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2023-12-10

For clarify, when I say false or true I'm referring to the statement. Not ChatGPTS response.

1. False, the lower the value of k the more complex the fit. When K=1, it overfits the data and lets noise effect it's predictions. ChatGPT got this wrong, which is concerning because the bias-variance trade-off is a fundamental and important concept.
2. False, the cross-validation error never goes to 0 and is not negligible. This is especially true when the dataset is small.
3. False, the point of hierarchical clustering is to build a global structure where we can pick choose different dissimilarity levels in the dendrogram. ChatGPT articulates this correctly.
4. False, the random forrest tries to lower the variance when we averaged the predictions of bagged trees. ChatGPT was partly correct, however it said the predictions of trees are combined whereas in our textbook it says the average of the predictions is taken. The random forrest also builds models from a set of bagged models where we randomly choose predictors.

5.True,

6. True, the largest eigenvalue is the direction in which the covariance matrix has the largest variance. The eigenvector associated to this eigenvalue determines the direction. This intuitively makes sense if we think of the eigenvalue as its magnitude.
7. True, ChatGPT describes it exactly how it is in the textbook. The global minimizer is not guaranteed but the local one is.
8. True, growing a tree too deep means that each observation is classified to a stricter degree and there are more possible classifications that could be made. As per the bias-variance trade-off the training error will be lower but the testing error will be high. ChatGPT described this adequately.
9. False, SVM could be used to split the feature space or logistic regression could be used. ChatGPT is correct.
10. False, random forrest do not consider label noise and suffers significantly when there is a lot of label noise. ChatGPT got this wrong.
11. True, ChatGPT describes it quite well.
12. False, $\frac{p}{1-p}$ is a rational function. ChatGPT's statement is correct.