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- ▶ Introduction: Machine Learning concepts
- ▶ Module 1. The Predictive Modeling Pipeline
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- ▼ **Module 6. Ensemble of models**

Module overview

Ensemble method using bootstrapping

Quiz M6



✓ Quiz M6.03

Note: For each question **make sure you select all of the correct options**— there may be more than one! Don't forget to use the sandbox notebook if you need.

Question 1 (1/1 point)

When compared to random forests, gradient boosting is usually trained using:

☒ a) shallower trees ✓

☐ b) deeper trees

☐ c) a subset of features

☒ d) all features ✓



Select all answers that apply

EXPLANATION

solution: a) d)

Usually, gradient boosting uses shallower trees than random forest. It is due to the fact that each tree corrects the errors of the previous ones and to avoid overfitting, these trees are required to be shallow.

Also, by default all features are used when using gradient boosting, contrary to random forests that use a random subset of features to select the feature to split on when growing the trees.

Hyperparameter tuning with ensemble methods

Quiz M6



Wrap-up quiz

Wrap-up quiz



Main take-away

- ▶ Module 7. Evaluating model performance
- ▶ Conclusion
- ▶ Appendix

Which of the hyperparameter(s) do not exist in random forest but exists in gradient boosting:

☐ a) number of estimators

☐ b) maximum depth

☒ c) learning rate ✓



Select all answers that apply

EXPLANATION

solution: c)

The learning rate in gradient boosting controls the speed at which the residuals should be corrected each time a tree is added to the ensemble. Since a random forest builds its trees independently of one another, this concept does not apply and there is no learning rate parameter for random forests.

You have used 1 of 2 submissions

Question 3 (1/1 point)

Which of the following options are correct about the benefits of ensemble models?

☒ a) Better generalization performance ✓

☒ b) Reduced sensitivity to hyperparameter tuning of individual predictors ✓



Select all answers that apply

EXPLANATION

solution: a) b)

Ensemble methods are usually more robust and lead to better statistical performance than single trees or linear models (though it depends on the dataset). However, ensembles are more complex to interpret since the final decision is taken as a combination of the decisions of numerous predictors.

You have used 1 of 2 submissions

YOUR EXPERIENCE

According to you, this whole 'Hyperparameters tuning with ensemble methods' lesson was:

- ☐ **Too easy, I got bored**
- ☐ **Adapted to my skills**
- ☐ **Difficult but I was able to follow**
- ☐ **Too difficult**

Submit

To follow this lesson, I spent:

- ☐ **less than 30 minutes**
- ☐ **30 min to 1 hour**
- ☐ **1 to 2 hours**
- ☐ **2 to 4 hours**

Submit

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