

Natural Language Processing (NLP)

Amritraj Binuraj

What is Natural Language
Processing?

Natural Language Processing (NLP) centers on training computers to understand and “speak” human languages.

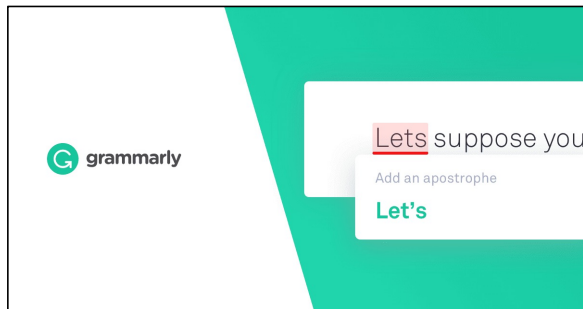


Courtesy of Microsoft

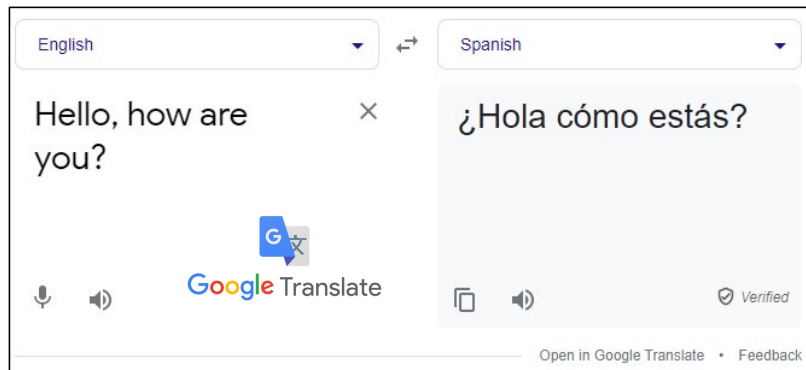


Courtesy of Microsoft

NLP is the **foundation** for innovations found in daily life such as **autocorrection**, language **translation**, and **voice-assistants**.



Courtesy of Grammarly



Courtesy of Google

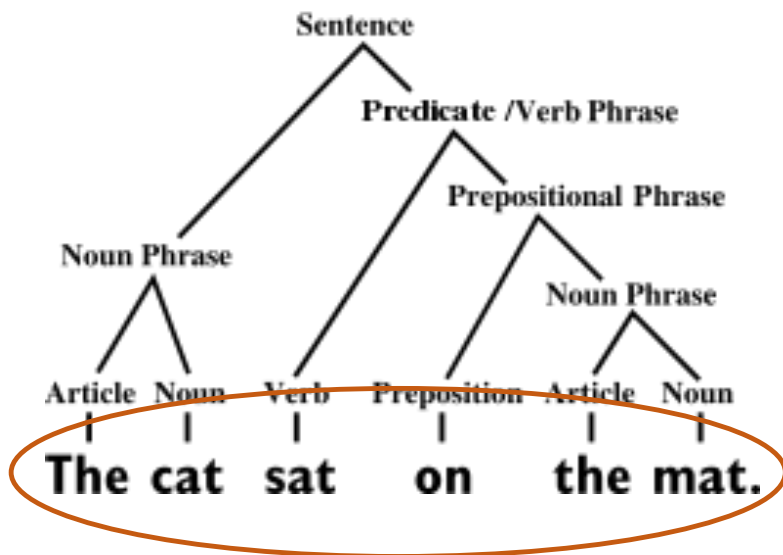


Courtesy of Amazon

Applications of Natural Language Processing

Natural Language Understanding (NLU) is a subset of NLP that focuses on machine comprehension of **syntax and semantics**.

Basic constituent structure analysis of a sentence:



Courtesy of Wikimedia Commons

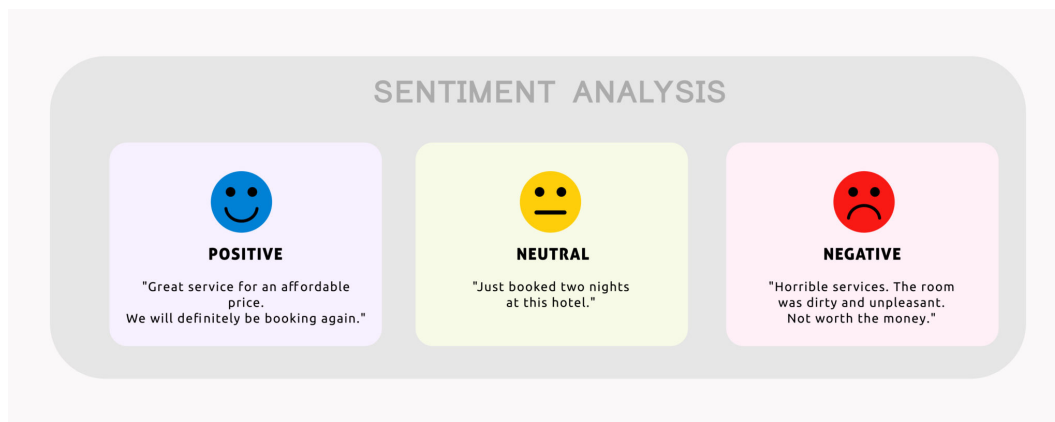
Syntax



Courtesy of Microsoft

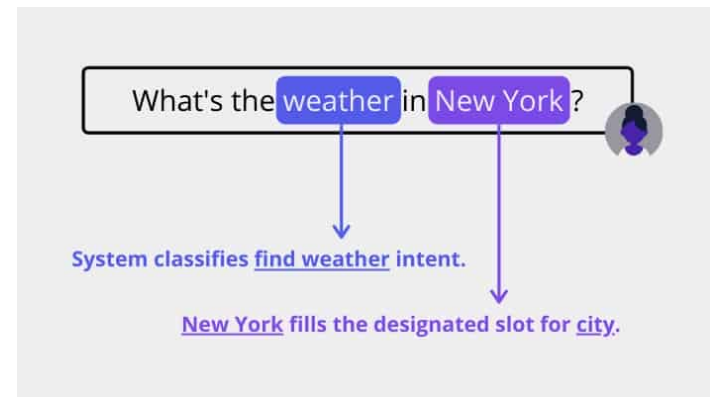
Semantics

Sentiment Analysis and **Intent Classification** are techniques for analyzing text or speech for **feelings** and **purpose**.



Courtesy of Express Analytics

Sentiment Analysis



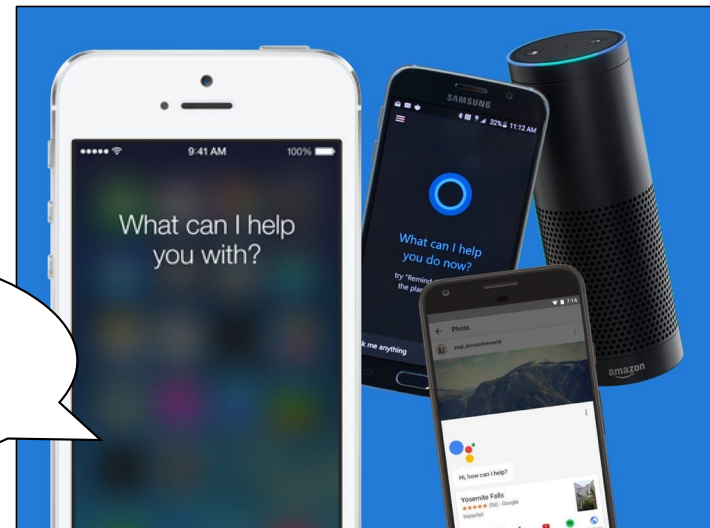
Courtesy of Cogito Tech

Intent Classification

Natural Language Generation (NLG) is the subset of NLP that focuses on constructing **human language responses** for **specific inputs**.

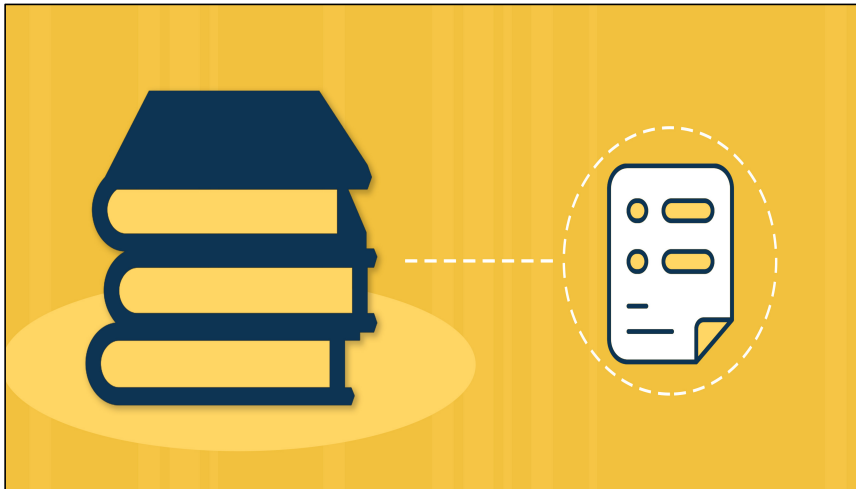


Courtesy of Microsoft



Courtesy of Business Insider

Text Summarization and **Autocompletion** have the goal of making contextual and accurate **inferences and predictions** based on an **input**.



Courtesy of The University of Michigan

Text Summarization



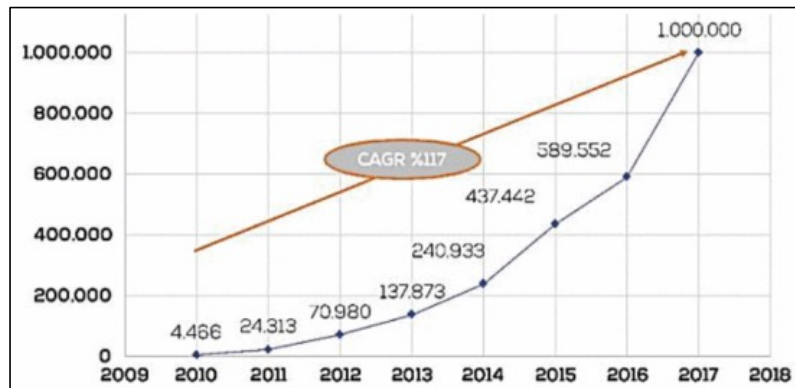
Courtesy of Google

Autocompletion

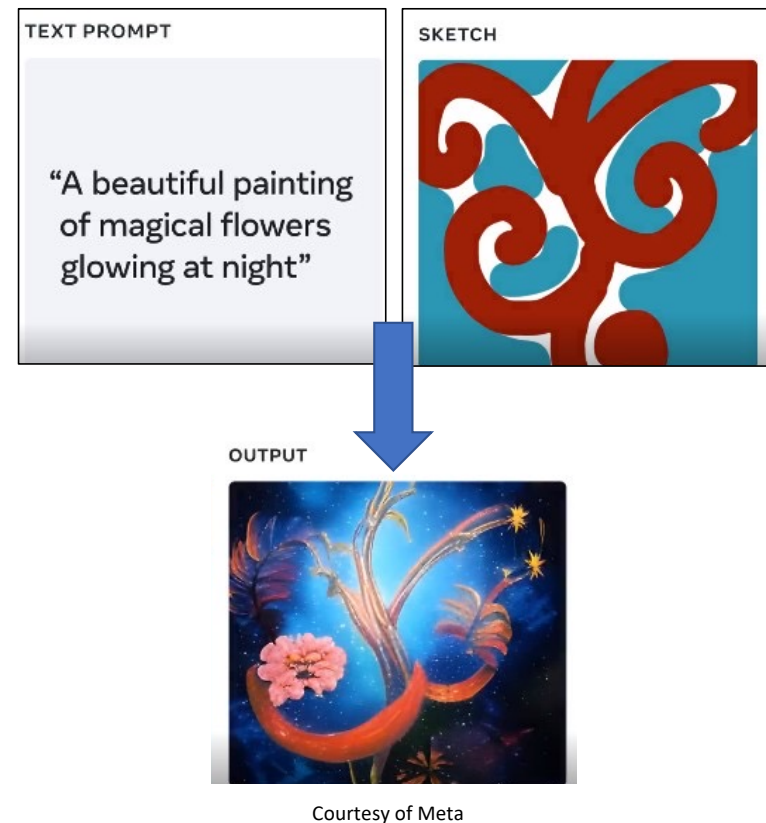
The Future of NLP

The NLP domain is expected to grow exponentially in the future, moving towards more human-like and context-aware understanding.

Growth of Machine Learning Jobs



Mahima (2020)



Annotated Bibliography:

<https://github.com/amritrajb/A-collection-of-NLP-related-topics/blob/main/NLP%20Annotated%20Bibliography.pdf>