Text

Description automatically generated

AI6001 AI and Big Data in Business

Trimester 1, AY 2021/2022

**CNN for Handwriting Analysis**

Class A, Team 10

Jian Jie

Cheng Xin

Du Yu Xian

Shen Feng Yuan

Low Guangwen Daniel

Contents

[1. Introduction 3](#_Toc83103346)

[1.1 Problem statement 3](#_Toc83103347)

[1.2 Application Areas 3](#_Toc83103348)

[2. Literature review 3](#_Toc83103349)

[3. Data analysis, Visualization and Pre-processing 3](#_Toc83103350)

[4. Model configuration and Evaluation 3](#_Toc83103351)

[5. Business Implication and Recommendation 3](#_Toc83103352)

[6. Conclusion and Future studies 3](#_Toc83103353)

[Bibliography 5](#_Toc83103354)

# 1. Introduction

Data analysis for education is a new field of research brough about by the increasing adoption of e-learning. As education continues its evolution to incorporate more digital mediums, there exists tremendous opportunities for both educators and students to accelerate learning outcomes by harnessing the use of data analytics.

One such opportunity arises from the increased use of mobile and tablet devices to offer students a more immersive learning experience. While older e-learning platforms may only offer typing as a source of input, newer platforms can offer photo taking or direct handwriting as inputs for submission.

## 1.1 Problem statement

At present, a student with a possible learning disability still must undergo consultation and diagnosis with a highly trained educational therapist(Dyslexia Association of Singapore, 2021). However, such a system is not scalable as it cost prohibitive to equip every school with such a specialist. Hence, students might fall through the gap and be judged as inattentive or being a poor learner, without ever receiving the necessary treatment.

Our team believes that the use of CNN in handwriting analysis can offer new solutions to better identify signs of early childhood learning disorders. For example, by having e-learning software inbuilt with Optical Character Recognition (OCR) technology.

## 1.2 Application Areas

As students use a platform student handwriting can be assessed and students with many unrecognizable inputs flagged for possible intervention. The specialist can also view the handwriting remotely to make an assessment. This ensures that student issues are recognized early when intervention can make the most difference and reduces the assessment time as a large volume of past handwriting inputs are stored in the system.

This application can cover a broad band of the curriculum from Math to languages as the only requirement is that the learner must personally write an input into the system. Thereby allowing for a greater variety of data.

# 2. Literature review

Educational Data Mining (EDM) is a new field of research that aims to analyze data that arises from an educational setting. The data collected in an academic setting would then be used to

# 3. Data analysis, Visualization and Pre-processing

# 4. Model configuration and Evaluation

# 5. Business Implication and Recommendation

# 6. Conclusion and Future studies

# Bibliography

Dyslexia Association of Singapore. (21 09, 2021). *assessment-process*. Retrieved from Dyslexia Association of Singapore: https://das.org.sg/services/about-our-services/spld-assessment-services.html#assessment-process