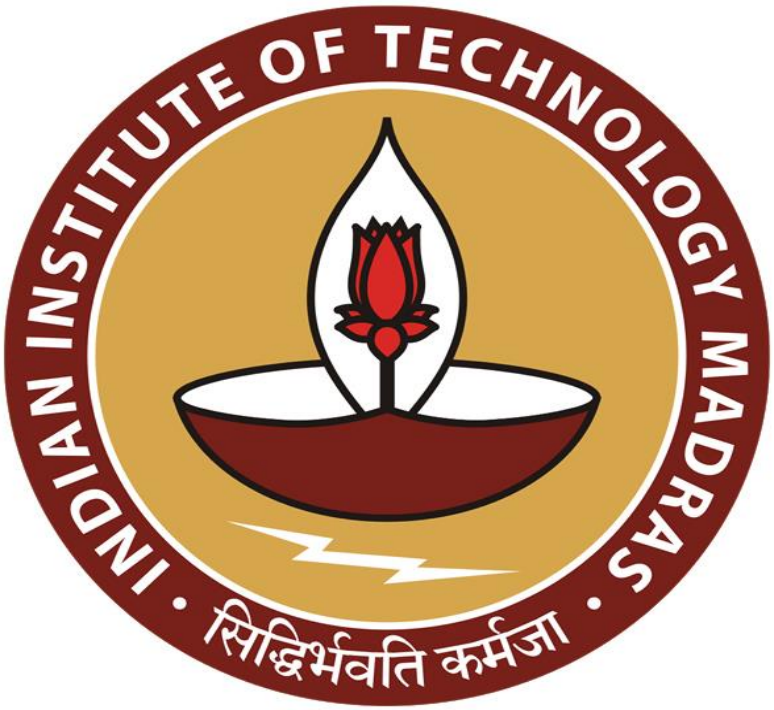

IIT Madras

ONLINE DEGREE

Machine Learning Techniques
Professor Doctor Ashish Tendulkar
Indian Institute of Technology Madras
Naive Bayes Classifier

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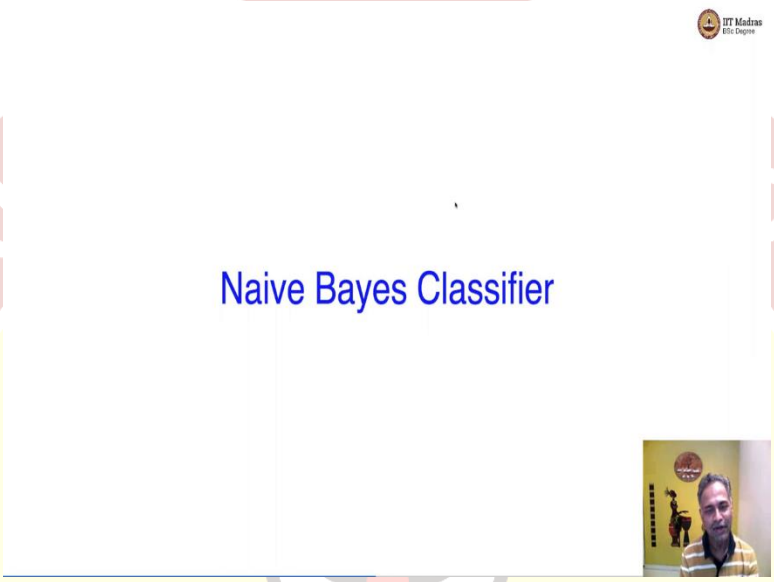

Namaste! Welcome to the next video of Machine Learning Practice course. This is a short video about Naive Bayes Classifier and how sklearn implements various Naive Bayes classifiers.

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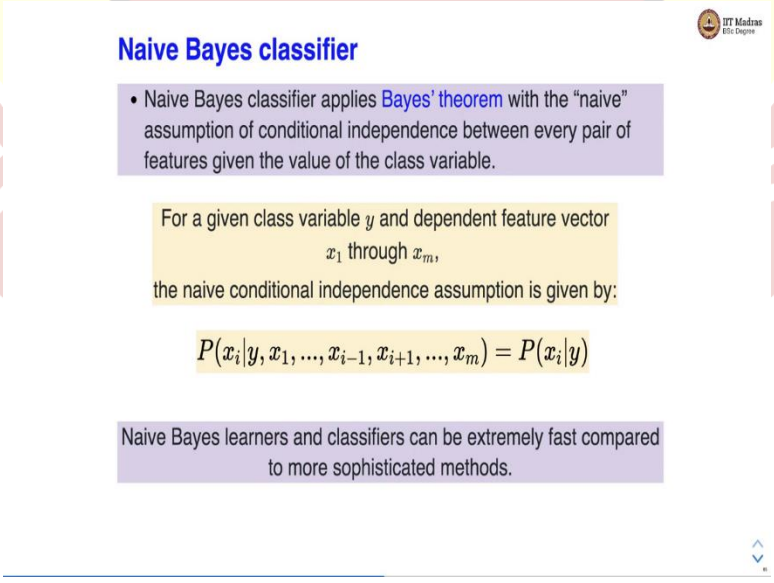

We know that Naive Bayes classifier uses Bayes' theorem for predicting the probability of a sample belonging to a specific class. It makes use of a conditional independence assumption among the features. Naive Bayes learners and classifiers can be extremely fast compared to more sophisticated methods.

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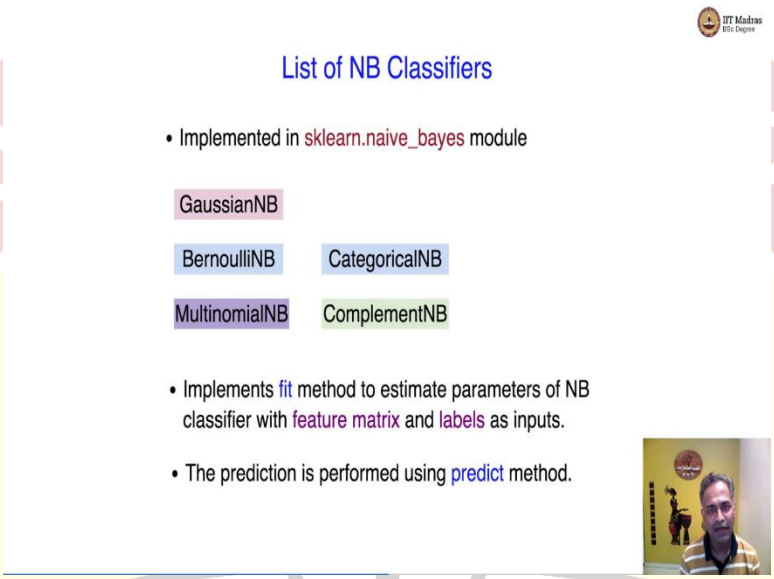

Let us look at list of Naive Bayes classifiers implemented in sklearn. The Naive Bayes classifiers are implemented in sklearn.naive _bayes module. There are five different naive bayes classifiers, GaussianNB, BernoulliNB, CategoricalNB, MultinomialNB and ComplementNB that are implemented as part of the Naive Bayes module. So, we use Gaussian Naive Bayes whenever we have continuous features.

If our features are binary then we use Bernoulli Naive Bayes classifier. If our features are distributed according to categorical distribution we use categorical Naive Bayes classifier. In applications like text classification where we assume multinomial distribution multinomialNB is used. And when we have class imbalance issues in the dataset we use complementNB.

So, in case of class imbalance complementNB has been found to be performing better than multinomialNB. Naive Bayes classifiers implement quick method to estimate parameter with feature matrix and labels as input. The prediction is performed using predict method. So, in this short video we studied different Naive Bayes classifier implemented in sklearn.