# Applications of NLP

# Daily Applications of NLP

- Some examples of the NLP applications that you you use daily, but may not be aware that they are built on NLP:
  - Spell correction (MS Word/ any other editor)
  - Search engines (Google, Bing, Yahoo, wolframalpha)
  - Speech engines (Siri, Google Voice)
  - Spam classifiers (All email services)
  - News feeds (Google, Yahoo!, and so on)
  - Machine translation (Google Translate, and so on)
  - IBM Watson (A question-answering computer system)

# Categories of NLP

## Text Classification

- spam filter
- inbox priority
- news aggregation
- sentiment analysis

# Categories of NLP

## Information Retrieval

- Google Search : The way a typical information retrieval system works is that it generates an indexing mechanism.

  This is very similar to the indexing schemes used in books, where you will have an index of the words present throughout the book on the last pages of the book.

# Categories of NLP

## Text Summarization

- We are given an article/passage/story and you will have to generate a summary of the content automatically.
- This method uses algorithms to identify the most important part of the text and presents them in the summarization.

# Categories of NLP

## Machine Translation

- The machine takes the input text and maps the words and sentences to the target language.
- This is one of the most useful applications of NLP.

# Categories of NLP

## Speech Recognition

- Speech recognition is a very old NLP problem. People have been trying to address this since the era of World War I, and it still is one of the hottest topics in the area of computing. The idea here is really intuitive. Given the speech uttered by a human can we convert it to text?
- The audio goes through acoustic, lexical, and language models for generating token as an output.

# Categories of NLP

## Information Extraction

- an information extraction engine processes huge numbers of unstructured documents and generates some sort of structured/semi-structured knowledge base that can be deployed to build an application around it.
- A simple example is that of generating a very good ontology using a huge set of unstructured text documents. A similar project in this line is DBpedia, where all the Wikipedia articles are used to generate the ontology of artifacts that are interrelated or have some other relationship.

# Categories of NLP

## Question Answering System

- A question answering system can be broken down to building components from speech recognition for querying the knowledge base while the knowledge base is generated using information retrieval and extraction.

# Categories of NLP

## Dialog Systems

- Dialog systems are considered the dream application, where given a speech in source language, the system will perform speech recognition and transcribe it to text. This text will then go to a machine translation system that can translate the speech into the target language and then a text-to-speech system will convert it into speech in the target language. This is one of the most desirable applications of NLP, where we can talk to a computer in any language and the computer will reply in the same language.

# Categories of NLP

## Dialog Systems

- Apple Siri and Google Voice are examples of some of the commercial applications in the line of dialog systems intelligent enough to understand our information needs, try to address them in a set of actions or information, and respond in a human-like manner.

# Categories of NLP

## Topic Modeling

- Topic modeling, in the context of a large amount of unstructured text content, is really an amazing application, where the primary task is to identify the emerging topics in the corpus and then categorize the documents in the corpus as per these topics.
- latent dirichlet allocation (LDA) and latent semantics indexing (LSI) are 2 algorithms for this.

# Categories of NLP

### Language Detection

- This application is used in detecting language in a corpus.
- This is used in a huge dataset of texts where the analyst needs to process a certain language.