REPORT

Machine Learning for Natural Sciences
Digit detector

Training the data:

For training the model, we used the MNIST dataset, applied CNN and loaded it from keras. Then we reshape and normalize the training data and labels to 28x28x1 and 10 respectively.

Testing the data:

For each image in the dataset and for each region in the image, we predict the label of the region by converting the image to gray scale image, reshaping and normalizing the image to 28x28x1 and 1 respectively and using the predict method of the model object of Sequential class from keras.

Methodology:

1. Converting the image into grayscale image, applying threshold.
2. Detecting digits and identifying the coordinates.
3. Extracting the digits from the image by storing their coordinates.
4. Padded the data.
5. Resize the data to 28x28 pixels as per the MNIST dataset format.
6. Training the model applying CNN using the Mnist dataset.
7. Testing the processed data.
8. Give the sum of predicted numbers as output.

Result: The accuracy observed after testing the model on the first 400 images of the dataset provided is 64-66%.