A Guide to Natural Language Processing

A #ThinkBeyond Best Practice Series

PHOTON

Table of contents

1 Executive summary

2 Overview

3 What is Natural Language Processing?

4 How does Natural Language Processing work?

5 Real-world business applications of NLP

6 The adoption of chatbots

7 NLP components and platform applications

8 NLP: Integration architecture

9 How Photon helps Fortune 500 brands leverage intelligent assistants

10 Conclusion

Executive summary

Natural (human) language is astonishingly vast, diverse, and complex. There are hundreds of languages and dialects, and each language has its own set of syntax rules, grammar, and slangs. The written word has its own anomalies like misspellings, abbreviations, etc. and when we speak, we have different accents and frequently use words from other languages. This high level of ambiguity can not only be resolved but utilized to boost a business' decision-making ability by applying Natural Language Processing (NLP).

NLP provides an algorithmic or numeric structure to text or voice-based data for functionalities like speech recognition, text analysis, and machine translation. It is almost impossible for machines to understand the context behind human language, but by harnessing NLP, businesses can successfully gather, process, and imitate human speech to give human-machine interactions a personalized feel.

This guide provides a detailed view of the advancements in NLP technology and the best practices to improve an organization's decision-making ability. It explains the business applications of NLP, such as chatbots and voice assistants, and their business benefits across various industries—eCommerce, banking, and healthcare, among others. The guide further reveals our approach to implementing text and voice-based digital solutions for global Fortune 500 brands.

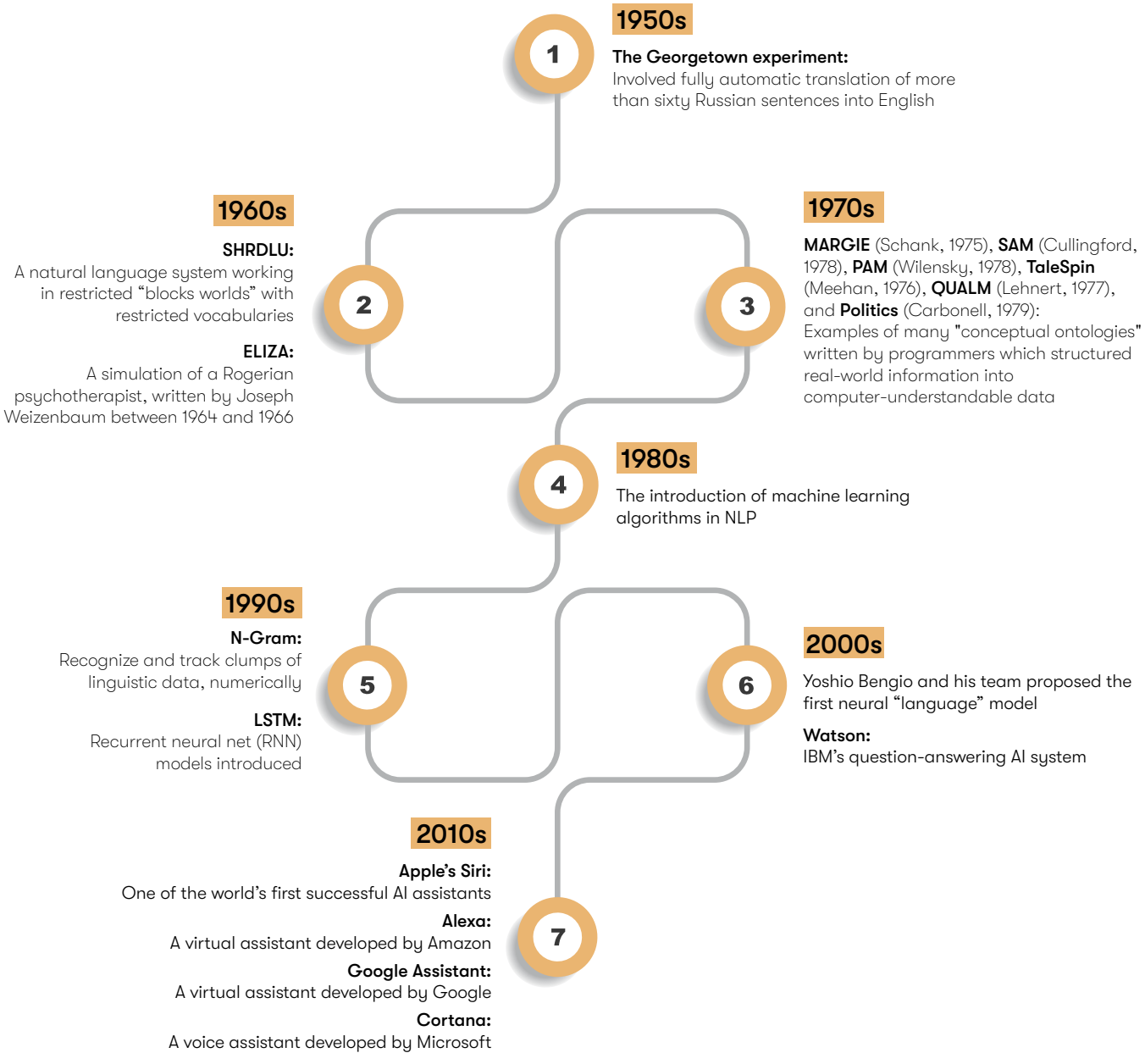
Overview

NLP is gaining a lot of focus from companies due to its rapid evolution and growing use cases. Research around deep learning, machine translation, language processing, and conversion systems has led to the development of many useful business applications. Companies across industries such as retail, finance, healthcare, and education are leveraging NLP techniques to create valuable applications that enable cognitive digital experiences, enhance the buying journey, provide instant customer service, and more.

The ultimate goal of NLP is to improve human-machine interactions to such an extent that talking to a voice-based tool becomes as convenient and intimate as talking to a real person. It is a fairly possible goal considering the ability of NLP to analyze text and voice-based unstructured data to make it meaningful to machines. A study predicted that the quantity of analyzed data by cognitive systems would grow to 1.4 ZB by 2025, impacting industries around the globe[1].

A historical perspective of **NLP**

The history of NLP can be traced back to the 1950s when Alan Turing published an article titled "Intelligence" which proposed the Turing test as a criterion of intelligence. NLP has come a long way since its nascent stages and has found numerous applications in various fields. Here is a decade-wise breakdown of NLP technology progression:



Today, the adoption and usage of voice-based solutions are one of the topmost priorities for digitally-driven companies to deliver convenient, in-the-moment experiences that connected customers demand.

What is **Natural Language Processing?**

NLP, also known as computational linguistics, is a field of artificial intelligence and linguistics that deals with the understanding, processing, and generating of natural (human) language by machines.

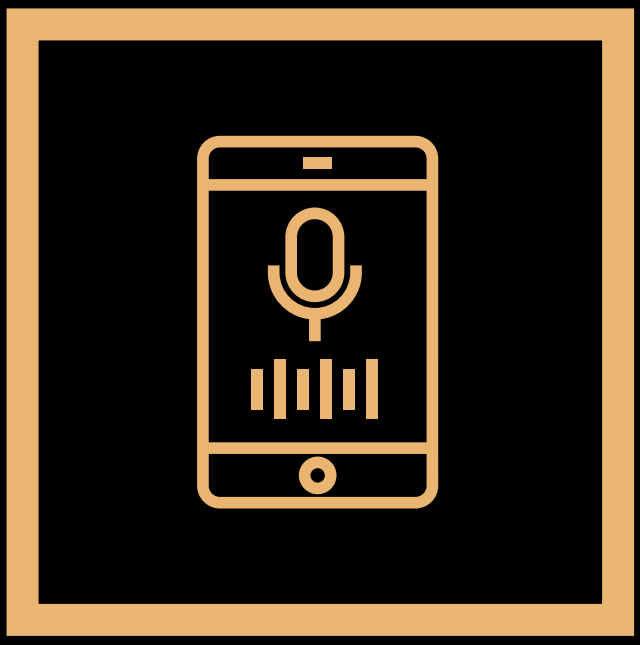
The subcategories of NLP are:

Natural Language Generation (NLG)

which deals with a machine's ability to create communication tools on its own

Natural Language Understanding (NLU)

which deals with a machine's ability to understand anomalies in a natural language like slangs, mispronunciations, misspellings, etc.



To view the rest of the guide, click the download button below