

The challenge consists in dealing with three binary classification problems using any of the studied approaches and methods. You will need to train a classification model for each of the problems and test it on the corresponding test dataset. Your task is to choose, for each binary problem, the classifier that achieves the best performance classification results on the test datasets.

You will receive three train datasets (ADCTLtrain.csv, ADMCItrain.csv, MCICLtrain.csv) and three corresponding test datasets (*test.csv). These include different numbers of observations (between 164 and 172, one for each row) and several independent variables (between 64 and 594, along the columns). The first column ('ID') indicates the ID of each observation. The last column ('Label') of the train datasets includes the class the observations belong to ('AD', 'MCI', or 'CTL', depending on the training set).

For each of the three binary problems, your submission will consist of:

1. Two CSV files whose name are formatted as:

StudentRegistrationNumber_FamilyName_.res.csv*
StudentRegistrationNumber_FamilyName_.feat.csv*

where * denotes the classification problem (ADCTL, ADMCI, or MCICL).

- 1.a) The first file will contain three columns

- the ID of the test observation;
- the predicted label;
- the probability of predicted label.

- 1.b) The second file will contain the column index in the training data files (from 2 to end-1) of the selected features. If features are somehow pre-transformed, describe the transformation in the presentation file (see below).

2. A presentation in PDF with up to 6 pages, in which you describe how you obtained the model. Please, observe that it is NOT mandatory to choose the same classification model for the three different binary problems; just choose the one that leads to the most promising results.
3. The R macro (script) used to obtain the results, named:
StudentRegistrationNumber_FamilyName_solution.R.

For each problem, the results will be ranked according to AUC (e.g., auc R function from pROC) and MCC (e.g., mcc R function from mltools).