Instituto Superior Técnico

Departamento de Engenharia Electrotécnica e de Computadores

Machine Learning

6^{th} Lab Assignment

Evaluation and Generalization

1 Introduction

When training a machine learning model, the goal is to obtain models that generalize well. This means that we seek to maximize performance on new data that the model has not seen before, and not to maximize performance on the training set, which would lead to overfitting.

2 Practical Assignment

In this lab you will given two datasets with real data and asked to evaluate different classifiers on these data. The goal is to obtain models that are able to generalize as well as possible.

For each dataset, you must try at least two different classifiers of your choice and use a minimum of two distinct methods for performance evaluation (Accuracy, Balanced accuracy, F-Measure, ROC curve, AUC, Confusion matrix, etc. . .).

One of the datasets is imbalanced, which means that there is a disproportion in the number of examples from each class.

Both datasets are already split into training and test data. Training and choice of classifier hyperparameters should be performed using only training data. To evaluate generalization, you should evaluate the performance only on the test data.

Your report should briefly describe the experiments and present the results that were obtained. A theoretical description of the classifiers is not required. The code should also be provided.