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CA04 Ensemble Models - Questions

1. *Random Forest*
   a. *Write your observations about the Classifier's behavior with respect to number of estimators*

      There seems to be no particular pattern in the random forest classifier's behavior with respect to number of estimators. There's a drop in accuracy score when number of estimators is equal to 250, but it doesn't seem to be significant. It seems that the classifier's accuracy score starts to stabilize when number of estimators exceeds 400.

   b. *Is there an optimal value of the estimator within the given range?*

      Yes, within the given range, it seems that 400 and 500 are the optimal values of the estimator.

2. *AdaBoost*
   a. *Write your observations about the Classifier's behavior with respect to number of estimators*

      There is a jump in accuracy score when number of estimators is changed from 50 to 100. There also seems to be a mild oscillation in accuracy scores of the model when number of estimators is below 300. But it starts to stabilize at 300 and higher.

   b. *Is there an optimal value of the estimator within the given range?*

      Yes, within the given range, it seems that 150 is the optimal value of the estimator.

3. *Gradient Boost (classifier)*
   a. *Write your observations about the Classifier's behavior with respect to number of estimators*

      There is a jump in accuracy score when number of estimators is changed from 50 to 100. The classifier has somewhat stable accuracy scores when number of estimators are between [140,400]. There are some changes but they look very miniscule, but the best performing classifiers seem to have number of estimators between [250,350].

b. *Is there an optimal value of the estimator within the given range?*

Yes, within the given range, it seems that 250 is the optimal value of the estimator.

4. *XGB (classifier)*
   a. *Write your observations about the Classifier's behavior with respect to number of estimators*

      As the number of estimators increases, there seems to be a somewhat continuous improvement for XGB classifier's accuracy score, even though the rate of change seems to be decreasing.

   b. *Is there an optimal value of the estimator within the given range?*

      Yes, within the given range, it seems that 400 is the optimal value of the estimator.