Experiment No.1
Study various applications of NLP and Formulate the Problem Statement for Mini Project based on chosen real world NLP applications
Date of Performance:
Date of Submission:

Aim: Study various applications of NLP and Formulate the Problem Statement for Mini Project based on chosen real world NLP applications.

Objective: Understand the different applications of NLP and their techniques by reading and critiquing IEEE/ACM/Springer papers.

Theory:

1. Machine Translation

Machine translation is a process of converting the text from one language to the other automatically without or minimal human intervention.

2. Text Summarization

Condensing a lengthy text into a manageable length while maintaining the essential informational components and the meaning of the content is known as summarization. Since manually summarising material requires a lot of time and is generally difficult, automating the process is becoming more and more popular, which is a major driving force behind academic research.

Text summarization has significant uses in a variety of NLP-related activities, including text classification, question answering, summarising legal texts, summarising news, and creating headlines. Additionally, these systems can incorporate the creation of summaries as a middle step, which aids in shortening the text.

The quantity of text data from many sources has multiplied in the big data era. This substantial body of writing is a priceless repository of data and expertise that must be skillfully condensed in order to be of any use. A thorough investigation of NLP for automatic text summarization has been necessitated by the increase in the availability of documents. Automatic text summarising is the process of creating a succinct, fluid summary without the assistance of a human while maintaining the original text's meaning.

3. Sentiment Analysis

Sentiment analysis, often known as opinion mining, is a technique used in natural language processing (NLP) to determine the emotional undertone of a document. This is a common method used by organizations to identify and group ideas regarding a certain good, service, or concept. Text is mined for sentiment and subjective information using data mining, machine learning, and artificial intelligence (AI).

Opinion mining can extract the subject, opinion holder, and polarity (or the degree of positivity and negative) from text in addition to identifying sentiment. Additionally, other scopes, including document, paragraph, sentence, and sub-sentence levels, can be used for sentiment analysis.

Businesses must comprehend people's emotions since consumers can now communicate their views and feelings more freely than ever before. Brands are able to listen carefully to their customers and customize their products and services to match their demands by automatically evaluating customer input, from survey replies to social media chats.

4. Information Retrieval

A software programme that deals with the organization, storage, retrieval, and evaluation of information from document repositories, particularly textual information, is known as information retrieval (IR). The system helps users locate the data they need, but it does not clearly return the questions' answers. It provides information about the presence and placement of papers that may contain the necessary data. Relevant documents are those that meet the needs of the user. Only relevant documents will be pulled up by the ideal IR system.

5. Question Answering System (QAS)

Building systems that automatically respond to questions presented by humans in natural language is the focus of the computer science topic of question answering (QA), which falls under the umbrella of information retrieval and natural language processing (NLP).

Output:

Title Name: "Audio/Text to sign language convertor"

Conclusion:

The survey of ten papers on speech to sign language translation for deaf people reveals the following:

Limitations of existing systems:

Accuracy is low in some systems.

Some systems only accept audio input, not text input.

Some systems do not provide real-time conversion of sign language.

Some systems have a restricted database of gestures.

Some systems do not include facial expressions or other nonverbal cues.

Possible improvements:

Improve the accuracy of existing systems.

Add text input capabilities to systems that only accept audio input.

Develop systems that can provide real-time conversion of sign language.

Expand the database of gestures in existing systems.

Include facial expressions and other nonverbal cues in systems that do not currently include them.