NLP Experiment 1

Aim: Study various applications of NLP and NLP Tools

Theory:

Natural Language Processing (NLP) has a wide range of applications. Some of them are:

- **Sentiment Analysis**: Sentiment analysis involves determining the emotional tone or sentiment expressed in a text, often used in social media monitoring and customer feedback analysis.
- **Chatbots**: Chatbots use NLP to engage in natural conversations with users. They can be found in customer support, virtual assistants, and more.
- **Machine Translation**: NLP is used for translating text from one language to another, such as Google Translate.
- **Named Entity Recognition (NER)**: NER identifies entities like names of people, organisations, locations, and more in text, which is useful in information retrieval and data categorisation.
- **Text Summarization**: NLP is used to automatically generate concise summaries of longer texts, which can be handy for news articles or academic papers.
- **Speech Recognition**: Converting spoken language into text is crucial in voice assistants (e.g., Siri, Alexa) and transcription services.
- **Text Classification**: Assigning predefined categories or labels to text, like spam detection in emails or classifying articles into topics.
- **Question Answering**: This is used in search engines to provide direct answers to user questions, like the featured snippets in Google search results.

We aim to solve the problem of Text Classification from our given problem statement. Text classification, in a more technical sense, is a natural language processing (NLP) task where machine learning algorithms are trained to assign predefined labels or categories to text data. It involves extracting relevant features from the text, such as words or phrases, and using these features to train a model to recognize patterns and associations between the text and the categories. Once the model is trained, it can automatically classify new, unseen text into the appropriate categories based on the patterns it has learned. Text classification finds applications in various fields, from sentiment analysis and spam detection to topic categorization and language identification, aiding in automating the organization and management of textual data.