NLP stands for Natural Language Processing, which is a part of Computer Science, Human language, and Artificial Intelligence.
Natural language processing (NLP) combines computational linguistics, machine learning, and deep learning models to process human language.
It is the technology that is used by machines to understand, analyse, manipulate, and interpret human's language. It helps developers to organize knowledge for performing tasks such as translation, automatic summarization, Named Entity Recognition (NER), speech recognition, relationship extraction, and topic segmentation.Natural Language Processing (NLP) is one of the most important techniques in computer science and it is a key part of many exciting applications such as AI and chatbots.Natural language processing (NLP) is a subfield of Artificial Intelligence (AI). This is a widely used technology for personal assistants that are used in various business fields/areas. This technology works on the speech provided by the user breaks it down for proper understanding and processes it accordingly. This is a very recent and effective approach due to which it has a really high demand in today's market. Natural Language Processing is an upcoming field where already many transitions such as compatibility with smart devices, and interactive talks with a human have been made possible.

Knowledge representation, logical reasoning, and constraint satisfaction were the emphasis of AI applications in NLP. Here first it was applied to semantics and later to grammar. In the last decade, a significant change in NLP research has resulted in the widespread use of statistical approaches such as machine learning and data mining on a massive scale.The need for automation is never-ending courtesy of the amount of work required to be done these days. NLP is a very favorable, but aspect when it comes to automated applications. The applications of NLP have led it to be one of the most sought-after methods of implementing machine learning.

Natural Language Processing (NLP) is a field that combines computer science, linguistics, and machine learning to study how computers and humans communicate in natural language.

The goal of NLP is for computers to be able to interpret and generate human language. This not only improves the efficiency of work done by humans but also helps in interacting with the machine. NLP bridges the gap of interaction between humans and electronic devices.

There are 4 different types of techniques:

Statistical Techniques

Stochastic Techniques

Rule-Based Techniques and

Hybrid Techniques.

Statistical techniques use statistics to process natural language. The most popular statistical technique is Naive Bayes.

Stochastic techniques use stochastic algorithms to process natural language. Themost popular stochastic technique is Hidden Markov Models (HMM).

Rule-Based techniques use rules to process natural language. The most popular rule-based technique is Chunking.

Hybrid techniques use a combination of statistical and stochastic techniques.

The most popular hybrid technique is Latent Semantic Analysis (LSA).Some common techniques used in NLP include:

1.Tokenization: the process of breaking text into individual words or phrases.

2. Part-of-speech tagging: the process of labeling each word in a sentence with its
grammatical part of speech.

3.Named entity recognition: the process of identifying and categorizing named
entities, such as people, places, and organizations, in text.

4.Sentiment analysis: the process of determining the sentiment of a piece of text,
such as whether it is positive, negative, or neutral.

5.Machine translation: the process of automatically translating text from one
language to another.

1. Natural Language Understanding (NLU)

Natural Language Understanding (NLU) helps the machine to understand and analyse human language by
extracting the metadata from content such as concepts, entities, keywords, emotion, relations, and semantic roles.

NLU mainly used in Business applications to understand the customer's problem in both spoken and written
language.

First, the computer must comprehend the meaning of each word. It tries to figure out whether the word is a noun or
a verb, whether it's in the past or present tense, and so on. This is called Part-of-Speech tagging (POS).

A lexicon (a vocabulary) and a set of grammatical rules are also built into NLP systems. The most difficult part of
NLP is understanding.

The machine should be able to grasp what you said by the conclusion of the process. There are several challenges in
accomplishing this when considering problems such as words having several meanings (polysemy) or different
words having similar meanings (synonymy), but developers encode rules into their NLU systems and train them
to learn to apply the rules correctly.

Working in natural language processing (NLP) typically involves using computational techniques to analyze and understand human language. This can
include tasks such as language understanding, language generation, and language interaction.

The field is divided into three different parts:

Speech Recognition — The translation of spoken language into text.

Natural Language Understanding (NLU) — The computer's ability to understand what we say.

Natural Language Generation (NLG) — The generation of natural language by a computer.