Lab 6: Experimental Setup and Classification using NN (Week 3.2)

1 – Objectives

In this work you will use Scikit-learn to implement classification tasks using NN and gain insights on the configuration of MLP hyperparameters and the process of experimental setup.

We will use the datasets from Lab 4, "Iris" and "Haberman". The first has information about 3 types of iris flowers and the second about survivability of cancer. Remember that you will have to add column names manually in case you haven't done it yet.

2 – Data preprocessing and Experimental Setup

For each dataset:

- Read the datafiles with pandas.
- Use the previously acquired knowledge to preprocess the data as you deem necessary, and create your **Train**, **Validation** and **Test** sets (check the lecture slides!).

Don't forget that you should only use your Test set after you are satisfied with all NN parametrization and hyperparametrization. Consider if using cross-validation is necessary.

3 – Classification Task

Use Scikit-learn (https://scikit-learn.org/) to implement NN MLP classifiers that predict the datasets outputs (**from sklearn.neural_network import** MLPClassifier)

You will need to configure and optimize your NNs in order to obtain good results. Do your best... but try to avoid overfitting.

4 – Evaluation and Validation

Use the knowledge acquired in first week's lectures to properly evaluate and validate the performance of your classifiers.