**Assignment 1**

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By using KNN we classified the handwritten digits (MNIST)………

By using 60,000 samples from the dataset for training and **10,000** for testing and saved the values in a **1-dimensional** array of dimension **784** after doing this we change the type to a **2-dimensional** array with a dimensions **28\*28** to be more

Graphical user interface, application

Description automatically generatedeasily in manipulated and visualized, so we can split the images into grids.

Graphical user interface, application

Description automatically generated

then in the characteristic extraction phase, we used the center of mass of every grid, and we shop them in characteristic vector so that every range has many function vectors however shut-in price so that we can evaluate a function vector of a look at pattern with the educated ones.

Text

Description automatically generated

After training, we look at the mannequin the usage of the KNN classifier by means of computing the rectangular distance between every characteristic vector in look at samples with the skilled samples and classify in accordance with the minimal distance.

Graphical user interface, text

Description automatically generated

After train many of numbers for k, the accuracy was different as it was decreasing and increasing but the highest accuracy was when I used **8** for k.

Text

Description automatically generatedby using rectangular grid which the use of a grid of **7\*14** scored the easiest accuracy of **91.31 %**

So, I split the data with rectangular grid instead of square grid.

Finally, by using the model with 10,000 samples for schooling and one thousand for checking out for a rapid result on the other hand its downside is that it doesn’t ranking immoderate accuracy in distinction to the complete dataset.