DEEP LEARNING ANALYSIS IN DEVELOPMENT OF HANDWRITTEN AND PLAIN TEXT CLASSIFICATION API

By

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STATEMENT BY THE AUTHOR

I hereby declare that this submission is my own work and to the best of my knowledge, it contains no material previously published or written by another person, nor material which to a substantial extent has been accepted for the award of any other degree or diploma at any educational institution, except where due acknowledgement is made in the thesis.

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ABSTRACT

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Optical Character Recognition (OCR) and Handwritten Text Recognition (HTR) are technologies that enable text recognition. The difference between OCR and HTR is one designed specifically for digital text and one designed for handwritten text. There are already various implementations of OCR and HTR online. However, such systems do not guarantee the systems are in premises. To solve this problem, the OCR and HTR system must be built from the scratch. The purpose of this research is to improve the recognition by separating the text whether it is a handwritten or a printed text, which will later be forwarded into the appropriate recognition system. An application program interface (API) was also created in order to finalize the classification system into real world usage. In this research, the classification system being developed using convolutional neural network (CNN) method. To be able to reach the highest accuracy of the classification system, the experimentation and improvement about hyperparameters, dataset format, data augmentation and analysis on 3 CNN architectures were conducted. In the end of this research, there are 2 architectures in a tight competition, one is VGG-16 with 90.63% accuracy and one is AlexNet with 90.17% accuracy on ideal data testing. However, AlexNet is chosen as the winner after the testing with real data.

Keywords: CNN, text classification, text categorization, in premises, OCR, HTR, API.

DEDICATION

I dedicate this work for my parents, family, friends and lecturer who have supported me with their wisdom, patience and perseverance during this research.

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