Practical Session 8 : Ensemble methods

This lab aims at using Ensemble Methods on on real and synthetic datas using the package `scikit-learn`.

1 Decision Trees

1. Import `scikitlearn` and the library `tree` of `sklearn` appropriate for decision tree

2. Import the dataset `digits` from the library `datasets`

3. Fit the decision tree classifier on the dataset `digits`

4. Can we use the model for prediction?

2 Bagging

1. Import the dataset `digits` from the library `datasets`

2. Define the data and the labels

3. Split the dataset into train set and test set

4. Import the library `tree` of `sklearn`

5. Fit a decision tree on the train set

6. Performance of this model on the test set?

7. Do the same with the `BaggingCassifier`

3 Random Forest and Boosting

1. Import `RandomForestClassifier` and `AdaBoostClassifier` from the library `sklearn.ensemble`

2. Compare the performance of these two methods and Bagging on the dataset `digits`