Research on the Application of Artificial Intelligence Natural Language Processing Technology in Japanese Teaching

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Abstract: In the context of artificial intelligence, natural language processing technology has matured and it is a key technology for foreign language teaching and research direction. The application of artificial intelligence natural language processing technology to Japanese teaching is essentially a language processing technology that combines computer science and artificial intelligence. Based on this, this article will analyze the application of artificial intelligence natural language processing technology in Japanese teaching, hoping to have a certain reference significance for Japanese teachers’ educational technology research.

1. Introduction:
With the rapid development of artificial intelligence technology, Japanese teaching and language translation have ushered in new opportunities and challenges. In the context of artificial intelligence, Japanese teaching should actively innovate and reform teaching concepts and methods, and skillfully use natural language processing technology to create a sustainable ecological chain to promote Japanese teaching in a more personalized and precise direction, accelerate the construction of Japanese teaching informatization, solve the current problems and improve the quality of training Japanese applied talents.

2. Overview of artificial intelligence natural language processing technology
Natural language refers to the languages used in daily life, such as Chinese, English, Russian, and Japanese. Natural language processing technology uses computer to process, understand and use natural language, including the pronunciation of natural language and text. It can be divided into several levels, such as grammar, semantics, and pragmatics. It belongs to intelligent computer language. Natural language processing technology needs to rely on the scientific research results of sociology, linguistics and other disciplines, as well as the research of knowledge and computer learning, so as to form its own natural language processing system. Artificial intelligence natural language processing technology can realize communication between humans and computers through natural language, thereby improving the efficiency of information transmission. At this stage, the use of artificial intelligence for language learning has received widespread attention from all walks of life (figure 1). In Japanese teaching, natural language processing technology has realized functions such as machine translation, voice navigation, intelligent robot chat, composition correction, allowing Japanese learners to exchange voices with computers and perform some Japanese proficiency tests and practices.
3. The difficulty of artificial intelligence natural language processing technology in Japanese teaching

3.1 The difference between students is large
Because each student’s Japanese learning foundation is different, there are also differences in the relevant courses chosen. It can result in large differences in students’ grammar foundation and foreign language ability, which will seriously affect the quality and efficiency of Japanese teaching.

3.2 Artificial intelligence natural language processing technology cannot successfully translate images in literary works
When natural language processing technology translates literary works, it is difficult to reflect the imagery in literary works. Literary translation needs to transform a literary work from one language to another, and it must reflect the state of “transformation”. It can not only avoid the feeling of being forced by language habits and other factors but also reflect the image of the literary work and preserve the style. The usage and rules of grammar and vocabulary in natural language are limited, which will lead to many different expressions and meanings in language forms. Since Japanese does not have natural word segmentation like Chinese and other languages, there are certain obstacles in language processing. The computer adding separators after each word will cause semantic ambiguity in the Japanese translation and fail to correctly process all levels. The problem of ambiguity in language units makes it difficult for natural language processing technology to reflect the images in literary works in the process of understanding and expressing natural language.

3.3 It is difficult for artificial intelligence natural language processing technology to accurately grasp and understand the cultural background of language
If someone wants to learn the culture of a country, he must first be proficient in the language of the country. Language is the carrier of culture. However, in the process of translating literary works with artificial intelligence natural language processing technology, it is difficult to understand the cultural background of literary works, which leads to the translation results inconsistent with the contemporary background and cultural background, which will seriously affect the quality of Japanese teaching. When natural language processing technology translates and understands a sentence, the acquisition of context is also a challenge. Natural language processing technology needs to make accurate scientific inferences based on the context, and use pronouns to infer the above content, which is also a big problem in natural language processing technology.
3.4 Artificial intelligence natural language processing technology needs to be updated in time to meet the development of the times

With the rapid development of the information age, many Internet hot words frequently appear, and the language is constantly updated and changed. For example, the current Internet hot words “I am too south” (It’s too difficult.) and “Chuan Jianguo” (Donald Trump) are used in natural language processing technology. If someone doesn’t understand the source and background, it will be difficult to correctly translate and express these hot online words.

4. Research on the strategies of applying artificial intelligence natural language processing technology to Japanese teaching

4.1 Effective use of intelligent interactive technology

Language learning is essentially a process of input and output. The knowledge that can be obtained in this process is what a learner can truly obtain, so does Japanese learning. It can be better through a large amount of input and output. This enables students to master the essence of Japanese, but each student’s pronunciation and learning methods are not the same. Teachers cannot accurately grasp the learning situation of all students. This may lead to more serious problems of student differentiation. If the new technology of artificial intelligence is used to program related data, then students will definitely achieve a multiplier effect.

For example, teachers can use the human-computer dialogue processing system. According to the learning characteristics of different students, the system can customize settings. According to the students’ preferences, the system pages and pronunciation methods can be adjusted. When using the system for learning, it can choose to talk to the system or enter text to exchange information. The anthropomorphic setting of the system can also make students more interested in Japanese, which is aimed at teachers’ current learning. Concerned about the real-time voice interaction function, the system has also been adapted so that students can use the voice input device to read continuous and complex Japanese sentences. At this time, the system can effectively analyze the input Japanese to find out the problem. It can click and output the sentences spoken by students to the students on the screen, accurately interpret the sentences and push some targeted example questions to consolidate. For students with extroverts, the use of methods will have a very significant effect, which will make them better adapt to the language environment on the basis of the original Japanese. For students with poor foundations and introverts, the interactive system will be no great pressure. Students can be instructed on the basis so that they can start with small phrases and fully master the learning methods.

4.2 Reform and enrich teaching content

Under the new trend of artificial intelligence, Japanese professional teaching should keep pace with the times, and scientifically and effectively apply natural language processing technology to Japanese teaching, so as to ensure that students receive basic Japanese language and listening, speaking, reading and writing.

For example, in the course of Japanese culture scholars studied in Tang Dynasty, teachers can ask students to independently design the route of Japanese scholars, and use natural language processing technology to communicate between students and computers to establish an immersive classroom atmosphere. Through the communication with computers, students can not only master the economy, culture and society of China and Japan in different periods, but also experience the prosperity of the Tang Dynasty, thus improving and cultivating students’ emotions. In addition, schools should also set up Japanese literature, film and television appreciation and other courses, use natural language processing technology to improve students’ aesthetic ability, and use Japanese aesthetics and art to improve students’ interests in learning Japanese. Through investigation and analysis, nowadays, many students learn Japanese because they are influenced by Japanese anime. Therefore, teachers can give full play to the advantages of animation and film and television works, and let students use the technology for dubbing and production, so as to fully attract students’ attention, stimulate students’
curiosity about natural language processing technology, and make students truly integrate into Japanese teaching class. Meanwhile, schools should design teaching courses scientifically and reasonably and introduce courses related to translation. Many students perfunctorily use translation software when writing Japanese. Schools should guide students to correctly use translation software and how to use the technology. In the course of interpretation, teachers should not only teach students basic Japanese knowledge and translation skills, but also guide them to learn and use natural language processing technology correctly. It can help students accurately compare the characteristics and accuracy of different software translation, so that they can find the appropriate translation software or website. When the software is assisting in translation, students should also identify the problems that often occur in the software or website to make proper use.

![Survey on acceptance of Japanese culture](image)

**Figure 2. Survey on acceptance of Japanese culture**

4.3 Use artificial intelligence to establish an ecological chain of Japanese mixed teaching

Artificial intelligence technology includes intelligent agents, natural language processing technology, and data mining technology. These technologies have been widely used in foreign language teaching systems and platforms. Schools can build Japanese mixed teaching concepts and use artificial intelligence natural language processing technology to solve problems in teaching.

For example, in an offline Japanese teaching classroom, teachers can make timely adjustments and improvements to teaching progress and methods through the learning results and mastery level displayed on the teaching platform. At the same time, Japanese learners can also understand their own learning through the teaching platform. Students can also make changes in the classroom according to their own situation, and make up for their shortcomings in the Japanese learning process according to the recommended content of the teaching platform. In the online platform, students can use artificial intelligence to formulate learning content, recommendations, learning achievement detection, etc., for targeted learning. Teachers can also create personal learning files for students based on their voices, texts, expressions, etc. These technologies are based on artificial intelligence natural language processing technology. It can not only reduce the teaching workload of teachers, but also allow teachers to invest more experience in teaching and strategies, and improve the quality of Japanese teaching.

5. Conclusion

In summary, in the context of the rapid development of artificial intelligence, natural language
processing technology will become an important method of Japanese teaching. Natural language processing technology should be continuously improved according to teaching methods, and strive to achieve better results in language processing tasks. Japanese teachers should also actively change their thinking, innovate and reform Japanese teaching methods and concepts, use the technology for diversified teaching, and improve the level and quality of Japanese.

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