A REVIEW OF NATURAL LANGUAGE PROCESSING TECHNIQUES

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ABSTRACT
Interaction between computer and the languages that humans speak is becoming in demand these days. The field of engineering that deals with human languages and the computer systems is known as Natural Language Processing. In this computational systems based on mathematical aspects are built and used for languages aspect. Recently this area of research has gained importance for representation and analysis. Some prominent areas of application include text summarisation, question-answering system, semantic analysis, information retrieval etc.

Keywords: Text summarisation, semantic analysis, information retrieval.

I. INTRODUCTION

The field of computation on Natural languages is termed as Natural language processing. Any language from where humans learn to read, write and understand could be termed as Natural Language. Such languages are used to express emotions and respond to surroundings. In the present research scenario, it is still not possible for a computer to understand the unprocessed Natural languages. The natural language processing technique deals with extracting grammatical structure and meaning to generate useful information. NLP is used to design output based on rules of the target language and the problem that is to be solved. It is useful in teaching – learning, detection of duplicate text, sentiment analysis, text summarisation etc.

II. LITERATURE REVIEW

In recent years there has been substantial work in the field of Natural language processing[1]. This area deals with an approach dependent on computers to analyse the text.
1. Synthesis of speech by NLP
It deals with the concept of converting to speech from text using NLP techniques. The idea of segmentation of sentence is useful here.
2. Speech Recognition using NLP

It is grammatically based NLP approach. Context free grammars are used to represent the syntax of the language. Concepts like indexing, summarisation of NLP are used to help information retrieval.

III. LEVELS OF NLP

The research on Natural Language and processing suggests that it is dynamic because the levels of NLP can communicate in a large number of ways[2]. The knowledge of higher level of processing is used in lower level of processing. The objective here is that meaning is conveyed by every level. A robust NLP system would use more levels.

A. . **Phonology**:
It refers to the interpretation of sounds in a sentence. Factually the speech rules are dependent on verbs, nouns, adjectives, adverbs as follows:
1) Phonetic rules: These are represented by conjunctions, pronouns and articles of a sentence and are used for sound in words.
 2) Parsing: It is used for pronunciation variations when words are parsed. It represents the syntactic structure of a sentence.

B. Morphology:

It is the beginning of analysis. It happens after input has been received. In this technique words are broken up into their components. The field of Morphology is related with part of speech identification and sentence formation and interaction of words[3]. Identifying the part of speech is useful in grammatical context.

C. Semantics:

It deals with the objects and its actions in a sentence. Also includes the details provided by adjectives, adverbs etc. The process is intended to know the value and meaning of the sentences.

D. Pragmatist:

Pragmatics is "an analysis of the real meaning of a statement in human language by eliminating the ambiguity and contextualization of a statement".

IV Ambiguity:

It deals with the interpretation that human language can have more than one meaning to a sentence. Tokenization divides the units present in syntactic ambiguity when more than one parsing constructs a fragment of text. This usually splits the sentence text exists.

V Syntax

Introspection shows that we often use syntax that enforces the rules of the target language[4]. Information that we get from what is usually considered grammar determine the role of each word at a higher level of processing and to help at a lower level of analysis. Give a sentence and organize this data in a structure that is larger, for example, of the pragmatic knowledge that was easily manipulated the document for further analysis.

VI. CONCLUSION & FUTURE WORK

Although it is well established that amongst the recent developments in the field of information technology, Natural Language processing has found its prominence and continues to grow. Recently NLP has met with lots of success and is research and development driven. The NLP techniques are successfully applied to speech recognition particularly to the synthesis of text to Speech. NLP has also found its utility in the area of Automatic speech recognition.

The future of Natural Languages Processing is dependent of latest research taking place in this area and the rise in demand of a robust NLP system. Being user friendly is another attribute that plays important role. The growth in NLP based systems has created a market competition. This new development is enabling the Natural language processing based system to be user friendly and be available in open sources. Being open sores would reduce the cost of a NLP system. Also it would enhance the portability of and maintainability of the system. The built of Chatter box enables the users to chat instantly and more and more corporate sector is adopting this new development.

VII. References:

1.L. Zhou and D. Zhang, "NLPIR: a theoretical framework for applying natural language processing to information retrieval," J. Am. Soc. Inf. Sci. Technol., vol. 54, no. 2, pp. 115–123, 2003.

2.Y.-Y. Wang, M. Mahajan, and X. Huang, "A unified context-free grammar and n-gram model for spoken language processing," in IEEE International Conference on Acoustics, Speech, and Signal

Processing, vol. III, (Istanbul, Turkey), pp. 1639–1642, Institute of Electrical and Electronics Engineers, Inc., 2000

3. Nation, K., Snowling, M. J., & Clarke, P. (2007). Dissecting the relationship between language skills and learning to read: Semantic and phonological contributions to new vocabulary learning in children with poor reading comprehension. Advances in Speech Language Pathology, 9(2), 131-139.

4. Feldman, S. (1999). NLP Meets the Jabberwocky: Natural Language Processing in Information Retrieval. *ONLINE-WESTON THEN WILTON-*, *23*, 62-73.