Classification

In the Simple Linear Regression,Multiple Linear Regression We assumes that the Response variable are **Quantitative**

Terminology

- Predicting a qualitative response $\rightarrow$ **Classifying** that Observation
- Classification techniques $\rightarrow$ Classifiers

Classifiers

1. Logistic Regression
2. Linear Discriminant Analysis
3. Quadratic Discriminant Analysis
4. Naive Bayes
5. K-Nearest Neighbors

Why not Linear Regression ?

- Even if the **Linear Regression** can predict two classes **qualitative** response they are not interpretable as **probabilities** and the estimates are not meaningful estimates of

$$\Pr(Y|X)$$

- **Linear regression** assumes constant error variance (**homoskedasticity**), but in binary classification the variance of the errors depends on the input (i.e., it's **heteroskedastic**).
- **Linear Regression** struggles to deal with predictors with more than two classes