**Naive Bayes**

**Naïve bayes Models:**

**1. Gaussian Naive Bayes:**

Gaussian Naive Bayes is a variant of the Naive Bayes algorithm that is used for classification tasks, primarily with continuous or real-valued data.

**Use Case:**

* Gaussian Naive Bayes is well-suited for classification tasks where the features are continuous or numerical, such as age, income, temperature, etc.
* It is commonly used in text classification when the features represent continuous variables, such as TF-IDF scores.
* It is also applicable to various machine learning tasks, including spam detection, sentiment analysis, and medical diagnosis, where real-valued features play a significant role.

**2. Multinomial Naive Bayes:**

Multinomial Naive Bayes is another variant of the Naive Bayes algorithm, primarily designed for classification tasks involving discrete data, such as text data or data with a count of occurrences.

**Use case:**

* Text data is the most common domain for Multinomial Naive Bayes, as it works well with the bag-of-words representation of text data.
* Multinomial Naive Bayes is widely used in text classification tasks, such as document classification, spam filtering, and sentiment analysis. In these cases, features often represent word frequencies or term counts.

**3. Results:**

* When we are using Gaussian Naïve bayes then we are getting 0.80, means 80% accuracy we get.
* When we are using Multinomial Naïve bayes then we are getting 0.77, means 77% accuracy.

**4. Execution Time:**

* When we are using Gaussian Naïve bayes then we are getting range in between 0.09+ to 0.1+.
* When we are using Multinomial Naïve bayes then we are getting range in between 0.03+ to 0.14+.
* We are getting almost same execution time in some executions.