or changed, the language detector on OCR (optical character recognition) function as language recognition in document for translation.

1.2 Problem Formulation

1. How does LSTM (long short term memory) work in text detection?
2. How OCR (optical character recognition) do text extraction?
3. How OCR (optical character recognition) detect language?
4. How to improve accuracy in OCR (optical character recognition)?

1.3 Scope

This project is uses Pyhton version 3.6, and NIST data image with 6009 image test and 9006 train image. For the library is using tensorflow for train and make model, opencv to read image, filter and tressholding, numpy for make image train, matplotlib. For text detecion is normal text(text is horizontal).

1.4 Objective

The first objective of this project is to make OCR (optical character recognition) using LSTM (long short term memory) algorithm. Which be used to detect character letters in image, then made into a file format document (.txt) and performs the translation process in a particular language. Second objective is to compare existing OCR (optical character recognition) program in terms of word accuracy, sentences detection speed, and language translation.

