Naïve Bayes Classifiers

What are they? Probabilistic classifiers based on Bayes' Theorem
- Classifier: machine learning model used to discriminate different objects based on certain features
- Naïve: ignores relationships between predictors
- Assumption that input variables are independent and that all predictors have equal effect on outcome

Strengths:
- simple
- fast
- accurate
- reliable

Weaknesses:
- predictors are dependent in most real life cases
- "Zero Frequency": categorical variable not observed in training set leads to assumption of "zero" probability

High bias but low variance
Perform well with categorical input variables
Particularly useful for natural language processing
Use examples: spam filtering, sentiment analysis

Conditional probability: Bayes' Theorem

$$P(A|B) = \frac{P(B|A)\ P(A)}{P(B)}$$

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