

Classification with Weka and Neural Networks

TME –assignment 2021

In this exercise, we will explore the use of Weka and Neural Networks for classification. Your task is:

- Select one of the following datasets and read the associated papers:
 1. The OCR dataset discussed during the course
 2. The following dataset on SUSY Monte Carlo simulations:
<http://archive.ics.uci.edu/ml/datasets/SUSY>
 3. Previous agreement by the teacher, a dataset of your own or from this repository: <http://archive.ics.uci.edu/ml/datasets.php>
- Your goal is to find a good method to classify the objects, as done in the papers. In our terms, you have to find a classification algorithm providing a good classification for the given data. You have to do this by:
 1. Test and select the best classification algorithms in Weka for this task (use the explorer and the experimenter as explained in the sessions)and
 2. Design, train and test a Neural Network so you get the best classification (use different topologies, training methods, etc.) and select the most suitable one. You can use JNNS, Python or any other software.
- For this:
 - You can consider reducing the dimensionality of the dataset (e.g. PCA)
 - You have to divide the input file into training/validation files.
- Your starting point is the *arff* (weka) file provided. This file can directly be used with Weka, but you will have to adapt it to be used with a Neural Network package.
- For NN, to check the results do not simply use the error value given by the software. Your result is the **classification of the objects**. Therefore, for a given neural network you must analyze the results and give the **percent of correctly classified objects** (like we did in the classroom), comparable with Weka results.

For this assignment you have to deliver a report describing all the steps you have followed and a summary of all the trials you have done and the best percentage of correct classification you have managed in each case. Include also your comments and conclusions about the task.