Programming Assignment-2

In this assignment, you need to create a multi-layer perceptron to classify the **Fashion-MNIST** dataset using Keras and TensorFlow.

1- Tune the following parameters to increase the performance of the classifier. **Better performance of the classifier means a better grade from this assignment.**

   a. Number of layers

   b. Number of neurons at each layer

   c. Activation functions

   d. Learning rate

   e. Batch size

   f. Number of epochs

   g. Optimization algorithm

   h. Batch normalization.

   i. Regularization

2- You need to assess the performance of the classifier that you create by the following performance assessment measures.

   a. Training loss and training accuracy.

   b. Validation (test) loss and validation accuracy.

   c. Plotting the graph of training accuracy and validation (test) accuracy per epoch to check the over fitting.

   d. Confusion Matrix.

   e. Plotting the roc-curves and finding the Area Under the Curves (AUC) for each class. You can use the sample provided here as a reference for this.

3- Provide a discussion about the results of the performance measures as well as your observation about how tuning the parameters change the performance of the classifier.

Please prepare your submission in Jupyter Notebook and the format of the submission file must be ".ipynb".

Submission is due on Wednesday, November 13, 2024, 11:59pm.