Computer Technology and Human Language Communication

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Abstract: *Technology has invaded all areas of human existence and left no field untouched including human communication. The paper attempts to take a bird's eye-view of the how researches in Comutational Linguistics/ Natural Language Processing/ Artificial Intelligence have impacted human communication. Emergence of Emoji is another phenomena whose eruption and evolution is attracting a lot of research. The paper will attempt to acquaint readers with the comcepts of Computational Linguistics and Emoji.*
Keywords– *Computer Language, Linguistics, Computational Linguistics, Natural Language Processing*

I. INTRODUCTION

The advent of technology has changed the way human language manages human communication. The following paper attempts to give an overview of two of the critical developments in the field of human communication against the backdrop of advancement and foray of technology into human communication methods. The two factors being:

1. Emergence of Computational Linguistics with help of Artificial Intelligence
2. Emergence of Emoji.

Language acquisition has always been a field of study that has attracted many a research. With the advent of computers and the internet, there is information explosion. The humungous amount of data that gets generated on the Internet needs to be analyzed, processed and used for appropriate tasks or applications. The data is not always available in one common language. Therefore, making machines understand the working of various natural languages and generate applications that would meet up the modern day demand of human communication is the focus area of the research.

II. HISTORY

The beginnings of research in Artificial Intelligence [AI] are traced to Norbert Wiener's feedback theory of early 1950. He proposed that intelligence, which was a result of feedback mechanisms, could be simulated by machines through constructed mechanism. The example of feedback theory was the thermostat that gathered the temperature information in the environment and responded by adjusting and controlling the temperature insides the house to the desired level.

Alan Turing, in 1950, posited the production of a "thinking machine" which to him was plausible. The contribution of Newell and Simon, [The Logic Theorist,1955],where they proposed problematizing a proposition with the help of a tree diagram to John McCarthy [1956] where he pioneered the research into a branch called " AI which stands for Artificial intelligence ,the AI field today has blossomed in a full-fledged field of study. Designing of Eliza by Weizenbaum[1966], where he madeuse of "keywordpatternmatching"openedwayforfurtherresearchintotheproduction of " intelligentmachine".It has made possible the use of drones, smart cars, ivrs, smartphones, video games and Android robots.

III. WHAT IS COMPUTATIONAL LINGUISTICS/ NATURAL LANGUAGE PROCESSING?

Natural Language Processing by a computer at a very simplistic level, is a sub-field of Artificial Intelligence (AI). Languages that are traditionally used for human communication, such as Hindi, English, Chinese are natural languages. Languages that are created for programming of computers such as c, c++, java are the artificial languages or machine languages. Natural Language Processing is a field of study that aims at creating systems, computational techniques that are similar to natural languages which can be used for performing various functions.

Computational Linguistics, though seen as a sub-field of AI, is an interdisciplinary field that involves linguistics, cognitive psychology, logic, mathematics, anthropology, cognitive science, psycholinguistics, neuroscience and many such inter-related fields, to express human language. Researches in the fields of L1[mother tongue] acquisition have never been conclusive; coupled with that is a fact that language is a result of

cultural conventions, always in a flux and ever-evolving. Thus replicating the similar models of language acquisition in machines may not deliver the desired results.

Computational linguistics has theoretical and applied components:
- Theoretical, computational linguistics takes up issues in theoretical linguistics and cognitive science; Applied computational linguistics focuses production of real time applications.
- The areas of research include Text Processing, Morph, Analyzer, POS Tagging, Machine Translation, Parsing, Speech Processing, Text to Speech, Automatic Speech Recognition, Speech to Speech translation.

Major Areas of Product Development include Search Engines, Advanced Text Editors, Commercial Machine Translation System, Collaborative Filtering, Information Extraction, Computational Advertising, fraud Detection, Opinion Mining, Sentiment Analysis, Social Network Analysis, Collective Intelligence.

Computational Linguistics generally follows following approaches:
1. Developmental Approaches: This approach focuses on child language acquisition process and through statistical and connectionist models attempts to relocate the process of language learning in machines.
2. Structural Approaches: This approach makes structure of language central to its study. It focuses on syntax, lexicon, grammar that are basic to the structure of the language. It then tries to generate through statistical probability models the large corpora of possible utterances and human discourse.
3. Production Approach: This approach is more concerned about production of human discourse appropriate to the environment and replicating it in machines with the help of statistical recurrence probability.
4. Comprehension Based Approach: The modern research focuses on comprehension. It concerns itself with the ability to create a program capable of understanding human language would have many broad and exciting possibilities, including improved search engines, automated customer service, and online education.

IV.   EMOJI

The World is also witnessing emergence and evolution of picture language that has become a universal language of communication—emoji. Social scientists, linguists, psychologists all over the world are studying the emergence, acceptance, impact, popularity, utility, and future of emoji. Emoji means communication with the help of emoticons.

Originated in Japan, emoji means, "picture letter." Each of its characters has an official name and is defined as part of Unicode standard. Emoticons were first created by Shigetaka Kurita in Japan in 1990. He created about 176 characters of emoticons for SMS text messages. Emoji evolved since then. In 2008, the world saw the emergence of uniform emoji alphabet and Apple adopted it in their iOS5 operating system in 2011. Its evolution continues.

Emoji is easy to understand, time saving and becomes helpful to all those users who do not have at their disposal adequate and appropriate vocabulary to express their feelings, especially in the global scenario when they do not have the adequate grasp of languages alien to them. The screen of the Smartphone's also compels the users to keep their message brief and effective, and the use of emoji comes handy. Time is yet another factor that is promoting emoji ,as users have to assimilate the message and respond to it in shortest possible time. Emoji's acceptability is akin to that of Archie, or Spiderman or Phantom comics.

Efforts have been made to translate the full text of Herman Melville's novel into emoji and copies are set up for sale on Amazon.com. Emoji, an informal language has also made its way to corporate communication. Social scientists wonder whether emoji will replace the formal spoken as well as written language in future.

V.   CONCLUSION

In the current writer's opinion, neither the machine language nor the emoji would not be able to replace the human discourse and its formal structure at any time. They will sufficiently alter it, impact it, challenge it and at best enrich the human language. But replacing it would be difficult. Emoji minus words makes reading a laborious process. Similarly, despite the researches and refinement in machine language, machine language is not in a position to handle ambiguities, multiple meanings in a context sensitive environment in which natural language evolves.

REFERENCES

[1].   Mallory McKee, Cody Nelson, History of Artificial Intelligence, Alicia Washington, 2012.
[2].   http://www.slideshare.net/pranavgupta21/introduction-to-natural-language-processing-13847262?next_slideshow=2
[3].   http://www.slideshare.net/yogendra48/natural-language-processing
[4].   http://www.slideshare.net/jaganadhg/natural-language-processing-14660849
[5].   https://en.wikipedia.org/wiki/Computational_linguistics

[6]. https://en.wikipedia.org/wiki/Natural_language_processing
[7]. https://en.wikipedia.org/wiki/Artificial_intelligence
[8]. Alice Robb, "The Emoji Have Won the Battle of Words" Emotional And what linguists say it means if your smiley face has a nose"