Decision Tree: Feature Importance

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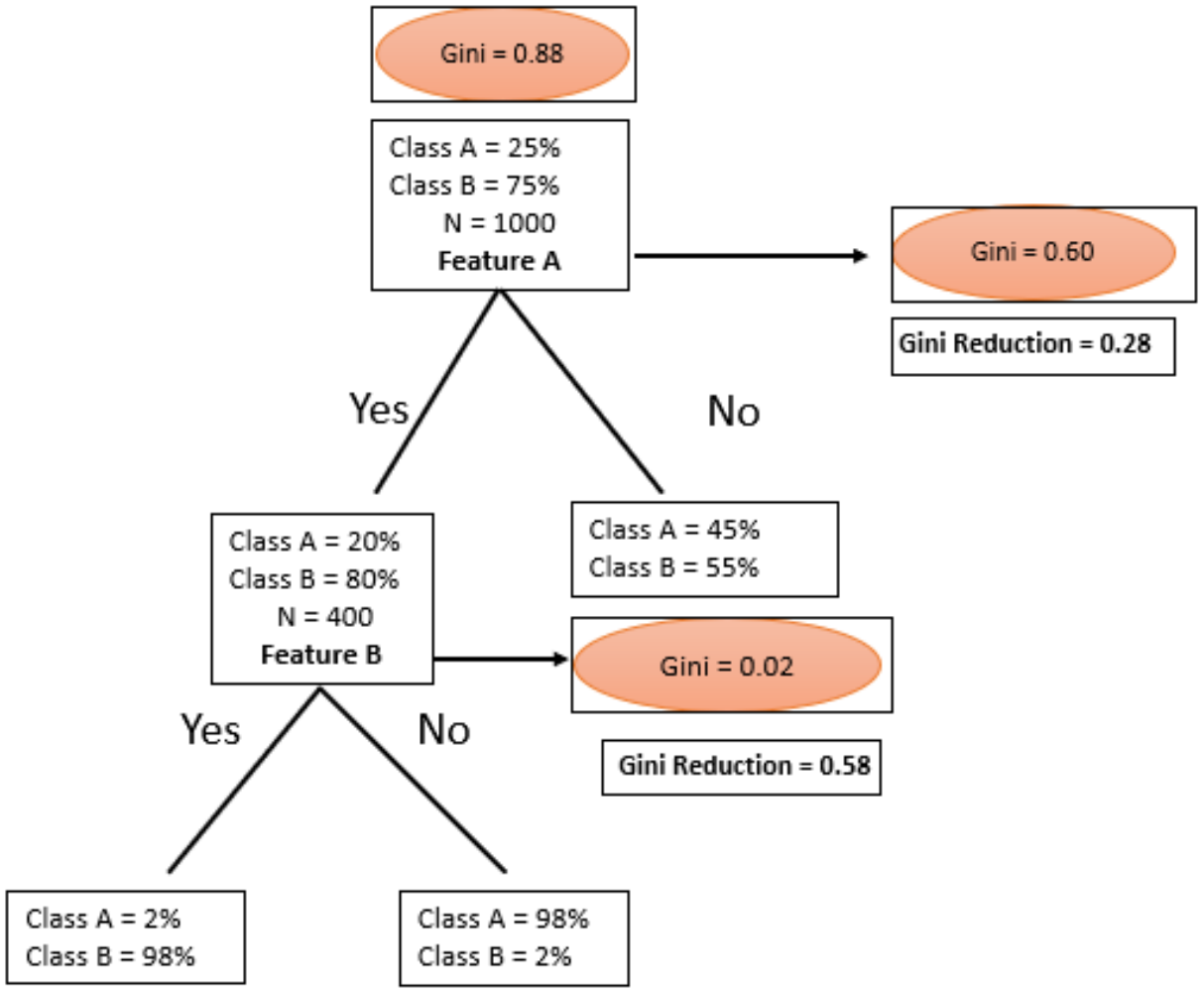
- Both Classification Tree and Regression Tree give us the ability to arrive at an idea of how important the predictors are.
- This is done by computing **“feature importance”.**
- Feature Importance, is computed as the total reduction of purity measure brought out by a feature.
- Example:

Decision Tree: Feature Importance



- Which Feature, A or B, is more important?
- Does the sequence of split matter?
- Does the purity of split matter?
- Both matter!!!!

Importance of A: Decrease in Gini*Proportion of data

Importance of A: $0.28 * \frac{1000}{1000} = 0.28$

Importance of B: Decrease in Gini*Proportion of data

Importance of B: $0.58 * \frac{400}{1000} = 0.23$

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For a regression tree, one would look at the decrease in MSE or RSS by each feature and weighing this decrease appropriately.

Thank You!