

Comp 4102

Winter 2020

January 31st, 2020

# **HANDWRITTEN NOTE RECOGNITION**

## **Project Proposal**

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## **SUMMARY**

Our team will be working on a handwritten text detection/recognition algorithm. The vision behind this project is to be able to easily transfer handwritten notes from pictures into readable digital text which would be achieved through image processing.

## **BACKGROUND**

Although there have been different approaches for text detection, many tend to fall short when dealing with unpredictable circumstances , perhaps due to the fact that many of the images being detected are captured on cheap digital cameras and low res smartphone camera. They're many other factors that affect the text detection accuracy such as image/sensor noise, image viewing angle, resolution, lighting conditions , etc. The most efficient method of text detection is accomplished by the use of heuristic-based approaches, which includes but not limited to , gradient information and the grouping of text into character and paragraph on a straight line. With the assistance of a deep learning-based text detector EAST (Efficient and Accurate Scene Text Detector), we can use neural network to predict a word or line-level text. EAST also allows the detection of arbitrary orientation with quadrilateral shape.

External link for more background information:

<https://www.pyimagesearch.com/2018/08/20/opencv-text-detection-east-text-detector/>

## **THE CHALLENGE**

The major challenge of this program is to recognize different types of handwriting and interpret them into meaningful sentences. Another major problem is having word detection accuracy in a real world application versus a constrained environment which is typically easier. We also want to make sure that the program is stable enough so there won't be a lot of mistakes. This problem is challenging because as a beginner in the computer vision area, such problem will help us to have a brief understanding about how to solve computer vision problems and we will be able to discover some of the important idea that we need to focus on when we are dealing with these questions. By doing this project, we hope to learn some important factors inside word/picture recognition and try to increase the accuracy of such algorithm by adjusting the program we use.

## **GOALS AND DELIVERABLES**

1. Our goal is to create/develop a handwritten note recognition program that can recognize clear handwriting and convert them into documents inside a system.
2. In order to validate our program is working, we need to provide the program single/multiple paragraph of clear handwriting and let the program to convert the writing into electronic text.
3. Finally we want to compare the original handwriting to the E-text and see if the program is going to operate normally. (Which means there should not be significant mistakes inside the e-text)
4. At the end, our program should have 85% accuracy in translation handwriting to text.

5. If time permits, we hope to increase precision and accuracy of this program and also test the program with non english text.

## **SCHEDULE**

<b>Week</b>	<b>Goal</b>	<b>Group member</b>
Feb 2nd - Feb 8	Come up with a process for everything we want to accomplish and do research	All members
Feb 9th - Feb 15	Breakdown of work based on research and assign parts and roles.	All members
Feb 16th - Feb 22	Implementation	All members
Feb 23nd - Feb 29	Revision with team mates and first major push to repository. Fix conflicts with code on github	Ore Awokoya - bug fixes and push to repository Zelin Wang - Fix conflicts with code on github Caleb Tony-Enwin - bug fixes and push to repository

		Mubarak Oseni - Fix conflicts with code on github
Mar 1st - Mar 7th	Implementation.  Peer code review  Fix any code conflict that appears.	Ore Awokoya - Implementation  Zelin Wang - Implementation  Caleb Tony-Enwin - Peer code review and bug fixes  Mubarak Oseni - Peer code review and bug fixes
Mar 8th - Mar 14th	Implementation.  Peer code review  Fix any code conflict that appears.	Ore Awokoya - Peer code review and bug fixes  Zelin Wang - Peer code review and bug fixes  Caleb Tony-Enwin - Implementation  Mubarak Oseni - Implementation
Mar 15th - Mar 21st	Major push to repository.  Fix any code conflict that appears.Clean and test code extensively	All members
Mar 22nd - Mar 28th	Prepare for presentation of the project. Work on	Ore Awokoya - work on 50 % of the slides

	<p>increasing accuracy and implement more functions to advance the code</p>	<p>Zelin Wang- work on 50 % of the slides</p> <p>Caleb Tony-Enwin - run and test examples for demonstration</p> <p>Mubarak Oseni - run and test examples for demonstration</p>
Mar 29th - April 10th	Bug fixes, if any.	All members