Comparison of Differences Between Artificial Intelligence Translation and Artificial Translation

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Abstract. With the development of innovation, the application of AI algorithm in the field of translation has greatly promoted the efficiency and level of translation, and promoted the continuous growth of translation power. However, in some specific application scenarios, the quality and accuracy of AI translation are still difficult to meet the actual needs. Based on this, this paper first analyzes the development status of AI translation on account of the era innovation, then studies the word and phrase analysis of AI translation, and finally gives a comparative analysis of the differences in translation quality and efficiency between AI translation and manual translation.

Keywords: AI, Artificial, Translation, Innovation, Comparison

1. Introduction

With the iterative development of modern technology represented by AI algorithm, AI has been widely and deeply applied in many fields, and has achieved remarkable results. In particular, the application of AI algorithm in the field of translation has greatly promoted the efficiency and level of translation, and promoted the continuous growth of translation power [1]. With the gradual maturity of AI translation and machine translation tech, it has been widely used in several aspects as shown in Figure 1, and has brought significant changes to these fields. The development of globalization puts forward higher requirements for cross-border trade and communication, which brings more severe challenges to the field of translation, such as the deepening requirements for the efficiency, quality and intelligent switching of translation.

![Figure 1. Application areas of AI translation and machine translation.](image)

On the other hand, AI intelligent translation makes cross regional, language and cultural exchanges more convenient, and also provides new ideas for the efficient and rapid communication between...
enterprises and industries in the fields of economy, trade, and science & tech education. At present, with the rapid development of AI translation tech, the improvement of machine translation level has become the focus and hotspot of research. AI algorithm translation, as the most advanced tech, adopts the unique neural network structure to model the whole process of translation, so as to ensure the accuracy of machine translation results. AI algorithm can simulate the human brain to analyze and decode sentences, and use the context information to judge the translation object organically, and generate high-quality translation [2]. AI algorithm can make organic division of labor with the help of neurons, and generate more intensive translation effect.

In addition, in order to verify the translation results of AI algorithm, it is necessary to compare the results with the results of labor division translation, so as to construct an organic neural network translation model, adjust and optimize the translation objectives, promote the organic combination and interaction with artificial translation results, and ensure the efficiency and effect of AI translation [3]. However, the quality of machine translation represented by AI algorithm is still unsatisfactory. The gradual application of deep learning in the field of machine translation will help to improve the continuous optimization of neural network translation model and promote the continuous improvement of machine translation ability. Therefore, it is of great practical value to study the differences between AI translation and artificial translation on account of the era innovation.

2. Current situation of AI translation development on account of era innovation

2.1. The development of AI translation
With the iterative development of modern intelligent tech represented by AI algorithm, AI development will gradually go through several development stages, such as intelligent tech, intelligent economy and intelligent society [4]. At present, it is transiting from the first half of economic intelligence to the second half. At present, the development of AI translation is still in a relatively primary stage. The biggest difference between AI translation and manual translation is that AI translation is difficult to understand specific and specific application scenarios, so it is difficult to effectively and accurately translate the content of specific scenes.

In addition, driven by the trend of globalization, as well as the frequent global economic and trade, cultural exchanges, and the increasing demand for language services and application scenarios, the translation industry is gradually transiting from traditional translation to localization translation and machine translation, and translation services are entering various application scenarios with a more diversified attitude.

2.2. The development trend of AI translation
The current development trend of AI translation is as follows: firstly, the in-depth study of machine translation tech has steadily improved the quality and accuracy of translation results [5]. AI translation has gradually become an important auxiliary tool for translators and linguists. Secondly, AI translation tech is gradually replacing the low value-added trivia in translation work, so that translators can spare more energy to focus on the content and quality of the source text. In addition, with the continuous development of the Internet, the rise and growth of more language markets, more language regions also begin to occupy a larger share, which makes AI tech face more diverse application scenarios. The gradual deepening of the application of voice search has put forward higher requirements for the speed and efficiency of AI translation, so as to meet the needs of broader application scenarios and more diverse groups of people.

Finally, with the gradual development and popularization of AI algorithm, more and more capital has been invested in the AI field, and a certain AI ecological layout has been carried out, and the industry alliance has been established, which makes the AI translation industry have a broader development prospect. Figure 2 shows the investment and development prospects of AI tech in the future.
3. Analysis of words and phrases in AI translation

3.1. AI translation method on account of analysis and transformation
Translation dictionary database is the foundation of AI translation system software construction. However, because the language vocabulary is an open set, the construction of dictionary database is more complex, which makes the performance of AI translation difficult to meet all application scenarios [6]. In order to make AI translation more accurate and efficient, in addition to building new bionic neural network architecture, we should also try to expand the capacity of database dictionary. Secondly, at the level of natural language understanding and natural language processing, the data dictionary integrated with AI algorithm can save storage space and improve the retrieval speed.

In addition, at the level of automatic word segmentation, positive maximum matching, reverse maximum matching and high frequency optimization are mainly used. The advantages and disadvantages of these three methods are shown in Table 1. Among them, the positive maximum matching method is to remove the last word in the Chinese character string when the matching is unsuccessful, and the reverse maximum matching method is the opposite. The principle of high frequency optimization is on account of the statistics of word frequency, the rule of combination between words and the principle of ambiguity segmentation.

Table 1. Advantages and disadvantages of automatic word segmentation.

| Methods                  | Advantages                                      | Disadvantages                    |
|--------------------------|-------------------------------------------------|----------------------------------|
| Forward maximum matching | Easy to implement by AI system                  | Subjectivity and limitations     |
| Reverse maximum matching |                                                 |                                  |
| High frequency optimization | Improves the efficiency of word segmentation | Ignored language ambiguity      |

3.2. AI based word sorting, retrieval and thesaurus
First of all, the design of thesaurus should be carried out separately for abbreviated word dictionary, omitted word dictionary, special dictionary and professional dictionary, so as to better meet more application scenarios. Secondly, at the level of word classification and multi category, the technical level of natural language information processing requires that each word should be classified into its part of speech and even subcategory. However, there is an obvious gap between linguistic theory and AI processing tech. Therefore, it is necessary to classify words in order to achieve AI translation better.
3.3. Word disambiguation in AI translation
Generally speaking, there are many polysemy words in both the source language and the target language. Manual translation can make specific interpretation on account of the application scenarios of these words. However, AI translation needs to disambiguate the meaning of words to meet the processing requirements of automatic language analysis. AI word sense disambiguation generally adopts several ways as shown in Figure 3 below. Among them, AI is built on the basis of physical symbols, so as to ensure the development of functional analysis, so as to complete the operations of establishment, modification, copy and deletion.

![Figure 3. AI word sense disambiguation methods.](image)

4. Comparison of AI translation and manual translation

4.1. The difference between AI translation and artificial translation effects
The comparison between AI translation and artificial translation needs to start from the interpretation of context and the specialization of knowledge in different fields. In terms of the final translation effect, AI translation is difficult to improve in a short period of time. This is mainly because AI translation can only obtain information input through sound, so it is difficult to fully understand the information and then translate the output. In contrast, artificial translation can use a variety of senses for comprehensive judgment and analysis, so as to realize the diversified understanding and processing of information, fully accept the input content, and thus produce more accurate and accurate output translation. However, AI translation is difficult to recognize the meaning of diversified mood and gesture, which makes it difficult to understand the meaning of specific environment. Therefore, human translation is still irreplaceable.

4.2. The difference between AI translation and artificial translation efficiency
The efficiency comparison between AI translation and manual translation mainly focuses on two dimensions: economic efficiency and work efficiency. Among them, in terms of work efficiency, it includes the speed of translation and the difficulty of operation. In terms of work efficiency, AI translation has significant advantages, which can produce translation results quickly. The speed of word processing and language transformation of AI tech is difficult to compare even for those who have been engaged in translation for many years. In terms of the difficulty of operation, the advantages of AI translation are becoming more and more powerful, and great progress has been made in the operation interface, operation process and other aspects. In terms of economic efficiency, AI translation also has higher advantages. However, in formal occasions with higher professional requirements, manual translation is still the mainstream, and AI translation is less applicable. However, with the iterative development of AI tech, the efficiency advantage of AI translation will be further developed and reflected in the future.

5. Conclusion
In summary, the comparison between AI algorithm translation results and artificial translation results helps to build an organic neural network translation model, adjust and optimize the translation objectives, promote the organic combination and interaction with the artificial translation results, and
ensure the efficiency and effect of AI translation. This paper analyzes the current situation and trend of AI translation through the research on the development of AI translation on account of the era innovation. Through the analysis of words and phrases in AI translation, the AI translation method on account of analysis and transformation and the disambiguation method of phrase are studied. By comparing the differences between AI translation and manual translation, this paper analyzes the differences in efficiency and quality.

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