

Retraction

Retracted: IoT-Based English Translation Teaching from the Perspective of Artificial Intelligence

International Journal of Antennas and Propagation

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This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

- (1) Discrepancies in scope
- (2) Discrepancies in the description of the research reported
- (3) Discrepancies between the availability of data and the research described
- (4) Inappropriate citations
- (5) Incoherent, meaningless and/or irrelevant content included in the article
- (6) Peer-review manipulation

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

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- [1] D. Liu, "IoT-Based English Translation Teaching from the Perspective of Artificial Intelligence," *International Journal of Antennas and Propagation*, vol. 2022, Article ID 1749728, 8 pages, 2022.

Research Article

IoT-Based English Translation Teaching from the Perspective of Artificial Intelligence

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In recent years, with the development of artificial intelligence, the Internet of Things (IoT) has become a research hotspot in industry and academia. At the same time, as a derivative tool of artificial intelligence, machine translation based on the IoT is constantly being applied to English translation and its teaching. In teaching, helping students learn English translation has been the focus of machine translation in recent years. Compared with human translation, machine translation is more efficient and convenient. However, machine translation also has some problems. Compared with traditional human translation, it cannot meet the requirements of faithfulness, expressiveness, and elegance of translation. In many fields, neural network translation is comparable to human translation. In the field of English translation teaching, neural network translation has broad prospects. With the gradual maturity of neural network translation, we should think about how to use neural network translation to make it a powerful English translation teaching tool instead of sticking to traditional teaching and cultivating students who are completely unable to compare it with neural network translation. Therefore, in the context of rapid AI iteration, college English translation teaching should also keep pace with the times. With the help of tools such as neural network translation, English translation talents who can skillfully use AI technology can be trained quickly and efficiently so that they can keep pace with the times and master the power of AI. The research in this paper provides important guidance for the application of artificial intelligence and the Internet of Things, especially for intelligent relaying.

1. Introduction

In recent years, with the development of artificial intelligence, the Internet of Things (IoT) has become a research hotspot in industry and academia. At the same time, as a derivative tool of artificial intelligence, machine translation based on the IoT is constantly being applied to English translation and its teaching. In recent years, the application of artificial intelligence technology in college education and teaching is also getting higher and higher. Artificial intelligence is gradually emerging in the field of English translation. The earliest translation software used algorithms based on word and grammar rules to let the machine translate according to the input language rules. The translation effect was illogical, which made people unable to read. Subsequently, there have been case-based, statistics-based, and template-based machine translation methods. The use of each new algorithm has improved, but not significantly. It

was only with the incorporation of neural networks into machine translation technology in 2016 that translation took a quantum leap forward. Based on neural network translation technology, artificial intelligence simultaneous interpreting technology has even been developed to translate meetings in real time, which makes many professional parliamentarians feel the coming of a professional crisis. But in fact, AI technology is not a crisis but an opportunity. AI technology iterates at a high speed and shines brightly in the field of translation, which also provides opportunities for English translation teaching. With the help of AI, English translation teaching will also be on a new platform [1–3].

Based on the background of artificial intelligence, translation teaching in English translation majors in universities is a product of adapting to the trend of the development of the times. It is an effective way to improve the translation level of university students and broaden their translation horizons. At the same time, through the study of

innovative teaching strategies for university English, it not only confirms the advantages and role of artificial intelligence translation technology but also plays an important role in the innovation of China's university English classroom teaching mode. Due to the fact that AI translation is carried out according to its own corpus, it can not effectively take into account factors such as emotion, culture, context, and style, so people need to comprehensively consider the AI translation technology. At the same time, some college students' improper use of artificial translation technology has led to a decline in English learning efficiency. For example, some students have a limited understanding of artificial intelligence technology and rely too much on translation software, which is not only detrimental to students' mastery of English vocabulary and translation skills but also hinders the improvement of students' English comprehensive literacy [4].

Based on the background of artificial intelligence, some leaders, teachers, and students in colleges do not have a comprehensive understanding of AI translation technology. Teachers' insufficient use of AI technology and an imperfect curriculum evaluation system have also had negative effects on students' improvement of translation ability and mastery of translation methods [5]. Inadequate guidance from teachers is also an important factor in the effectiveness of students' learning. In addition, there are some problems in some universities. For example, the construction of an artificial intelligence translation platform and an English course evaluation system is not perfect. In response to these problems, universities should first strengthen publicity and deepen their understanding of AI translation technology among university subjects. At the same time, strengthen teachers' and students' understanding of AI technology. Fully integrate AI technology into the teaching process of English translation courses. Innovate the combination mode of AI technology and translation courses of English translation majors in colleges and universities, optimize the evaluation system of translation courses of English translation majors in colleges and universities, and at the same time, continuously optimize the evaluation mode of English teaching and the construction of AI translation platforms [6]. The most important thing is to be familiar with artificial intelligence tools and formulate a set of application methods suitable for English translation teaching according to the characteristics of artificial intelligence and teaching needs, so as to further promote the improvement of college English teaching quality under the background of artificial intelligence translation [7]. The research in this paper provides important guidance for the application of artificial intelligence and the Internet of Things, especially for intelligent relaying.

2. Contribution

Based on artificial intelligence and the IoT, the main work of this paper is as follows: first, this article introduces the advantages and disadvantages of the basic principles of artificial intelligence and explains why artificial intelligence will only become a tool for translation professionals rather

than completely replace human translation. Secondly, this paper formulates the relevant use methods of English translation teaching in colleges and universities, integrating artificial intelligence into English translation teaching. Finally, it theoretically analyzes its role, which can effectively improve the translation efficiency of professional translation ability of future English translation students and skillfully use artificial intelligence tools to avoid becoming the victim of artificial intelligence tool replacement.

3. Principles and Characteristics of Neural Network Translation of Artificial Intelligence Tools

In order to make better use of AI tools, we first need to understand the principles and characteristics of AI tools. At present, the latest and best performance is neural network translation, which basically replaces traditional machine translation.

Artificial neural networks use physically realizable systems to simulate the structure and function of human brain nerve cells. Artificial neurons use activation functions to simulate different states of human neurons. The interconnection of neurons forms a neural network structure. The learning process is a process of constantly adjusting the network connection weights. The main learning method is called error correction learning; that is, the deviation between the expected output and the actual output of the neural network is used as the reference for the adjustment of the connection weight [8]. Therefore, neural networks need data training with labeled answers. Figure 1 depicts the structure diagram of multilayer perceptron, which serves as the basis of neural network [9–11].

Based on artificial intelligence and the IoT, seq2seq learning of neural networks is a basic learning principle, which is also called sequence-to-sequence learning. This problem can be solved for the IoT using an RNN structure. Generally, when applied, encoder and decoder use the LSTM or Gru structure, as shown in Figure 2.

As a typical application of the IoT, the structure of neural network nodes is also developing. The basic unit of the network (LSTM) is a complex structure containing three control gates, which can effectively solve the problem of long-distance dependence. In translation, it is often necessary to determine how to translate according to the larger context, so LSTM is widely used in machine translation models. Its translation principle is shown in Figure 3 [12]. Machine translation is to translate one language into another. The process is shown in the following figure. There are mainly two steps. The first step is translation selection. When translating a sentence, we will face many problems with word selection because the phenomenon of polysemy is common in the language. For example, in this example, the word "look" in the source language sentence can be translated into words such as "look," "watch," "read," and "see." If the following object "book" is not considered, these translations are correct. In this sentence, only when the machine translation system knows the object "book" of

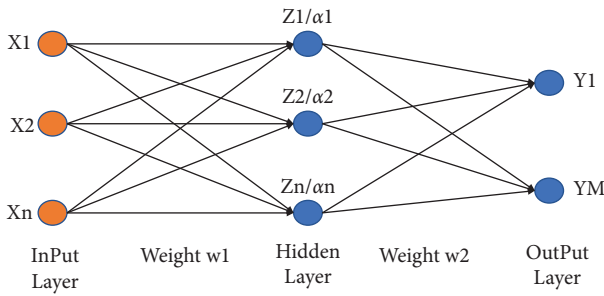


FIGURE 1: Artificial intelligence and the IoT-based structure diagram of multilayer perceptron.

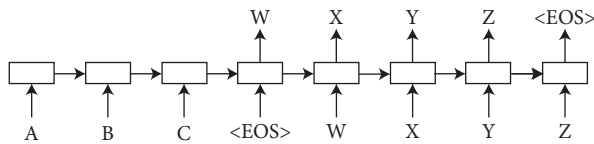


FIGURE 2: Artificial intelligence and the IoT-based seq2seq learning of neural network.

“look,” can it make a correct translation choice and translate “look” into “read” and “read a book.” The second step is to adjust the word order. Due to the differences in culture and language development, we sometimes say one component first and then another component when expressing. However, in another language, the order of these language components may be completely different.

From the IoT, neural network machine translation has three advantages:

- (1) Translate sentences as a whole, and the fluency of the translation is significantly improved. Neural network machine translation gives people the impression that the readability of the translation is high. The evaluation of translation fluency is related to many factors, including spelling, word formation, syntax, semantics, and so on. Neural network machine translation significantly improves the readability of the translation, mainly because it better deals with syntactic problems, such as subject-predicate consistency, past participles, double objects, complements, and so on, and also significantly reduces word order errors, word form change errors, and functional word errors. The phrase-based statistical machine translation model makes independent assumptions about the relationship between phrases in sentences, so it separates the relationship between phrases, resulting in the fluency of the translation, which is caused by the defects of the model itself. Neural network machine translation adopts an end-to-end translation method. When learning, the whole example sentence is taken as the input of the network, and the complete translation is obtained at the output end. Through learning, the neural network realizes the best approximation to the expression of natural sentences on the basis of a large number of calculations.

- (2) Multilingual translation shares a model to realize zero training translation. Google’s GNMT can translate between dozens of languages, and the translation of different languages can be realized by the same translation model. In other words, the IoT can realize transfer learning and zero-shot translation between two languages that have never been trained directly with translation data. For example, researchers first trained the Portuguese to English translation model with a Portuguese to English translation corpus and then trained the English to Spanish translation model with English to Spanish data. Although there is no Portuguese to Spanish translation training data, the model can translate Portuguese into Spanish better. Sharing one model to realize multilingual translation greatly reduces the workload of multilingual translation research and provides the possibility of automatic translation between language pairs that lack training data [13].

- (3) Structural simulation realizes functional simulation, and the translation mechanism is more mysterious. Machine translation based on statistics is also statistically interpretable because machines always choose the translation output with the greatest probability. But the result of neural network machine translation is difficult to explain. A neural network simulates the neural system of the human brain in structure, but it is different from the information processing mechanism of the human brain. Finally, the weights stored between neural network nodes are closely related to the data used in training and the network structure. The significance of connection weights is difficult to explain, and the translation mechanism of neural network machine translation is more mysterious.

But at the same time, artificial intelligence tools have defects, which cannot be compared with human translation:

- (1) First of all, there are omissions and mistranslations caused by the differences between Chinese and English sentence patterns. Any language has its own unique expression habits and patterns. Taking the Chinese and English languages as an example, Chinese sentence patterns do not need connectives to connect; they rely on semantics to imply logical relations; and they belong to a paratactic language. In addition, Chinese people are used to placing modifiers in front of the modified object, with the main information in the back and the secondary information in the front. While English sentence patterns belong to a hypotactic language, sentences are closely related, and there must be related words between clauses to indicate the logical relationship between them. Generally speaking, the key information comes first and the secondary information comes second. This completely opposite sentence structure means that when translating Chinese into English, the translator must pay attention to the differences

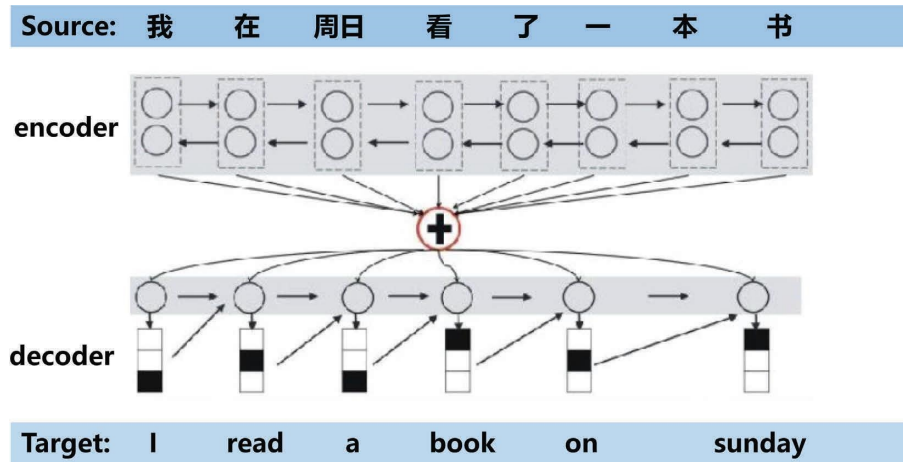


FIGURE 3: Artificial intelligence and the IoT-based Long Short-Term Memory Networks translation principle.

between the two languages and choose an expression that conforms to the readers' thinking habits. For machine translation, first of all, we need to analyze the sentence structure, understand the composition of sentence components, break up the sentences, rearrange them in the customary way of the target language, and then translate. Whether this process can be handled well is a major challenge for machine translation at present.

- (2) Secondly, polysemy recognition has always been one of the most basic and difficult problems in natural language processing. It is manifested in almost all aspects of language. It also includes polysemy or sentences caused by pragmatic factors. For example, murder will come out. The original is a proverb in English, and the difficulty of translation lies in the understanding of it. "Out" is both an adverb and a preposition, as well as a verbal part of speech, with a wide range of meanings. The choice of polysemous word meanings is not only a machine translation but also a headache for professional translators. Yan Fu once exposed his translation process to an uneasy mood. However, human translation can still achieve accurate translation by mastering cultural connotations and other ways.
- (3) Chinese grammar is more complex and hidden than Western grammar and exists in implicit semantic relations. In some specific communication situations, the translator needs to grasp not only the surface meaning of the language but also the potential meaning of the language so as to convey this information to the reader without omission. After all, the complexity of the human brain can not be replicated by simple machine simulation. To sum up, machine translation will still make some major mistakes that human translators will never make. From the perspective of linguistics, the fundamental reason for these mistakes is that the language is not proficient enough and the exchange between the two languages stays on the surface without going deep into the core of language and cultural

differences. From the aspect of machine language programming, the main reason lies in the defects in its training data, which leads to a lack of information materials for machine autonomous learning, resulting in mistranslation. To solve these problems, the author believes that we can improve from these three aspects: from the technical level, we should give "computers" more "learning experience," that is, improve the algorithm of deep learning, improve the end-to-end correspondence process, and gradually optimize the translation system; establish the system error correction database, integrate the common errors in the machine operation process, combine the translation and operation process, and help the system to be intelligent; third, interdisciplinary communication. Engineers engaged in natural language processing should combine with the field of linguistics to develop natural language processing from the perspective of linguistic theory, which will be of great help to the improvement and practical application of the software. Although neural network machine translation has room for improvement, in the face of more standardized science and technology, medicine, and other fixed and written rules, this translation technology can translate faster and have higher accuracy. It is difficult to completely replace human translation, and it is likely to be impossible to achieve because the existing machine translation is aimed at the language phenomenon that has appeared now, but the language is always updated and changed with the development of society, and human beings continue to create new words or give new meanings to words. Therefore, universities should consider how to improve the quality of English translation teaching from the perspective of using artificial intelligence as a tool [14].

In the considered artificial intelligence and the IoT, the advantages and disadvantages of human translation and machine translation are shown in Table 1, including accuracy, fluency, efficiency, slang, stability, and cost.

TABLE 1: Artificial intelligence and IoT-based comparison of human translation and machine translation.

Fields	Human translation	Machine translation
Accuracy	100%	70-95%
Fluency	High	Low
Efficiency	Low	High
Slang	Able	Unable
Stability	Due to different translators	Stable
Cost	High	Low

4. Strategies of Using Artificial Intelligence in Translation Teaching

4.1. Improve Students' Self-Study Ability. In order to use AI tools to improve students' self-study English translation ability, we first need to start with the translation process and the content that needs attention in translation [15]. The process of English translation is shown in Figure 4.

Based on artificial intelligence and the IoT, as can be seen from Figure 4, English translation needs to pay attention to three factors and eleven details. Traditional English translation teaching also trains students in these factors and details. Therefore, AI tools can help train students on these factors and details. Starting from the factors of accurate understanding, traditional teaching requires students to look up dictionaries, and artificial intelligence tools can quickly give all the parts of speech meanings of all words, effectively helping students grasp the meaning of the whole sentence, helping students save a lot of time, and helping students recite single words.

Based on artificial intelligence and the IoT, starting from the understanding factors dominated by the internal factors of speech, traditional teaching needs to help students gradually analyze the subject, predicate, deep structure and surface structure; comparative and superlative; conditional clause and virtual clause; negative form; verb object relation and verb complement relation, etc. Artificial intelligence tools can also start from all aspects. Artificial intelligence can quickly mark subjects and predicates to help students understand and clarify the skeleton of sentences, which is a necessary condition for understanding the overall situation. At the same time, after training, artificial intelligence tools such as neural network translation can translate the deep structure of sentences, that is, it avoids the ambiguity caused by the literal translation of surface structure. At the same time, AI tools can provide semantic deep structure translation and surface structure translation for students to learn. In the understanding of comparative and superlative details, it is closely combined with the surface structure and deep structure. Some original surface structures are not comparative or superlative, but the deep structures should be translated into comparative or superlative sentences. Artificial intelligence tools can show the sentences that the surface shows the superlative but are not suitable for direct translation for students to learn. At the same time, due to the thinking gap between English and Chinese, literal translation often leads to the wrong understanding of conditional clauses, virtual clauses, and negative sentences, such as

double negation, affirmation, and so on. There is also the verb object verb complement relationship. If the verb complement relationship is understood as the verb object relationship in the English translation, it will cause serious meaning distortion. These details need to be mastered by students through a lot of contacts, and the teacher's energy is always limited, so AI tools can help teachers train students, and the effect will not be worse than artificial ones.

4.2. Replacing Translation Textbooks. From the viewpoint of artificial intelligence, because language is always updated and changed with the development of society, human beings continue to create new words or give new meanings to words, and the learning speed of artificial intelligence is always faster than that of human beings. Usually, whenever a new word or slang appears, human translators hand it over to artificial intelligence neural network translation learning after translation. After training, neural network translation can recognize new words or new meanings, which is almost consistent with the translation. It is difficult for teachers and teaching materials, and almost all of them will be updated after a long time. Therefore, from this perspective, using artificial intelligence tools instead of textbooks has the advantage of timeliness. At the same time, AI tools also have the characteristics of low cost and environmental protection. This is the difference between paper books and electronic books. Artificial intelligence tools are not only environmentally friendly but also highly unified, that is, national unified standards. Although there are national unified textbooks, from the perspective of timeliness, artificial intelligence tools can be updated in real time and synchronously, which is difficult to achieve in the national unified textbooks.

In the process of helping students learn English through translation teaching, AI tools can also learn by themselves and constantly iterate and evolve. Figure 5 depicts a closed-loop flow chart of teaching and self-study.

5. Suggestions of Using Artificial Intelligence in Teaching

5.1. Improving Awareness of AI Technology. From the viewpoint of artificial intelligence, the development of college English classroom teaching in the context of artificial intelligence translation requires all subjects in our school to actively understand and comprehend the use and role of artificial intelligence translation technology in English teaching [16]. First of all, colleges and universities should make full use of the existing publicity methods of the university to actively popularize the role of AI translation technology in the actual English teaching process of the university and its positive significance for students learning English so as to further enhance the acceptance of AI translation technology by college teachers and students.

Secondly, university leaders should also actively organize their teachers and students to learn and understand relevant policy documents and cutting-edge teaching concepts of English; help teachers and students establish a correct

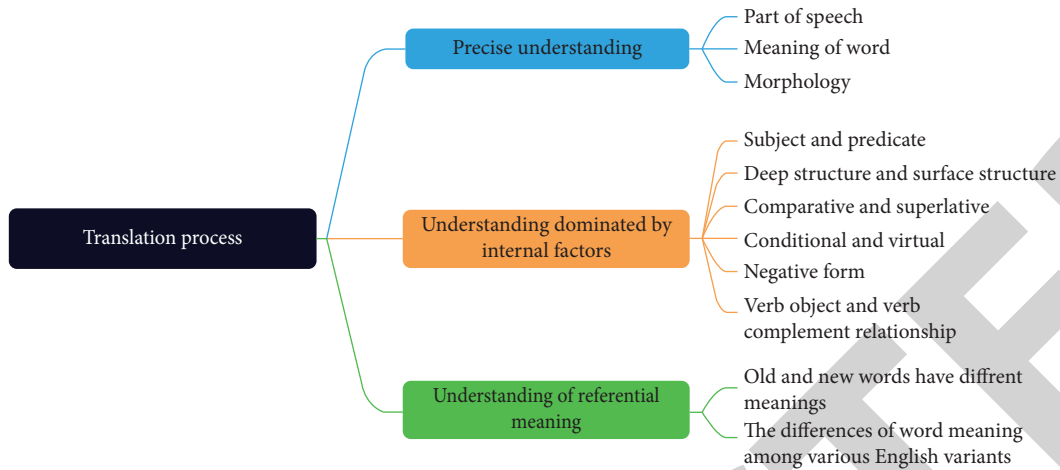


FIGURE 4: Artificial intelligence and IoT-based process of English translation.

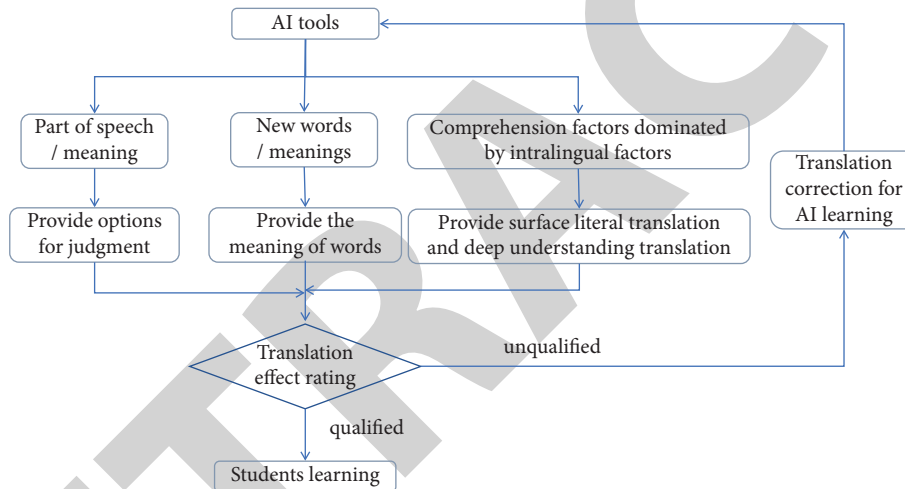


FIGURE 5: Artificial intelligence and IoT-based closed-loop flow chart of teaching and self-study.

attitude towards the application of artificial intelligence technology in the process of English classroom teaching so as to further promote the improvement of the quality of English talent training in colleges and universities in China.

Finally, colleges and universities should further clarify the differences and connections between the college English classroom teaching mode and the traditional teaching mode from the perspective of artificial intelligence, further improve the adaptability of college English teachers' teaching methods and artificial intelligence translation technology, and promote the improvement of students' English levels.

5.2. *Optimizing the Methods of Using AI Tools by English Translation Teachers.* For the considered artificial intelligence and the IoT, in the process of teaching translation courses for AI translation majors, colleges need to further strengthen the construction of English translation teachers.

Firstly, constantly optimize the teacher training mechanism of translation courses for English translation majors. On the basis of ensuring that all teachers of English translation courses participate in the training, adjusting the

proportion of artificial intelligence technology in the training content, helping teachers deeply grasp the combination of artificial intelligence technology and translation course content, and promoting the improvement of course teaching quality. Secondly, encouraging teachers of English translation courses to continuously improve their understanding of AI technology. In terms of preclass teaching design, it aims to increase the application times of relevant AI technologies, deepen students' understanding and application of AI technologies in the course, and promote the improvement of students' English translation level. Third, with the help of the Internet translation platform, it provides an exchange module for translation teachers to improve the proficiency of teachers in the use of artificial intelligence technology in translation classroom teaching and improve the ability of college students to use artificial intelligence technology in the process of translation.

5.3. *Expanding the Integration Method of English Translation Courses and Artificial Intelligence Technology.* In the context of artificial intelligence, the teaching of translation courses

for English translation majors in colleges and universities also needs to integrate artificial intelligence translation technology into different teaching links and steps of English translation courses [17].

Firstly, students can make more use of AI translation technology in the preclass preview, comprehensively preview the words, grammatical context, and translation skills in the translation course, and at the same time, make deep use of AI technology, integrating AI technology into the learning ideas of the translation course so as to promote the improvement of students' English self-study ability.

Secondly, we should strengthen the combination of the teaching content of the translation course and artificial intelligence technology, deepen the combination of artificial intelligence technology and the teaching content of the translation course through diversified teaching methods, and deepen students' understanding of the course content.

Thirdly, we can strengthen students' mastery of English translation skills by reserving time for teachers and students to exchange and discuss classroom learning content and the application of AI translation technology.

5.4. Improving the Evaluation Proportion of Artificial Intelligence Technology in the Curriculum. For the considered artificial intelligence and the IoT, a scientific and perfect curriculum evaluation system plays an important role in improving the quality of college English teaching and the efficiency of students' learning. First of all, colleges and universities should improve the comprehensiveness of the English curriculum evaluation system and comprehensively and carefully plan the application mode, scope, and frequency of artificial intelligence translation technology for English teachers' actual classroom.

The development of teaching work points out the direction. Secondly, colleges and universities should continue to add innovative factors to the curriculum evaluation system, encourage and support teachers to actively innovate teaching models, further enhance the enthusiasm of college English teachers to innovate in the actual teaching process, and constantly enrich college English classroom teaching models. Finally, colleges and universities should further strengthen the education and training of course evaluation staff, further improve their understanding and inspection ability of course evaluation staff on AI translation technology, and constantly optimize the actual teaching evaluation system.

5.5. Expanding the Use of Artificial Intelligence in Translation Practice. From artificial intelligence and the IoT, practice is the only way for students to improve their translation. Translation practice is not only the consolidation of theoretical knowledge learned but also a practical means of transforming knowledge into skills.

First of all, we should encourage and support students to participate in various translation activities, especially online simulation training, through online and offline English simulation competitions, simulated recruitment, simulated meetings, and other forms. There are no space constraints or

activity funding constraints. The network platform makes up for the lack of opportunities for translation practice training in reality.

Secondly, English translation clubs are also another way for students to exercise their English translation ability. Colleges and universities can support students to establish English translation network societies, which gather talents from all aspects with rich translation experience and ability in the network and hold online activities or competitions regularly or irregularly. Students are inspired by the charm of translation talents and set an example for learning. Only in this way can they continuously enhance their confidence in their translation ability.

By expanding these various practical activities, students can master and use artificial intelligence tools, neural network translators, and so on, so that students can get real exercise in social translation practice.

6. Conclusion and Suggestion

The study of artificial intelligence and the IoT has been a hot research topic for researchers in industry and academia in recent years. Machine translation has been widely used in English translation teaching to help students learn English translation. To sum up, this paper studies and analyzes the methods of artificial intelligence. The principles and characteristics of neural network translation, the most advanced artificial intelligence method, are introduced and analyzed. After fully analyzing and understanding neural network translation, it also studies the teaching of English translation for students. The English translation process is divided into three processes and eleven details. In these three processes and eleven details, the entry point of the use of artificial intelligence tools is integrated, and a complete set of artificial intelligence methods to assist the process of English teaching tasks are summarized. Moreover, artificial intelligence methods also learn by themselves, iterate, constantly revise their own models, and form a closed-loop system in the process of assisting English translation teaching. It also puts forward the reform direction of integrating AI methods with the aspects of college students, college teachers, college leaders, and equipment, which can better help AI methods participate in English translation teaching. Meanwhile, in the context of artificial intelligence, university English teachers actively explore the application of artificial intelligence technology in the process of reform and innovation of English translation activities courses. The organic combination of information data and artificial intelligence is used to build a new translation model. It can highlight the contemporary characteristics of translation teaching and cultivate the English translation ability and information literacy of university students. It provides inexhaustible power support for the development of translation teaching activities.

In particular, it is proposed that a proper understanding of the approach to artificial intelligence is required. Artificial intelligence will always be a tool for human beings and will not replace them, let alone create resistance to it. At the same time, we should recognize that AI as a tool is for the

convenience of people. If we fail to learn to use AI, we will eventually fall victim to the zeitgeist. Therefore, we, from students to teachers to leaders, should pay attention to the teaching activities under artificial intelligence. The research in this paper provides important guidance for the application of artificial intelligence and the Internet of Things, especially for intelligent relaying.

Data Availability

The data used to support the findings of this study are available from the author upon request.

Conflicts of Interest

The author declare that they have no conflicts of interest regarding this work.

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