**STT 811**

**In-Class Assignment 16**

This problem will use the OJ dataset, with Purchase as the target.

1. Create a numerical input matrix for the features.
2. Perform a grid search to find the best hyperparameters. Graph the results. Use the following bounds for the grid search: max\_depth from 1 to 4, eta from 0.01 to 0.4 (steps of 0.01), iterations from 100 to 500, going by 100. You can reduce the grid if it takes more than 10 minutes to run.
3. Find the best set of hyperparameters and build a model off the entire dataset with those hyperparameter values.
4. Calculate the variable importance from this model.