**Handwritten Text Recognition**

I Shashank Singh started this project on 27th June 2022. The pre-requisites for this project were some basic knowledge of python with their libraries like matplotlib, numpy, etc., and Tensorflow and also some knowledge of neural networks and deep neural networks.

**Week 1 (27th June – 1st July 2022)**

This week I started to learn the basics of python covering the topics like variables input() function, operators, control statements, strings, tuples, lists, dictionaries, OOPs, etc. For covering all these concepts I took the course on Coursera course named – “Python For Everybody”.

**Week 2 (2nd July to – 11th July 2022)**

This week I started to learn the basics of Tensorflow. Tensorflow is an end-to-end open source platform for machine learning. It has a comprehensive, flexible ecosystem of tools, libraries, and community resources that lets researchers push the state of the art in ML and developers easily build and deploy ML powered applications.

During this week I came to know about new terms which include

* Loss and Optimizer
* Computer vision
* Max pooling and Global average pooling
* Conv2d
* Overfitting
* Image Generator
* Convolution
* Many activator functions like softmax, relu, sigmoid, etc.
* Training set and Validation set
* Callback function
* Binary classification and Multi-class classification
* Tokenizer
* Tokenizer oov property
* Word embeddings and Padding
* NLP (Natural language processing)
* RNN (Recurrent neural network and types of RNN like GRU (Gated Recurrent Units)
* LSTMs (Long Short Term Memory)
* CNN (Convolution neural network
* Text generation

For covering these topics I did the courses from Coursera. The name of the course is “Deep Learning.AI Tensorflow”.

**Week 3 (12th July - 15th July 2022)**

This week I started writing the script of the project but before that, I did some research on finding the datasets for the project on which we are going to work. After some research, I found the datasets of emnist and IAM dataset . EMNIST dataset includes the alphabets and digits. IAM dataset includes handwritten words.

Then after that, we started working on the project. The first task was to load the dataset and see the images which there in the dataset. For writing the script I used Google Colab.

**Week 4 (16th July - 23th July 2022)**

In week 4, I started building the model for the dataset. For this dataset, I build the KNN model.

KNN is based on feature similarity we can do classification using KNN classifier so we have our input value the picture goes into the training model and it predicts the output.

KNN stands for K-nearest neighbors, it is one of the simplest Supervised Machine learning algorithms mostly used.

KNN algorithm is based on feature similarity, choosing the right value of k is a process called parameter tuning and is important for better accuracy.

So the question arises when do we use KNN, we can use KNN when data is labeled we know that we have a group of pictures with digits and alphabets.