

# Ensemble Learning Quiz

<b>Due</b> No due date	<b>Points</b> 4	<b>Questions</b> 4	<b>Available</b> after May 7 at 12:44
<b>Time Limit</b> None	<b>Allowed Attempts</b> Unlimited		

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## Attempt History

	Attempt	Time	Score
LATEST	<a href="#">Attempt 1</a>	less than 1 minute	0 out of 4

Submitted Jun 16 at 18:18

Unanswered

Question 1

0 / 1 pts

What are the techniques that use instance manipulation approach to combine classifiers?

☐ Stacking by Meta classification

☐ Boosting

☐ Bagging

☐ Random Forest

Bagging constructs multiple new datasets through a random sampling of instances with replacement to train multiple classifiers. Random Forest adopts the same bagging technique to generate multiple datasets for different random trees. Boosting also iteratively samples instances from the training dataset (to train multiple classifiers) while assigning more weights to the instances that are not correctly classified in the previous iteration.

In contrast, Stacking introduces meta classifier to decide which base classifiers to rely on.

Unanswered

## Question 2

0 / 1 pts

Which of the following statement(s) are TRUE about Random Forest?

Correct Answer

☐

Random Forest adopts both feature manipulation and instance manipulation approaches.

☐

Random Forest provides higher interpretability over the logic behind the predictions than a single random tree.

☐

Random Forest minimizes the bias by having multiple random trees trained on different versions of the dataset.

Random forest adopts instance manipulation to train multiple random trees using different bagged datasets. For each random tree, feature manipulation is used to consider different feature combinations at different nodes. By training multiple random trees with different bagged datasets, random forest reduces the variance (not the bias). The predictions made by a random tree can be explained by following the decisions made along the tree. However, combining multiple random trees using a voting mechanism (i.e., random forest) degrades the interpretability of the overall logic.

Unanswered

### Question 3

0 / 1 pts

Which of the following statement(s) are TRUE about ensemble learning?

Correct Answer

☐

An ensemble of classifiers may not be able to outperform any of its individual base learners.

☐

Combining significantly diverse base learners (suppose each produces meaningful predictions) typically yields bad results.

Ensembling **diverse meaningful** base learners typically yields better results and generalized models. However, it is not always guaranteed to have improved performance by ensembling.

Unanswered

### Question 4

0 / 1 pts

Which of the following statement(s) are TRUE about Boosting?

☐

Boosting adopts feature manipulation approach to train multiple base learners

☐

Boosting iteratively learns base learners while emphasizing the samples that can be easily classified

orrect Answer

☐

Boosting assigns higher weights to better-performing base learners

Boosting adopts a weighted voting strategy to combine base learners based on the importance of each base learner. Boosting is an instance manipulation technique, where the wrongly predicted samples (i.e., difficult samples) are iteratively emphasized.