Python for Computer Science and Data Science 2 (CSE 3652)

MINOR ASSIGNMENT-5: DEEP LEARNING

1. Explain briefly Single layer perceptron and multilayer perceptron with architecture and illustrate the loss function associate with it.
2. How would you define the architecture of a simple feed forward ANN for classifying the Iris dataset? Write python code for the same.
3. How can you build and train a simple Artificial Neural Network (ANN) using the MNIST dataset to classify handwritten digits? Write python code for this.
4. Find convolution , ReLu and Max Pooling with the following data Input image (4×4):

   $[[1, 2, 0, 1]$,
   $[3, 1, 2, 2]$,
   $[1, 0, 1, 3]$,
   $[2, 1, 2, 1]]$

   Filter/kernel (2×2):

   $[[1, 0]$,
   $[0, -1]]$
5. How can you build a Convolutional Neural Network (CNN) with two convolutional layers and one fully connected hidden layer to classify handwritten digits from the MNIST dataset?