Natural Language Processing – Interaction between Humans and Machines

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ABSTRACT

Natural Language Processing is the technology which used to aid computers to understand the human being's natural language, which is not an easy task to complete because humans can easily master a language, the ambiguity and imprecise characteristics of the natural languages are what make NLP difficult for machines to implement.

I. INTRODUCTION

NLP is sub field of computer science, information science and artificial intelligence which helps to develop the relationship between human and machines. In machine learning NLP has gained lots and lots of knowledge due to the critical need of understanding the text, with its varying structure, implied meanings, sentiments, and intent.

Computer programming will never be able to convert a piece of English language into a programmer friendly data structure that describes the meaning of the natural language text. Natural Language Processing (NLP) have removed many of the communicating barriers between humans and machines by translating machine language into human language and by providing opportunities for humans to accomplish tasks that were not possible before. NLP jointly enable automatic tools to uncover meanings from raw data in use of security applications and fraud detection.

II. WHAT IS NLP?

In Natural Language Processing, the Machine Learning training algorithms researches millions and millions of examples of text, words, sentences, and paragraphs which is written by human's beings. Training algorithms after studying the samples gain an understanding of the context of human speaking, writing, and other modes of communication. This training helps Natural Language Processing software to differentiate between meanings of various texts.

Natural Language Processing is a subset of AI and it converts data into natural sounding text the way it is spoken or written by a person. In daily life, people probably come across many instances of NLP without realizing it. When you ask Alexa, Google, Cortana, Siri for a forecast for directions, NLP is at work behind the scenes.

The five important phases of Natural Language Processing (NLP) involve Structure analysis, parsing, semantic analysis, discourse integration, and pragmatic analysis and also some well-known application areas of NLP are Optical Character Recognition (OCR), Speech Recognition, Machine Translation and Chatbots.

Important Phases of Natural Language Processing:
1.Sentiment Analysis:

It refers to the use of natural language processing, computational linguistics, and biometrics to minutely identify and study affective states and subjective information. It is largely applicable to the customer materials in survey responses and social media also healthcare materials for applications that range from market products to customer service and to clinical medicine.

2.Information Extraction:

The Extraction of Information is method of automatically extracting the structured information from non-structured information or semi- structured information machine languages. In many cases this process concerns processing human language texts by NLP.

Smart Search:

Smart Search understands the meaning of the search query, disambiguates topics, provides a uniquely rich set of search choices, recognizes URLs and the content on the respective page, good with very short phrases. Smart Search's ontology is continuously updated by professional linguists and search is available in more than 30 languages and works across many languages.

III.   STEPS INVOLVED IN NLP IMPLEMENTATION

These are the important steps which is used in Natural Language Processing:
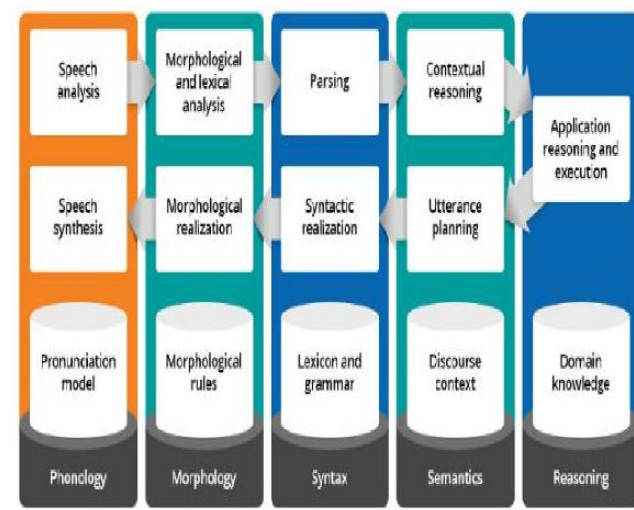
IV.   THE MYTH SURROUNDING NATURAL LANGUAGE PROCESSING

Natural Language Processing is the technology that analyses and arranges the data into comprehensible and written text. Natural Language Processing operates the machine in providing solution through many variables also delivering natural-sounding sentences and paragraphs that observe the rules of English grammar.

With the help of Natural Language Processing, Data Scientists are free to dive directly into Data Analysis without worrying about data preparation methods. With the very well-known NLP vendors in the market these days include Arria, Narrative Science, and BeyondCore, which was recently acquired by Salesforce.
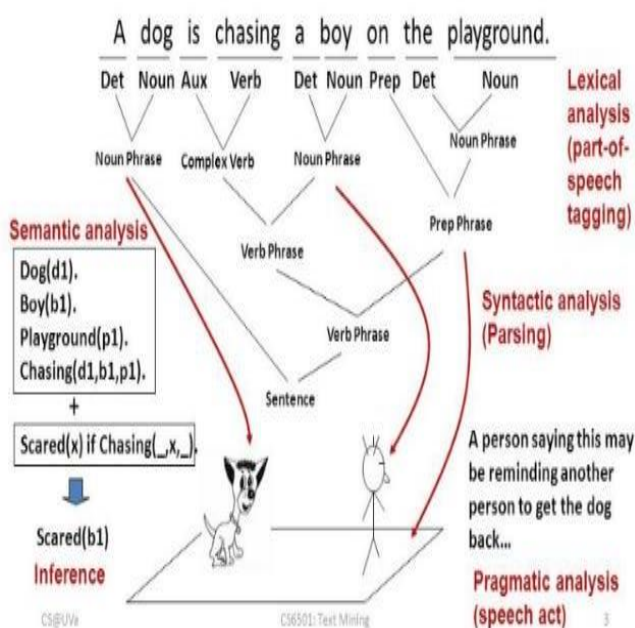
Success Story of Natural Language Processing:

Many market watchers have offered their insights and expert views on Natural Language Processing in various market report. Some surveys and organizations encapsulates the most significant findings of those market reports, and offers convincing arguments in support of the technical

functionality of conversational interfaces that have already gained market clout.

Some companies like IBM, SAS, SAP, Oracle have started their own Text Analytics Solutions which indicates that stand-alone Text Analytics vendors may soon find it difficult to market their solutions with so many larger IT players offering lots of solutions.

V. EXAMPLE OF NATURAL LANGUAGE PROCESSING

VI. CONCLUSION

Natural Language processing makes the employment easier but also demands a human interference because it cannot work without human inputs. It is based on deep learning. NLP tries to find a relationship between samples of data and collect them together into the desired and worth outcome. This algorithm also uses descriptive and predictive analytics to come to results.

In the age of big data analytics when the Internet of Things (IOT) is growing very fast, the maintenance of huge chunk of data is posing a problem that demands quick attention. Manipulation in the data big data can be hence achieved by Natural Language Processing wherein the advanced version of NLP can prove to be extremely useful.

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