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IE517 MLF F21

Module 7 Homework (Random Forest)

Using the ccdefault dataset, and 10 fold cross validation described in Raschka;

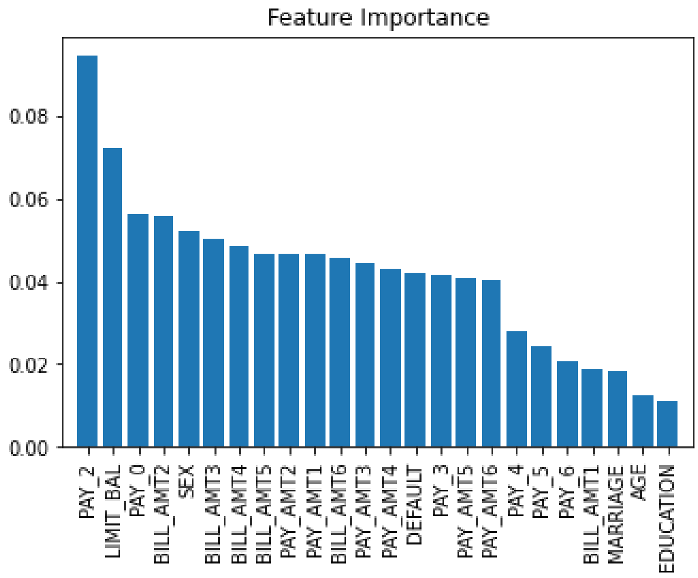
Part 1: Random forest estimators

Fit a random forest model, try several different values for N_estimators, report in-sample accuracies.

I tried n_estimators = 10, 20, 50, 75, 100, 150, 200, 400

Part 2: Random forest feature importance

Display the individual feature importance of your best model in Part 1 above using the code presented in Chapter 4 on page 136. {importances=forest.feature_importances_ }



Part 3: Conclusions

Write a short paragraph summarizing your findings. Answer the following questions:

a) What is the relationship between n_estimators, in-sample CV accuracy and computation time? *The greater the number of estimators, the greater the computation time, but also the greater the in-sample accuracy*

b) What is the optimal number of estimators for your forest? *N_estimators = 75. Out of the range of n_estimators I ran, this gave the best in-sample and out-of-sample accuracy scores partnered with the shorted computation time, as more estimators were able to perform similarly, just with a longer time to train.*

c) Which features contribute the most importance in your model according to scikit-learn function?

Pay_2 did, with it given 0.094387 as its feature importance

d) What is feature importance and how is it calculated? (If you are not sure, refer to the Scikit-Learn.org documentation.)
Feature importance is the mean and standard deviation based on how much decrease of impurity a given feature provides within each tree in the random forest

Part 4: Appendix

Link to github repo: https://github.com/eemayes2/IE517_F21_HWK7