Programming Assignment-III

Computer Vision-CAP 5415

**Question 2: Nearest Neighbor Classification**

Accuracy for different K-values

Text

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The accuracy was the highest for the k value =1 and it reduces gradually with the increase in k value. As K increases, the KNN fits a smoother curve to the data. This is because a higher value of K reduces the edginess by taking more data into account, thus reducing the overall complexity and flexibility of the model

For this particular dataset, the best accuracy is obtained for low k values.

**Question 1: Autoencoder**

Designing two AEs, one using a fully connected (FC) layers and another one using convolutions neural networks (CNNs). The objective is to implement the two AEs on the MNIST dataset and to compare their performance.

**Fully Connected Autoencoder**

The encoder consists of 2 layers (with 256, and 128neurons) and the decoder will also have two layers (with 256 and 784 neurons).The network is trained with MSE loss function for 10 epochs with a learning rate of 0.001.

**Output**

**Text

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**ConvNet Autoencoder**

The encoder consists of two convolutional layers with 3x3 kernel size, padding of 1 and ReLU activation function. Each convolutional layer is followed by a maxpool layer. The decoder consists of three convolutional layers with 3x3 kernels, paddingof 1 and ReLU activation function. The first two layers are followed by a upsampling function that upsamples by a factor of 2. The last covolutional layer is followed by a sigmoid function .The encoder and decoder each have a total of 233472 parameters

**Output**

Text

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