**MACHINE LEARNING FROM DATA**

**Report: Lab Session 7 – Neural Networks**

**Names:**

**Group:**

Instructions

Getting the material:

* Download and uncompress the file Mlearn\_Lab7\_soft.zip
* Answer the questions in the document Mlearn\_Lab7\_report\_surname.pdf

Questions

Q1. Which are the default parameters used by the Perceptron class? (check scikit-learn documentation). Compare the performance of the Perceptron on the two toy examples (linearly and non-linearly separable). Compare the performance of the Perceptron when using the original 2D features and features augmented by interaction

Q2. Compare the performance of the Perceptron with 3D features (with interaction) and the Multi-Layer perceptron with 2D features (you can try to improve the performance by varying some hyperparameters).

Q3: For the MNIST task, copy the global accuracy and the confusion matrix for the training and test set and analyze the results.

Q4. For the MNIST task, analyze and compare the methods based on the loss curves.

Q5. Analyze the results provided by grid\_search.cv\_results\_

Mention if you find significant differences in performances for some of the hyperparameters.

Q6. Classify the training and test sets with the best hyperparameters. Compute the classification reports, accuracy, error and confusion matrices for the training and test sets. Discuss the results.