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Runmei Zou
School of Foreign Languages and culture, Panzhihua University, Sichuan, China

Wei Chang
School of Foreign Languages and culture, Panzhihua University, Sichuan, China

Shuangshuang Gao
School of Foreign Languages and culture, Panzhihua University, Sichuan, China

Shan Qin
School of Foreign Languages and culture, Panzhihua University, Sichuan, China

Strategies for improving the quality of computer-assisted translation based on internet

Runmei Zou, Wei Chang, Shuangshuang Gao and Shan Qin

Abstract
The application of AI in the field of translation has led to the birth of many machine translation products, which has completely changed the traditional mode of artificial language translation. However, while machine translation has certain speed advantages, it also has fatal defects, and it is still difficult to achieve ideal translation results. With its unique logic, culture, flexibility and other advantages, human translation can just make up for what machine translation cannot? The combination strategy of machine translation and human translation has become a problem that language translators must consider.

Keywords: computer-assisted translation, strategy, translation skill

1. Introductions
In September 2016, Google released a neural network based translation system (GNMT) and claimed that GNMT reduced translation errors by more than 55%-85% in the translation of multiple major language pairs. Subsequently, Google, Microsoft, Baidu, Alibaba, Tencent and other companies launched artificial intelligence translation software products that claim to be able to imitate the human brain. Although the translation quality of neural machine translation system based on neural network has been greatly improved compared with traditional machine translation system, the quality of machine translation still has shortcomings [1]. Human translation still has something that machine translation cannot surpass. For a long time to come, the combination of machine translation and human translation will be the basic strategy of high-quality language translation.

2. Current Situation of Machine Translation
Machine translation belongs to the category of computer linguistics. Its research uses computer programs to translate words from one natural language to another. Machine translation has probably gone through three stages: Rule based machine translation, statistical machine translation and neural machine translation. At present, neural machine translation has replaced traditional statistical machine translation as the core technology of commercial online machine translation systems such as Google, Microsoft, Baidu and Sogou [2].

From a technical perspective, with the continuous improvement of computing power and the further development of deep learning, as well as the continuous breakthroughs in the research of neural network image recognition, speech recognition, semantic understanding, natural language, etc., neural machine translation has developed rapidly, and the quality of translation has been greatly improved. Experiments show that the translation quality of neural network machine translation on multiple language pairs exceeds that of rule based, instance based, corpus based and statistical machine translation [3].

3. Problems with machine translation
Machine translation is a multi-edge discipline based on linguistics, mathematics, informatics, computer science and other disciplines, and it is also one of the important research directions in the field of artificial intelligence and natural language processing. The whole process of machine translation can be divided into three stages: original text parsing, original text translation conversion and compilation generation. Common methods of machine translation include direct translation, rule-based translation, intermediate language based translation, corpus based translation, etc.

Corresponding Author:
Runmei Zou
School of Foreign Languages and culture, Panzhihua University, Sichuan, China

From the current stage of the translation process, machine translation cannot avoid errors caused by uncontrollable factors.

3.1. Mistranslation caused by Misidentification

In machine translation, translation errors caused by speech recognition and text recognition cannot be avoided at present. In June 2018, iFLYTEK announced that it was the first to achieve speech recognition accuracy of 98% and dialect accuracy of more than 90% with AI technology. Even so, in the face of a large and complex language environment, the proportion of machine translation errors should not be underestimated. Optical character recognition (ORC) technology has been developed for decades since it came out, although it has made remarkable achievements in document scanning and recognition. However, the traditional OCR technology can hardly work in character recognition in natural scenes. In the 2017 Chinese text recognition contest in natural scenes (RCTW-17), the accuracy rate achieved by the champion was 0.74, the recall rate was 0.59, and the comprehensive index was 0.66 [4]. Therefore, the limitations of speech and text recognition make it difficult for machine translation to perform well.

3.2 Mistranslation caused by translation rules

The common methods of machine translation include direct translation, rule-based translation, statistical and corpus based translation and neural network based translation. From the current information technology capabilities, each translation method has obvious weaknesses. The direct translation method is faced with mistranslation caused by wrong choice of word meaning, especially for new words, hot words and rare words. The rule translation method is faced with the fact that rules are a summary of language phenomena, but rules are always lagging behind language phenomena. The basic grammar leak in the rule translation method leads to mistranslation in machine translation. In the early days, statistical and corpus based translation methods were criticized by Chomsky and others due to the constraints of computer computing ability. With the improvement of computer computing ability, statistical based translation methods need to be paid more attention again. But this translation method needs large-scale bilingual corpus and translation model. The accuracy of language model parameters directly depends on the number of corpora, while the quality of translation mainly depends on the quality of probabilistic models and the coverage of corpora. The selection and processing of language materials is a huge project. For the endless language phenomena, this translation method can hardly avoid mistranslation. At present, the most advanced translation method based on neural network has preliminary intelligent translation ability. This translation method automatically learns translation knowledge from corpus by establishing a deep neural network of massive nodes (neurons). After the sentence is vectorized; it is transmitted layer by layer in the network and transformed into a form that can be "understood" by the computer. Then, it is generated into a translation of another language through multi-level complex conduction operations. Although the quality of the translation technology has improved by a "leap" compared with the previous translation technology, there is a lack of comprehensive breakthroughs in such aspects as abstraction, logicality, field experience, cultural background factors, etc,

As a result, translation results still have quality problems and mistranslation still exists.

3.3 Mistranslation in sentence forming

Machine translation refers to the application of linguistic principles to the language itself. The machine automatically recognizes grammar and established rules and models, calls the stored thesaurus and corpus, and automatically translates accordingly. No matter which translation technology is adopted, during the translation, the rules, pattern and fixed programing design are used to generate target language, which unavoidably lead to the expression style of the source language and the characteristics of cultural atmosphere lost. Without emotion like human, machine will never feel such things as: "It is the tenderness of bowing your head, like the shyness of a lotus flower overwhelmed by the cool wind", which is the charm of this language. Therefore, in the process of target language generation, mistakes usually appear due to the lost of the original artistic conception and real intention.

4. Countermeasures for translation problems

At present, machine translation has obvious advantages in basic expression and conventional language translation. But there is still a long way to go to achieve high-quality translation of completely natural language. As the linguist Professor Zhou Haizhong pointed out in his paper Fifty Years of Machine Translation: To improve the quality of machine translation, the first thing to be solved is the problem of language itself rather than the problem of programming. It is impossible for machine translation to reach the level of "faithfulness, expressiveness and elegance" when humans have not yet understood how the brain conducts fuzzy recognition and logical judgment of language. As a contemporary translator, we should improve the problem of machine translation mainly from the following aspects.

4.1 logic Correction

Language is the product of national habits, with greater randomness, especially natural language, while logic is the same as all human beings, with strong standardization. In different languages, the way of logic is often different. In addition to the basic grammar rules, the grasp of logic is often based on the deep perception of language. Omission, concealment, pun, irony and homophone in language expression often bring logic problems in machine translation. Only by paying attention to the inherent logic of language, can we make a good intervention in the results of machine translation.

4.2 Restoration on style

Nida, a translation theorist and practitioner, believes that translation is to reproduce the information of the source language in the most natural and appropriate language in the target language, first in meaning, and then in style. The style here is actually the abstract expression of the source language emotion. Machine translation is unable to recognize the personality characteristics of the characters, the background of the source language, and the author's intention of the source language, so that there is a lack of emotion and style. Only by making up for the lack of translation style in the process of translation, mining and restoring the style and emotional elements contained in the

source language, can the style consistency between the source language and the target language be guaranteed.

4.3 Reproduction of cultural background

Translation activities include the process of the translator's understanding of the subjective experience of the original text and the objective description process of finding accurate language to express the subjective experience of the original text. The lack of such subjective experience in machine translation makes the cultural loss inevitable in the process of information transformation of the original text. The translator must reinterpret and describe the original text from the perspective of cultural perception of the two languages. According to the readers' receptivity and cultural aesthetics, it is necessary to modify and reshape the cultural atmosphere background. Only when the two foreign cultures are successfully transformed in translation, can high-quality translation results be guaranteed.

5. Conclusion

Machine translation supported by information technology and artificial intelligence has become an important means of translation. While machine translation has brought technological changes to traditional human translation, the dispute between efficiency and quality still exists for a long time. At present, machine translation still exists as an auxiliary tool. The main reason is that we cannot break through our unique advantages in language perception, emotion, logic and culture. In the current translation activities, we must pay attention to and constantly explore the shortcomings of machine translation, and make up for the problems of machine translation through human intervention. With the continuous development of translation technology, this machine first and then manual translation mode will inevitably have new adjustments, but from the current point of view, it is still the only way to achieve high-quality and efficient translation.

6. Funding

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