

# Language Technology and Computational Linguistics

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**Abstract:** In the present world information technology is predominant which has the ability to change the future of this globe. Being a futuristic technology, computational linguistics can change communication models among human beings. Due to the changing context and development of Natural Language Processing various new doors are open in the fields of computational linguistics. Computational Linguistics (CL) increases the applicability of Language Technology towards man-machine interactions. Globalization can convert the world into a small village. For interchange human knowledge among various communities, Auto language processing play a vital role. In this paper, it is tried to discuss the various dimension of language technology and computational linguistics.

**Keywords:** Language Technology, Natural Language Processing, Machine Translation Computational linguistics, Human language, Assamese.

## I. INTRODUCTION

Language is the milestone for communication among human beings. Language technology denotes the integration of Computer Science and the phenomenon of linguistics. Computational linguistics (CL) and Natural Language Processing (NLP) deal with how human language transforms into the computer program. Language Technology accomplishes with computational methods, program and various electronic devices. Electronic devices work on speech recognition, manufacturing and adjusting the text. Everyday develops the dimension of Language technology. In regional language, it creates a great role in communication and preservation and promotion of the specificity.

## II. Objectives and Possibilities of Language Technology

The major objectives and possibilities of language technologies are as follows-

- Improve the communication between human and machine in the easiest way.
- Increase the productivity of any language in a machine-readable format.
- Language technology increases virtual communication in text and speech form.
- Speech and text technology increase acceptability in communication.
- Language Technology plays a vital role in the preservation of endangered language.
- Text recognition provides a platform for heritage script.

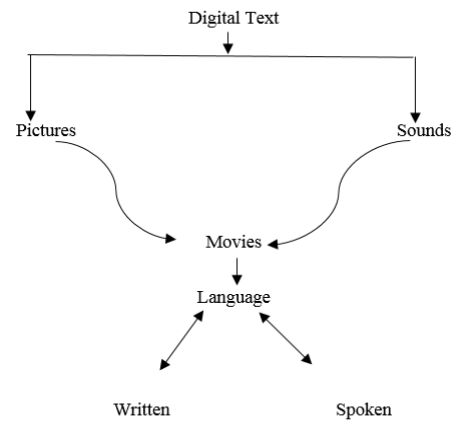


Figure .1- Text Combination

## III. FUNCTIONS OF LANGUAGE TECHNOLOGY

In the context of the information society, Language Technology plays a vital role in communication. The major aim of language technology is to create software tools that have the ability to process human language. Language technology has a great position in Information Retrieval (IR). On the base of the weight of language in an information retrieval system depend recall, precision rate. Language technology control the following system-

- Synthesis of Speech,
- The categorization of Text,
- The fusion of Data,
- Summarization of Text,
- Indexing of Text,
- Extraction of Information,
- Informational Retrieval,
- Data Mining.

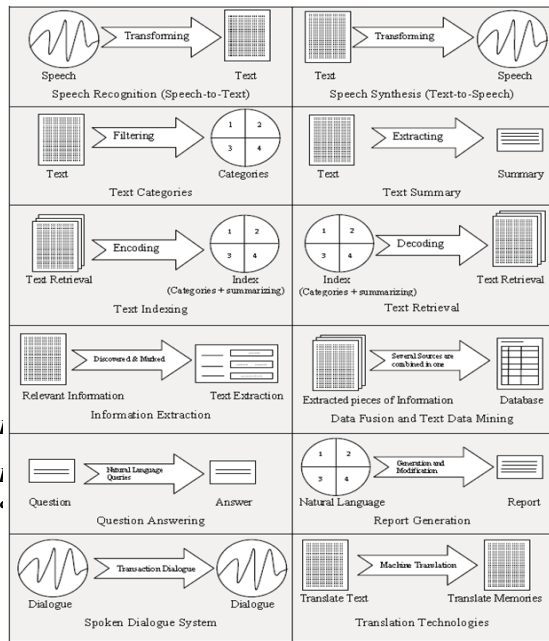


Fig.2: Function of Language Technology

IV. COMPUTATIONAL LINGUISTICS

Computer technology can cover all parts of society. Computational Linguistics is a completely virgin discipline in combination with Linguistics and Computer Science. Every day change the dimension of Computational Linguistics and add with the various hybrid area. The application of computer technology and linguistics theory can open new milestones for communication for visually challenged persons.

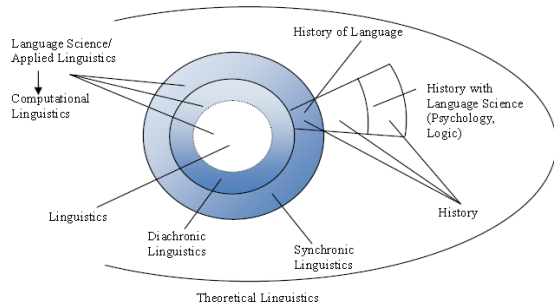


Figure-3: Linguistic Diversity and Position of Computational Linguistics

Now computational linguistics combined with various disciplines for solving various communication problems such as mathematics, theoretical linguistics, engineering, etc. using Machine Translation has developed various problems such as- auto-grammar checker, Extension vocabulary, identification of parts of speech. MT provides translational capabilities with minimum time.

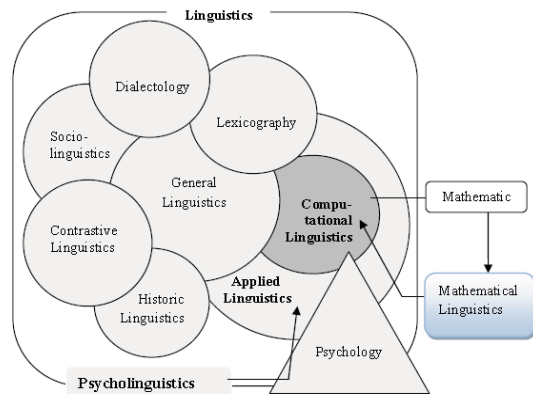


Figure- 4: Relationship between Computational Linguistics and Linguistics Science (Bolshakov & Gelbukh, 2004)

Speech Recognition(SR)is an integral part of Computational Linguistics, which has a large amount of demand among common peoples. Various Speech Recognition software has come in the software market. Using speech recognition technology various task becomes easy. Such as Information Retrieval (IR). Speech Recognition (SR) is another integral part of computational linguistics, SR provides an extensive learning and communication platform.

Speech Generation(SG) solved the problems of natural sound reading of the written text.

**Objectives of Computational Linguistics:** The major Purpose of computational linguistics are as follows-

- Prepared a specific applied system for NL.
- The major application area of Computational linguistics is- Information Retrieval (IR), Machine Translation and Man-Machine Interaction.

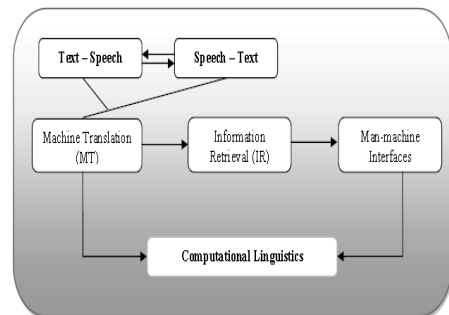


Figure- 5- Central Development of Computational Linguistics

- Machine translation provides an opportunity for quick translation.
- These also combine with the Psychological process of Language Processing and Knowledge illustration and Understanding.

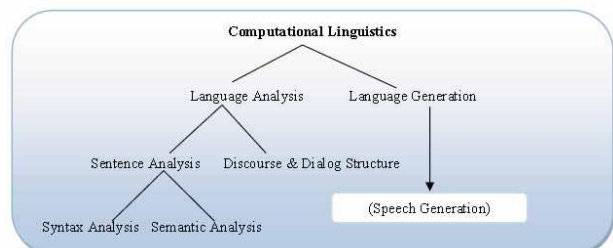


Figure: 6 Structural Diagram of Computational Linguistics

### Application Areas of Computational Linguistics:

The major application of computational linguistics are as follows-

- Increase effective communication among human beings.
- Remove the difficulties faced in modern communication.
- Increasing the efficiency in human-machine interaction.
- Save time for Second language learner using- MT, NLI, IR Grammar Checker, Style Chacker, etc.
- In the software, market every day increases the job opportunity for developing a search engine, IR models, etc.
- Various research groups work in AI using Computational linguistics.

It is her first attempt on computational linguistics with the help of modern ICT tools.

## V. CONCLUSION

The present worlds run with ICT, Without ICT the world's community can survive in this environment. Due to the changing situation, Linguistics fields drastically changed and integrated with computer science various productive gift provides for society. AI, NLP, IR, SR, SG, etc become an integral part of human society.

To develop all language in a full computerization form is essential form the application and preservation point of view. develop a language to a computational form need an expert professional with the knowledge of Computer Science and Linguistics.

To develop a language and expand tin computational format is a very important aspect for that particular region. In the time of globalization, it is very difficult to protect a language, its time to developed all langue to computational form and provide access opportunity for common people in communication.

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**Puspanjali Hazarika** is a research scholar of Assamese Language. She pursuing her PhD in Dibrugarh University, Assam. She Specilaly related with the socio-linguistics and communication among people in Assamese community. She published various research paper in journals. She also attend two international seminar on theme of Sankardeva and another one is Language Tourism, She also presented various

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