

INDIAN STATISTICAL INSTITUTE
Computing for Data Sciences (PGDBA)
July - December 2018

Assignment VI
Deadline: November 30, 2018.

Using the PyTorch deep learning python library, solve the following problems.

1. Define a fully connected neural network architecture to recognize 10 different objects provided in the CIFAR-10 dataset. Train the network for at least 7 epochs using stochastic gradient descent optimizer with initial learning rate 0.01 and momentum 0.9. Update the learning rate after each 3 epoch by the multiplicative factor 0.1. Evaluate the performances of your network considering following two loss functions: a) cross-entropy loss, and b) MSE loss.
2. Define a convolutional neural network architecture to recognize 10 different objects provided in the CIFAR-10 dataset. Train the network for at least 7 epochs using stochastic gradient descent optimizer with initial learning rate 0.01 and momentum 0.9. Update the learning rate after each 3 epoch by the multiplicative factor 0.1. Evaluate the performances of your network considering following two loss functions: a) cross-entropy loss, and b) MSE loss.
3. Define a fully connected neural network architecture to recognize 100 different objects provided in the CIFAR-100 dataset. Train the network for at least 7 epochs using stochastic gradient descent optimizer with initial learning rate 0.01 and momentum 0.9. Update the learning rate after each 3 epoch by the multiplicative factor 0.1. Evaluate the performances of your network considering following two loss functions: a) cross-entropy loss, and b) MSE loss.
4. Define a convolutional neural network architecture to recognize 100 different objects provided in the CIFAR-100 dataset. Train the network for at least 7 epochs using stochastic gradient descent optimizer with initial learning rate 0.01 and momentum 0.9. Update the learning rate after each 3 epoch by the multiplicative factor 0.1. Evaluate the performances of your network considering following two loss functions: a) cross-entropy loss, and b) MSE loss.