

# 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, since this would lead to overfitting.

## 2 Practical Assignment

In this lab you will be given two datasets with real data and asked to train and test different models on these data. The goal is to obtain models that are able to generalize as well as possible. Both datasets are already split into training and test data. Training and choice of hyperparameters should be performed using **only training data**. To evaluate generalization, you should evaluate the performance on the test data.

### 2.1 Classification Task

Train and test an SVM classifier using the Cancer dataset. Evaluate performance using at least two different metrics (Accuracy, F-Measure, etc...). Train and test at least one more classifier (learned in this course) and compare the results.

### 2.2 Regression Task

Train and test a Neural Network for price prediction using the Real Estate dataset. Evaluate performance using at least two different metrics (Mean squared error, Max error, etc...). Train and test at least one more regression method (learned in this course) and compare the results.

### 3 Report

Your report should include a small introduction, briefly describe the experiments and present and analyze the results that were obtained (including any plots, matrices and scores). The document must not exceed 8 pages (10 point font size). A theoretical description of the classifiers is not required. The code should also be provided.