HANDWRITING RECOGNITION SYSTEM

The objective of this project is to identify the handwritten alphabets correctly. The basic idea is to split the dataset into training and testing dataset and then it will get trained with the training set. The output of the testing dataset is used to give feedback to the model to accordingly increase the accuracy of the model again by training it and validating the accuracies and losses

Data Files used:

1. **A_Z Handwritten Data.csv** - Labelled dataset of 372450 images each of 28*28 pixels in a 1d array form.
2. **Training data** : 297960
3. **Testing data :** 74490 Here, 20% percent of the has been assigned for testing purposes and the rest 80% for training purposes.

Training

In this project we have used a Convolution Neural Network model for handwriting recognition. The model takes the input images extracts the features uses the assigned weights(by training the model using the data) adds the bias input and then recognize the character.

Code file

mini.ipynb

The file reads the csv data file, pre-processes the data, builds the CNN model and trains the model using the train data and also finds the performance metrics using the test data retrieved from the main data set.

The model built predicts the character in the input image

Dependencies

- OpenCV
- Tensorflow
- Keras

Authors

1. **Subhiksha S** - 185001172
2. **Sukeerthi M** - 185001175
3. **Vaishnavi M R** - 185001187
4. **Varshinee M M** - 185001190

Citations

- https://www.kaggle.com/sachinpatel21/az-handwritten-alphabets-in-csv-format
- https://www.tutorialspoint.com/keras/keras_model_compilation.htm
- https://www.pyimagesearch.com/2018/12/31/keras-conv2d-and-convolutional-layers/
- https://keras.io/api/metrics/
- https://towardsdatascience.com/a-comprehensive-guide-to-convolutional-neural-networks-the-eli5-way-3bd2b1164a53
- https://www.researchgate.net/figure/Schematic-diagram-of-a-basic-convolutional-neural-network-CNN-architecture-26_fig1_336805909
- https://towardsdatascience.com/metrics-to-evaluate-your-machine-learning-algorithm-f10ba6e38234
- Improved Handwritten Digit Recognition Using Convolutional Neural Networks (CNN) Savita Ahlawat, Amit Choudhary, Anand Nayyar, Saurabh Singh and Byungun Yoon

Acknowledgements

We would like to thank our professor Dr. S.V.Jansi Rani for guiding us throughout this project