

# Introduction to Natural Language Processing

Applications of AI

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# Agenda

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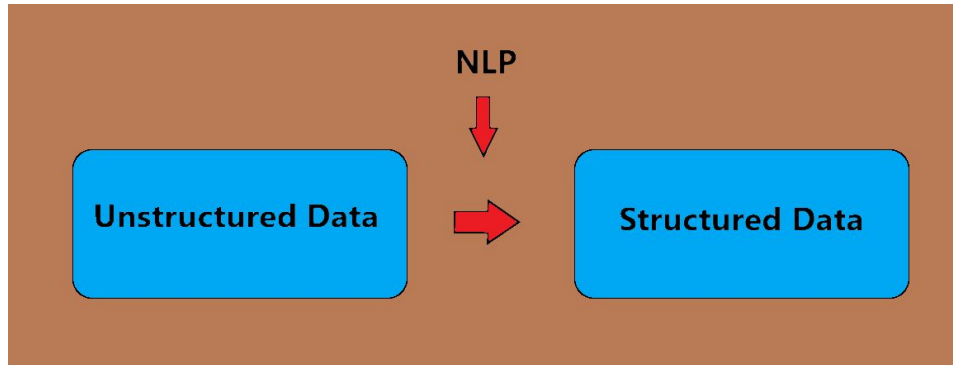
- Intro to NLP
- Application of NLP
- Text Mining
- Chatbots

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# What is NLP?

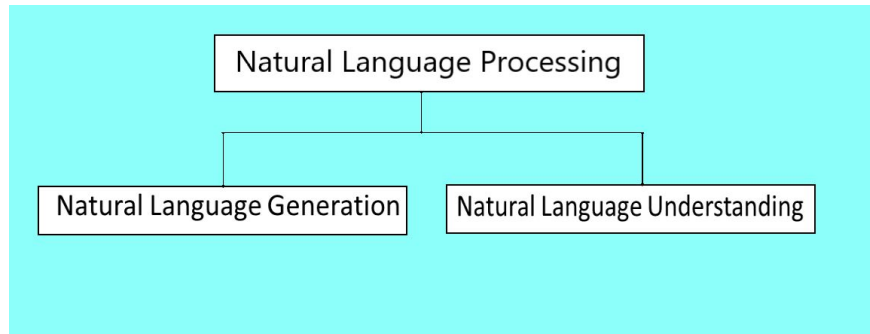
NLP aids machines in reading text (or another form of input such as speech) by simulating the human ability to understand a natural language such as English, Spanish, or Chinese.



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# Types of NLP?

Natural Language Processing consists of both Natural Language Generation and Natural Language Understanding, which simulates the human ability to create natural language text. Example - to take part in a dialogue or summarize information.



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# Applications of NLP

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# Speech Recognition

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Converting spoken words into data:

- Alexa
- Cortana
- Google Assistant
- Siri

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# Machine Translation

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Translating texts from one language to another.

Example:

- Google Translator
- Microsoft Translator

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# Sentiment Analysis

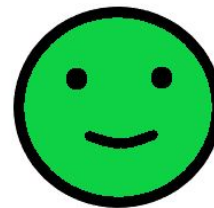
Interpreting basic Information from languages and check whether comments are positive or negative.



**Negative**



**Neutral**



**Positive**

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# Example of Sentiment Analysis – Amazon Comprehend

Entities | Key phrases | Language | PII | **Sentiment** | Syntax

## Analyzed text

Hello Zhang Wei, I am John. Your AnyCompany Financial Services, LLC credit card account 1111-0000-1111-0008 has a minimum payment of \$24.53 that is due by July 31st. Based on your autopay settings, we will withdraw your payment on the due date from your bank account number XXXXXX1111 with the routing number XXXXX0000.

Your latest statement was mailed to 100 Main Street, Any City, WA 98121.

After your payment is received, you will receive a confirmation text message at 206-555-0100.

If you have questions about your bill, AnyCompany Customer Service is available by phone at 206-555-0199 or email at support@anycompany.com.

## ▼ Results

### Sentiment

Neutral

0.98 confidence

Positive

0.00 confidence

Negative

0.01 confidence

Mixed

0.00 confidence

## ► Application integration

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# Named Entity Recognition

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Identification of named entities (people, places, organizations, etc.) from input text is known as Named Entity Recognition.



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# Named Entity Recognition - Amazon Comprehend

## Analyzed text

Hello Zhang Wei, I am John. Your AnyCompany Financial Services, LLC credit card account 1111-0000-1111-0008 has a minimum payment of \$24.53 that is due by July 31st. Based on your autopay settings, we will withdraw your payment on the due date from your bank account number XXXXXX1111 with the routing number XXXXX0000.

Your latest statement was mailed to 100 Main Street, Any City, WA 98121.


After your payment is received, you will receive a confirmation text message at 206-555-0100.

If you have questions about your bill, AnyCompany Customer Service is available by phone at 206-555-0199 or email at support@anycompany.com.

## ▼ Results

Q Search

<12>



Entity	Type	Confidence
Zhang Wei	<div></div> Person	0.99+
John	<div></div> Person	0.99+
AnyCompany Financial Services, LLC	<div></div> Organization	0.99+
1111-0000-1111-0008	<div></div> Other	0.99+
\$24.53	<div></div> Quantity	0.99+
July 31st	<div></div> Date	0.99+

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# NLP to create World Cloud

A word cloud (also called a tag cloud, word collage, or wordle) is a visual representation of words that emphasizes the words that are most frequently used.



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# NLP to read News - IBM Watson News Explorer



Image source: <https://news-explorer.mybluemix.net/?query=Harvard%20University&type=unconstrained>

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# NLP to summarize articles - Inshorts

[Read Now](#)[Careers](#)[Blog](#)

Stay informed in 60 words.

We understand you don't have time to go through long news articles everyday. So we cut the clutter and deliver them, in 60-word shorts. Short news for the mobile generation.



Image source: <https://inshorts.com/>

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# NLP to summarize articles - Inshorts (Cont.)

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- NLP is used to automatically condenses a news article down to 60 words.
- Inshorts editors summarised more than half a million articles over a five-year period to develop an algorithm that summarises more than 100K articles per month.

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# What is Text Mining?

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The process of extracting useful patterns and insights from unstructured text is known as text mining.

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# Applications of Text Mining

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# Risk Management

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In the Financial industry, Risk Management Software based on text mining technology can drastically improve risk mitigation.

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# Fraud Detection through Claims Detection

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With the help of text mining technologies, insurance companies are preventing fraud and processing claims more quickly by combining the results of text analysis with structured data.

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# Thank You!

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