

## Homework 11 - Boosting

### **Boosting Algorithms (extending HW10)** (50 points)

Due Date: Monday April 19 at 11:59 pm

Instruction:

- This is a group-work assignment!
- You are expected to submit the **.ipynb** file and the exported **.html**.
- Only one member in each group needs to submit the assignment. It will be automatically submitted for the rest of group members.

Good luck and enjoy machine learning!

**Question 1** Extending Question 1 From HW-10 Random Forest (Washington DC Bikeshare data):

Train 3 different boosting regressors (AdaBoost, GBM and XGBoost) using their default model inputs. Compare the performance of the 3 boosting regressors with the vanilla Random Forest model (not optimized) by reporting the scores (R-squared in the test set) among the four models. **(25 points)**

- Rank the models based on their execution speed.
- Rank the models based on their performances.
- Which model is the overall winner?

**Question 2** Extending Question 2 From HW-10 Random Forest (Washington DC Bikeshare data):

Train 3 different boosting classifiers (AdaBoost, GBM and XGBoost) using their default model inputs. Compare the performance of the 3 boosting classifiers with the vanilla Random Forest model (not optimized) by reporting the f1scores in the test set among the four models. **(25 points)**

- Rank the models based on their execution speed.
- Rank the models based on their performances.
- Which model is the overall winner?