ABSTRACT

Artificial Intelligence (AI) technology has been making tremendous progress in language interpreting these years, which poses a pressure on interpreters. However, challenge as it is, there is still much that interpreters can do but AI falls flat. This paper focuses on the features of AI interpreting in comparison with human interpreting based on exemplifications and a theoretical framework. Conclusions have been drawn that although AI can do better in storage of information, it relies heavily on the maturity of corpora. Since multidimensional corpora should be built up for AI interpreting training, exploring and analyzing them can provide valuable additional information on how AI interpreting system can translate source language into target language like a real man.¹

INTRODUCTION

According to Tech News on March 15, AI interpreting system developed by Microsoft has made a breakthrough in interpreting Chinese into English at a level that could compare to human being in Newstest2017 [1]. It is true that AI helps a lot in improving interpreting efficiency. AI can do better in information storage, memorizing as well as translating simple and regular texts. But the news tested was in a normative style, which meant AI had mastered the rules of what’s being said. In this sense, the conclusion is not exact. Based on analysis, we present that many differences between AI and interpreter can cause some confusion and difficulties in

¹Yunyun Wu, Yu Wang, Foreign Languages Department, Tianjin University of Finance and Economics, Tianjin, China.
the process of interpreting. It is the fact that AI needs some improvements on processing, learning and thinking instead of merely producing words.

The Development of AI Interpreting

As early in the 1950s, AI has been used in our daily life such as social network, and it was statistics based [2]. In 1980s, with the application of voice cognition, AI again drew attention of professionists. Since the early 21 century, unprecedented changes have been made on AI technology, such as words, voice and pictures cognition, which are later widely used in interpreting.

A report on Nature said that AI technology has cut the interpreting mistakes down by about 60% [3]. In china, iFly, Baidu, Sougou is speeding up in AI research and development. Wang Xiaochuan, CEO of Sougou, announced their newly released AI simultaneous interpreting products. Apple, Microsoft, IBM are also releasing their AI products. Google Translation can even put 65 languages [2] into one another regardless of accuracy.

It is true that AI can interpret word for word and sentence by sentence. Now it can interpret paragraph for paragraph, although only superficial meaning, based on its deep-learning system and corpora. Progress as it makes, the results of AI interpreting are, in many occasions, unreadable. What are the difficulties? We will discuss them next.

AI Interpreting Quality Assessment

For the current research, we take examples to examine the differences between AI and interpreter in English-Chinese interpreting. It contributes to the six aspects that AI does not work as well as interpreter from perspectives of linguistics and cross-cultural communication. We find that logics and cultural awareness are what AI lacks in interpreting.

INFORMATION REORGANISATION

As an interpreter, familiar with the mission area or not, preparation is of vital importance, of which vocabulary is basic. With this regard, AI can do better than interpreter in translating terminology, places, proper names etc. Surprisingly however, the result is far more than what we have expected. For instance, “there was only one high-redshift (>7) quasar, ULASJ1120+0641, has been found” [4]. It is originally in Chinese. When put into English, it becomes “but only a quasar ULAS with a redshift value more than 7 was found J1120 + 0641”. Not only the fixed name is incorrect, what the author emphasizes, the only one, is not conveyed, either. Even though AI has much more vocabularies, its interpreting is less acceptable compared to that of an interpreter. So, corpora are important, but they are not the decisive factor of interpreting quality. What matters is how to apply the corpora, or
memories, to create what can be understood. The working process of AI and interpreter differs in reorganizing the information.

The methods of AI translation are six [5]: a. Direct Translation Method, which interpret word for word with adjustments according to lexical order. b. Semantic and Syntactical Conversion Method, which follows the rule of source language(SL) analysis – SL conversion - target language(TL) generated. c. Intermediate Language Method, in which SL is translated to an intermedia language before being translated to TL, such as Chinese-English-Portuguese. English is the intermedia language between Chinese and Portuguese. d. Example Method. e. Translation Memory. These two are both corpus-based. Once the information needed is in the corpora, the translation process will be easier. Otherwise, an interpreter will be necessary. f. Statistics-Based Translation, in which the data of paralleled texts will be collected and used to build up a model. This method is also depended on corpora it has. However, most of present corpora are in written forms. Audios, videos concerning real situations are not available in AI corpora.

There are three stages of human interpreting [6]: Before Interpreting, During Interpreting and After Interpreting. Preparation is what to do before interpreting. Once the topic is set, the brain will be triggered and integrate all information about the topic, and then find out what needs to be collected. Finally, instead of merely piling up vocabularies, the information will be logically organized and produced. Besides that, an interpreter also learns about the expectation of his or her employer, the audience and the purpose of the communicative event so that she or he will do the best to get there. During interpreting, what has already been done is not enough. What is to be said is shifting all the time accordingly depending on the logics of the speaker. After interpreting, a review is necessary. What has been done and what needs to be done are concluded. Knowledge and expression methods concerning the topic are systemized and stored. It is common that an interpreter becomes an expert in another field.

Comparatively, to make the job easier, interpreters need the help of AI. And to improve the ability to filter and reorganize information, AI need to learn the thinking process of human brain.

TRANSITION IN SENTENCE STRUCTURE

There are English sentences that can be interpreted into Chinese with no difficulty, such as “I love you”, which can be interpreted word for word, or “Both China and Laos are socialist countries led by communist parties” [7], which can be interpreted only by a little adjustment to the order of the words. There are also sentences that are simple in structure but cannot be interpreted literally, such as “the hatred took the form of government bans with severe punishment” [8]. In Chinese, there is no such equivalent sentence, the proper way to say is from the government bans and severe punishment, we can see the hatred. But AI will interpret the sentence word by word and not adjust at all.
To be not disrupted by sentence structure and convey the connotative meaning of what is said, an interpreter should do what we summarized as the Three Jumps — jump into SL, jump out of SL and jump into TL. Because: a. the meaning of a given word is not determined by its lexical explanation but by the sentence; b. the meaning of a given sentence is not determined by words consisting in it but by its context. While what AI does is input-parallel texts-output. The result, to a large extent, depends on its corpora. Thus, it failed to understand the real meaning because it didn’t jump into the context of SL.

PARALANGUAGE

AI conveys the literal meaning of the speaker, very correctly sometimes. But what’s said includes more than mere the language. Tones, stress, rhythm, pet phrases, interjection or even stammers are parts of the speech. These might show the speaker’s personal style, position, attitude toward what’s being said and willingness to continue the conversation or not. For instance, the word yes, is it still the same meaning when the speaker uses it with a flat tone, rising tone or falling tone? Most of the time, AI answers with three yeses with flat tones.

Experiments showed that AI performs better when what’s said is in a clear and standard accent. But the reality is that in most cases people talk in dialect with different accent, which may not easily be understood even by their companies. Moreover, what’s said may not be in a logical way as standard text. And it’s common to see impromptu speeches in any occasion. As a result, an interpreter may practice by listening to speeches delivered by people from different parts of the world and pay attention to the differences. But AI can do little about it. On the one hand, corpora on which AI bases are in written form and there are little materials like video and voice record. On the other, even if the corpora are correct, accurate, how to distinguish between meaningful words and redundant words is another challenge for AI.

METAPHOR

Metaphor is not only a matter of language, but more importantly a matter of thought [8]. So, it is all about communication rather than pure language. Take an example, “I would rather be a bright leaf on the stream of a dying civilization than a fertile seed dropped in the soil of a new era” [9]. In this sentence, when we take people as a leaf, it indicates that human is plant. When we describe civilization as dying, we imply that society is person. So how to put it into Chinese? Not surprisingly, AI gives us the lexical meaning of the sentence. For another example. “One inconvenience I sometimes experienced in so small a house, the difficulty of getting to a sufficient distance from my guest when we begin utter the big thoughts in big words” [9]. In this sentence, Chinese students will wonder what big thoughts
and big words means because thought is invisible. But soon find out it means important thoughts and important words. It is obvious what is bigger is more important. Such is the same case in economic articles [9], such as bear market, bull market, hot money, balloon option. And “blocked the tumor cell’s invasion and killed tumor cells, recycle bin” in technological articles.

Chinese is comparatively abstract than English language, which is determined by their contexts. Chinese is a high context language in which most information is already in the person, and very little is conveyed by words. While English is a low context language in which the mass of the information is vested in an explicit way [10]. AI will probably give you the superficial Chinese meaning of an English expression instead of its connotative meaning.

CULTURALLY LOADED WORDS

Culturally loaded words are words that are specially used by their own culture. There are three types of cultural loads according to Xu Guozhang [11]: a. The load in native cultural is smaller than that in foreign cultural context. b. The load in native cultural is larger than that in foreign cultural context. c. The load in native cultural is smaller in some ways and larger in other ways than that in foreign cultural context. Therefore, it is possible that these cultural loads be interpreted wrongly or inaccurately. For example, bourgeois, which refers neutrally to middle class and conventional in English speaking culture, means selfish and greedy in Chinese culture. And criticism, which refers to an evaluation in English culture, means, very often, repudiation in Chinese culture. As regard to these words whose meaning can be conveyed correctly by intellectually trained and learned interpreters, they can barely be properly interpreted by AI.

NONVERBAL LANGUAGE

Whatever the circumstance is, speakers are talking to one other. Thus, interpreting is all about communication. Language is one part of communication while nonverbal language, or nonverbal communication, is the other part of it. Nonverbal communication is used either for repeating, complementing, substituting, regulating or contradicting. It consists of action (body language), space (distance), time and silence [12].

Action means general appearance and dress, including body movement, posture, gestures, facial expressions, eye contact and gaze, touch and smell. Space refers to personal space, seating and furniture arrangement. Time, or the usage of time, concerns about informal time, past, present and future as well as one’s attitude toward time (monochromatic and polychromatic time). Silence may be not meaningful for part of the life in the U.S., it is important in the Eastern culture. In American culture, people love talking, watching television, listening to music, and other
sound-producing activities because silence is more or less awkward. However, the view of silence is much different in the eastern view. For instance, in some part of Asia, people do not feel uncomfortable or weird without noise or talking. That do not try to fill every silent moment. There is even a belief that silence represents inner peace and it is from silence that people reflect on themselves. As for these aspects, AI needs to learn much beyond language.

CONCLUSIONS

Interpreting is a multidimensional work which needs more of visualization, imagination and creativeness than bare abilities of listening and speaking. Suppose AI works by picking up codes from its statistics bank, then an interpreter works by programing the codes while listening and outputting. Therefore, what AI needs is not only rich corpora, but also the ability to think and create. Because what should be produced is not the equal measurement of a language, but the equal value of it.

However, with development of relevant areas such as neuroscience and psychology, AI might do better in the future. Whatever the case will be, one thing is for sure that with the help of AI technology, interpreters in the future will be much more intelligently advanced.

ACKNOWLEDGEMENT

This work was financially supported by Pre-research of Foundation for The Youth Scholars of Tianjin University of Finance and Economics (05010161), China.

REFERENCES