Topic Modeling is a branch of Natural Language Processing (NLP) that deals with discovering abstract topics within a collection of documents. It is used to organize, understand, and summarize large datasets of textual information. Topic modeling can uncover hidden thematic structures in the text, making it easier to manage and interpret large volumes of data. This technique is widely used in various applications such as document clustering, information retrieval, document summarization, and content recommendation.

The core idea behind topic modeling is that documents are composed of multiple topics, and a topic is characterized by a distribution over words. Two of the most popular algorithms used in topic modeling are Latent Dirichlet Allocation (LDA) and Non-negative Matrix Factorization (NMF):

1. **Latent Dirichlet Allocation (LDA):** LDA is a generative statistical model that assumes each document is a mixture of a small number of topics and that each word's presence is attributable to one of the document's topics. LDA is based on two main ideas: documents with similar topics use similar groups of words, and those topics can be discovered by looking at which words appear together frequently.

2. **Non-negative Matrix Factorization (NMF):** NMF is a linear-algebraic model that factors high-dimensional vectors into a non-negative matrix and its non-negative inverse. This technique can be applied to the term-document matrix (a matrix describing the frequency of terms that occur in a collection of documents) to discover patterns in the data, effectively grouping the documents into topics based on word frequencies.

Topic modeling can be applied to any large corpus of text, including news articles, research papers, books, social media posts, and more. The outcome of topic modeling is often used to enhance the capabilities of search engines, improve the relevance of recommendations in content delivery platforms, and facilitate the analysis of textual data in research and development across various fields.