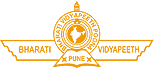
**STOCK MARKET PREDICTION USING MACHINE LEARNING**

**SYNOPSIS**

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## Naive Bayes Classifier

## Naive Bayes Classifier Introductory Overview

The Naive Bayes Classifier technique is based on the so-called Bayesian theorem and is particularly suited when the dimensionality of the inputs is high. Despite its simplicity, Naive Bayes can often outperform more sophisticated classification methods.

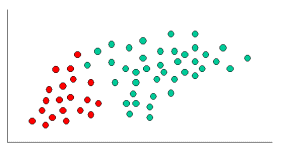


Fig. Naïve Bayes Classification Examples

To demonstrate the concept of Naïve Bayes Classification, consider the example displayed in the illustration above. As indicated, the objects can be classified as either GREEN or RED. Our task is to classify new cases as they arrive, i.e., decide to which class label they belong, based on the currently exiting objects.

Since there are twice as many GREEN objects as RED, it is reasonable to believe that a new case (which hasn't been observed yet) is twice as likely to have membership GREEN rather than RED. In the Bayesian analysis, this belief is known as the prior probability. Prior probabilities are based on previous experience, in this case the percentage of GREEN and RED objects, and often used to predict outcomes before they actually happen.[1]

**Stock market prediction**

* **Stock market prediction** is the act of trying to determine the future value of a company [stock](https://en.wikipedia.org/wiki/Stock) or other [financial instrument](https://en.wikipedia.org/wiki/Financial_instrument) traded on an [exchange](https://en.wikipedia.org/wiki/Exchange_(organized_market)). The successful prediction of a stock's future price could yield significant profit. The [efficient-market hypothesis](https://en.wikipedia.org/wiki/Efficient-market_hypothesis) suggests that stock price movements are governed by the [random walk hypothesis](https://en.wikipedia.org/wiki/Random_walk_hypothesis) and thus are inherently unpredictable. Others disagree and those with this viewpoint possess myriad methods and technologies which purportedly allow them to gain future price information. [2]

**Technology Used**

* The backbone of our project is, Naïve Bayes and related algoithms . This algorithm devises several features that correspond to the market parameter values at various time-delays to the present.
* **R** is the [programming language](https://en.wikipedia.org/wiki/Programming_language) used and it provides a software environment for [statistical computing](https://en.wikipedia.org/wiki/Statistical_computing) and graphics. The R language is widely used among [statisticians](https://en.wikipedia.org/wiki/Statistician) and [data miners](https://en.wikipedia.org/wiki/Data_mining) for developing [statistical software](https://en.wikipedia.org/wiki/Statistical_software)and data analysis. Polls, [surveys of data miners](https://en.wikipedia.org/wiki/Rexer%27s_Annual_Data_Miner_Survey), and studies of scholarly literature databases show that R's popularity has increased substantially in recent years.[3]

**Future Scope**

* The rise of [financial](https://en.wikipedia.org/wiki/Social_media) Data from [blogs](https://en.wikipedia.org/wiki/Blogs) and [Analytics](https://en.wikipedia.org/wiki/Social_networks) Platform has fueled interest in Machie Learning using Historical Data . With the proliferation of reviews, ratings, recommendations and other forms of online expression, online opinion has turned into a kind of virtual currency for businesses looking to market their products, identify new opportunities and manage their reputations.
* As businesses look to automate the process of filtering out the noise, understanding the conversations, identifying the relevant content and taking action on it appropriately, many are now looking to the field of Stock analysis.

**References**

[1] Naive-Bayes-Classifier, http://documents.software.dell.com/Statistics/Textbook/Naive-Bayes-Classifier

[2] Stock Market Prediction, <https://en.wikipedia.org/wiki/Stock_market_prediction>

[3] R, <https://en.wikipedia.org/wiki/R_(programming_language)>