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**Cogswell Polytechnical College**

SU18-CSE480HA

Neural Networks

**Proof of Concept**

**30th June, 2018**

# Document Modification History

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| --- | --- | --- | --- |
| **Version** | **Date** | **Author** | **Description** |
| 1.0 | 06/30/18 | Arjun | Initial Version |

# OBJECTIVE

This software aims provide an easier method of converting written documents to digital format to help preserve work and or edit written documents.

This proof of concept sought to test the recognition ability of test sample by using an existing neural network algorithm.

The POC is deemed successful when a test handwritten document is converted and saved digitally with no difference in punctuations and words between handwritten and digital.

# Members / Role

1. Arjun Chandrasekaran - **Project Manager/Project Leader/Programmer**

# Methodology

Neural network is currently one the best methods of training and creating algorithms for a system to performs tasks and evolve to accommodate future problems. This is especially true for handwriting as it changes over the years.

The data flow for this system starts with user uploading a image of handwritten document.

1. Algorithm cleans up the image and splits them into frames of individual characters
2. Each character is run through and a prediction is made to recognize the character
3. The result is saved and each consecutive character is added to create a string.
4. The overall result is a digital document of the image which is saved onto the disk.

# Components

1. **User** Users with handwritten documents for conversion  
   **Action** Provides documents needed for training and testing neural network   
    algorithm.
2. **3rd Party Algorithm** <http://neuralnetworksanddeeplearning.com/chap1.html>  
   **Action** Uses neural network algorithm to clean, split and recognize each character  
    from the provided document.
3. **Training samples** Custom samples similar to 3rd party training samples used on algorithm  
   **Action** Custom images different from proven ones will be used to train algorithm  
    and check if the neural network can learn
4. **UI** Tkinter. Python de-facto standard GUI interface  
   **Action** UI used to import image and export digital document

# Results

**(Will be added in future versions)**

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