

# **Accuracy and Time Cost of Handwritten and Typed Text Using Optical Character Recognition Libraries**

## **CSCI 4220U - Course Project**

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With an interest in computer vision and natural language processing, we decided that a project involving the implementation and evaluation of optical character recognition libraries (OCR) would be best suited for us. After careful consideration of different projects involving OCR libraries, we found that a beneficial program for students like us would be one that can turn our notes into text format. Although programs like this exist, we would like to compare different libraries with two key benchmarks: accuracy (OCR libraries detecting written names vs typed out texts of the same note) as well as the time cost (average processing time per image). With these benchmarks in mind, we aim to analyze strengths and limitations of each OCR library in order to find practical implementations that are best suited for each library, to a particular problem.

Therefore, our goal is to compare optical character recognition libraries by accuracy and time cost, in order to find their practical implementation that they are best suited for.

We have decided to use a Kaggle dataset of PNG files, each containing a typed paragraph and their hand-written version within the same PNG. With the typed paragraph as well as the hand-written version, we are able to compare the two results and measure the accuracy between the two. The dataset can be found below:

[IAM Handwritten Forms Dataset](#)

The libraries that will be evaluated are PyTesseract, EasyOCR library, and Keras-OCR, since they have pre trained models that are directly useful for benchmarks. The implementation of the project will consist of preprocessing and segmentation of handwritten and typed out text, implementation of these libraries as well as applying data analysis techniques to determine possible applications.

### **Application:**

If time and project scope permits, we can create an application that recognizes handwritten text from images and attempts to parse the text into a text file with similar format. Additionally, it is possible to find if a library is best suited for handwritten text vs typed text. In real world application a post processing technique could be applied that performs spell check or grammar correction on some notes when being converted to typed text format.