

College English Teaching Based on Artificial Intelligence

Fengling Wang

Xianyang Normal University, Xianyang, China

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Abstract: The most critical part of AI is interaction; the system receives input from the terminal, processes it, and returns the result to the terminal, which is man-machine dialogue. Interaction is the communication of information between sender and receiver, which exists in all kinds of teaching activities and is one of the most basic features of teaching activities. According to the theory of communication, the interaction works between students and teachers in learning content, between students and students in learning, and between students and learning interface.

1. Introduction

Today is intelligence era; there are a lot of translation APP; machines for simple translation of words and phrases can be accepted. In particular, live conversational translation between English and Chinese languages has been achieved by means of machines. For instance, Blue Canoe integrates an English learning method called color phonetic alphabet into the APP for learners to learn. App digitizes this learning method, more in line with people's usage scenarios and learning styles. In addition, voice-recognition apps can provide real-time feedback to help learners spot and correct errors in their pronunciation. In fact, as early as 2016, Fluent English, a domestic brand of oral English learning, applied the recursive neural network deep learning model used by Alpha Go to English learning and developed the paid course "understand your English". There are nearly 600,000 paying users, and the company has achieved large-scale profit at the beginning of the year. The application of Artificial Intelligence is to be discussed as follows:

2. Functional Structure Analysis of English Teaching System:

This system adopts B/S mode (browser/server) architecture to build an internet-based online teaching assistance system. The system consists of two modules: college English teaching assistant expert system and student independent learning system. The whole system includes four kinds of users: domain experts, English teachers, students and system administrators. Users have different module operation permissions according to different identities when logging in.

System Administrator:

Mainly refers to the personnel designated by the system owner to carry out daily maintenance of the system. The main rights include user management (query, add, delete, modify), question bank management (add, query, modify, delete), password modification, etc.

Domain Expert:

refers to a senior English teacher with many years of teaching experience. who can thoroughly analyze the knowledge points, degree and degree of certainty involved in English test questions, and give samples of the established format required for training neural network. Main permissions include knowledge base maintenance (add, query, modify and delete static and dynamic knowledge bases), neural network sample maintenance (add, query, modify and delete), password modification and so on.

Teacher:

refers to the ordinary English teacher; each English teacher has a designated class and students. the main authority of the organization of the test, uploads the test results, analyses of the knowledge points of the designated group of students, etc..

Student:

refers to an ordinary student who can log into the system with the user name and password given by the system administrator. The main permissions include participating in exercises, self-diagnosis, historical practice diagnosis, knowledge point strengthening exercises (the system exercises according to historical practice diagnosis results, combined with memorization principles), changing passwords, etc.

The English teaching assistant expert system, which uses the method of knowledge expression combined with the production and the framework, and adopts the uncertain reasoning technology, can complete the basic assessment knowledge acquisition of students from college English teachers. It can realize the overall evaluation of a single class, multiple classes, a single college, and multiple colleges, reduce the teaching burden of teachers and improve the teaching quality.

3. The Concept of Artificial Intelligence Technology:

Artificial intelligence technology is based on the research of related theories of human intelligence to carry out simulation, extension, and expansion of related theories. Artificial intelligence is also called machine intelligence. As a branch of computer science, artificial intelligence research aims to equip computers with human intelligence, enables them to have certain autonomous computing, learning and thinking abilities, and at the same time to efficiently complete some complex tasks. Artificial intelligence mainly includes computer vision, natural language processing, speech processing and intelligent robot and other related research fields.

3.1 Personalized Learning:

Teaching students in accordance with their aptitude, as an important teaching method, has been advocated by educational scholars. However, in the context of exam-oriented education in China, it is difficult to formulate specific and targeted learning programs according to students' different cognitive levels, qualities and learning abilities. With the development and wide application of artificial intelligence technology, the feasibility of teaching students in accordance with their aptitude has been greatly improved. Artificial intelligence technology can predict students' future learning performance according to their historical learning data, and intelligently recommend the most suitable content for students, so as to effectively and significantly improve students' learning effect. For example, McGraw-Hill, a personalized education services start-up, uses artificial intelligence to create an adaptive learning experience for each student. For example, when students read materials and answer questions, the system will provide relevant materials suitable for students according to their mastery of knowledge.

3.2 Photo Search Questions:

In recent years, it has been called "the saviour of students, the Nemesis of homework" and other kinds of question-searching software, such as excellent Student Jun(student with excellent grades) and Homework Help in China, Volley abroad and so on. This kind of software mainly uses deep learning, image recognition, optical character recognition and other technologies to analyze photos and texts. After users upload photos of the topic to the cloud by their mobile phones, the system can give the answer to the question and the solution ideas within a short time, and display the learning points, difficulties and previous knowledge. In addition, this kind of software can not only identify the printed questions, but also support the recognition of handwritten questions. This learning method of taking photos and searching questions not only improves students' learning efficiency, but also enriches students' ways of answering questions and tutoring, and greatly enhances students' autonomous learning ability.

3.3 Intelligent Homework Correction:

With the development of natural language processing technology and semantic analysis technology, automatic correcting of homework has become a reality. The computer can correct the grammatical errors of the text according to the natural language processing technology, such as subject-verb agreement of various English tenses, singular and plural number, word choice, and

even give modification suggestions, which can effectively share the teaching pressure of teachers, and significantly improve the teaching efficiency of teachers and learning efficiency of students. Now many of the education products begin to use artificial intelligence technology to achieve this function, such as Ape Tutoring Company has launched an “English Composition Smart Correction” application, the user can use the phone and upload handwritten English composition; the system can automatically recognize handwritten words, correcting automatically, and display the essay scoring. The application also will remark on errors such as grammar, words, has high identification accuracy, at the same time support the full handwritten offline recognition. With the improvement of image recognition technology and natural language processing technology, automatic homework correction will become more and more practical and accurate. With the continuous improvement of computer vision, speech recognition and human-computer interaction and other technologies, the future artificial intelligence technology is bound to bring extensive and profound impact on the education industry.

4. Advantages of Machine Translation:

With the rapid development of science, technology and economy, the connectivity of countries around the world has become irreversible trend. In order to realize the effective communication between different countries, the machine translation came into being. Its advantages are mainly reflected as follows:

4.1 Low Cost:

Compared with human translation, machine translation is much lower at cost because machine translation needs few people in participation, basically completes the translation automatically by the computer, greatly reduces the budget.

4.2 Easy to Control:

The machine translation process is simple and fast, and the translation time can also be controlled.

4.3 Speed

Calculator programs are very fast, and machine translation takes advantage of this. The advantage of human translation lies in its thinking ability, flexibility. Sentence structures, grammatical applications, and contextual logic are all free to think analytically. The translation of things will not be confused and illogical in grammar. Like some literary articles, manuscripts, human translation can be perfect expression of the charm, in which all kinds of thought essence are not difficult to understand. Also human translation can be based on the translator's language habits, thinking style, customs, etc., and the translation becomes more in line with the user's reading habits, makes translation more authentic and accurate. The translated text is also very readable. Therefore, in this level of application, machine translation is still difficult to overcome its defects. In this mode, AI first completes the most basic translation. According to the machine translation result, the ordinary translator first makes a correction to the machine translation error. Later, senior translators will further improve the literariness and professionalism of the translated text. Such flow operation will bring greater efficiency and ensure quality. Computers also track the “hard” parts of human translation, helping translators avoid silly mistakes. In this process, artificial intelligence and human translation will form a virtuous circle.

Now in China, the most important translation demand in the market is the translation between Chinese and English, whether they are media, academic papers, or British and American films and dramas. The combination of artificial intelligence and human translation can optimize the efficiency of the current translation, bring freer cross-country communication, and create greater market opportunities.

5. In the Solving and Application of Education Problem, There Are Four Main Application Forms of Artificial Intelligence:

Intelligent tutoring system, automatic evaluation system, educational games and educational robots.

5.1 Intelligent Tutoring System

Intelligent tutoring system (ITS) was developed from the early days of computer-aided teaching, which simulates a teacher to achieve a one-to-one intelligent teaching, which is the typical application of the artificial intelligence technology in the field of education. The typical intelligent tutoring system is mainly composed of domain model, mentor model and learner model, namely classic “triangulation”. Domain model is also known as expert knowledge, which contains the basic concepts, rules and problem solving strategies in the learning field. Generally, it consists of hierarchies, semantic networks, frameworks, ontologies, and production rules. The key role is to complete the knowledge calculation and reasoning. The tutor model determines the learning activities and teaching strategy suitable for learners; learner model dynamically describes cognitive style, ability and emotional state in the learning process of students. In fact, the tutor model, learner model and domain model are exactly three teaching elements -- the computer programming of the teacher, the student, and the teaching content. Among them, domain model is the basis of AI realization. The teaching model is the bridge between domain model and learner model; The essence of the teaching model is to make adaptive decisions and provides personalized learning services. The teaching model is to make adaptive decisions and provide personalized recommendation service to learners based on domain knowledge and its reasoning according to the learner model which reflects the learner’s current knowledge and skills and emotional state.

ITS respects learners’ individual characteristics, such as learning style, interest, specialty, etc., to meet the individual needs of learners. ITS provides the learner with personalized learning paths, learning resources and learning partners, etc. according to individual characteristics which the learner model describes.

5.2 Automatic Evaluation System

Evaluation is an important part of teaching activities. The application of automatic evaluation technology brings about profound changes in evaluation methods and forms. The automated evaluation system can achieve objective, consistent and efficient evaluation results, provide immediate feedback, greatly reduce the burden of teachers, and provide real and reliable evidence for teaching decisions. After evaluation criteria have been set up, students can use E-rater’s feedback to evaluate their writing, develop skills and identify areas for improvement. Teachers can help students develop their own writing skills independently and automatically acquire constructive feedback through E-rater. In addition to providing an overall score of the passage, E-rater also provides real-time diagnosis and feedback on grammar, writing style, and organizational structure. Automatic spoken language evaluation has realized automated testing and evaluation of speech in multiple languages by speech recognition and other technologies. For English teaching in China, the lack of language environment is the biggest obstacle to students’ oral English learning at present. Oral English evaluation is difficult and timeliness is poor, which intensified the difficulty of teaching and learning oral English. Hkust xunfei develops intelligent listening and speaking test system, English listening and speaking test and teaching system, and the college English test system for band 4 and 6 by the strong advantages of voice technology, which can be used to promote English listening training and automated testing with feedback.

Through knowledge representation, computation and understanding, artificial intelligence can simulate teachers to achieve personalized teaching; it can realize automatic measurement and evaluation of knowledge and skills with the aid of problem space theory. It can solve lexical analysis, grammatical discrimination and semantic understanding in text and oral speech with the help of natural language processing and speech recognition technology. The “edutainment” is

endowed with new connotation in an intelligence enhanced way through educational games and education robots. We should further analyze the typical characteristics of artificial intelligence education and grasp its future development trend which is the necessary conditions for the application of AI education.

6. Conclusion

The application of artificial intelligence in education shows the way in promoting the development between artificial intelligence and integrated innovation with education. At present, under the guidance of the policy of development of artificial intelligence in China, we not only essentially recognize the core elements and driving force of artificial intelligence and grasp its typical application, but also are able to conform to its development trend. Educational informationization development direction should be led by data, and teaching mode should be pushed by deepening the application. Artificial intelligence technology is promoting the rapid development of educational informationization. However, there are some specific problems which still should be discussed in promoting the application of artificial intelligence in education and need to be solved urgently.

References

- [1] Songtao Kong. The Development and Application of Artificial Intelligence. Journal of Henan Science and Technology. 2003.
- [2] Juval Horali. Homo Deus[M] Beijing: China Citic Press, 2017
- [3] Menghebayar. On Artificial Intelligence Technology. Journal of Chifeng College (natural science), 2012(05):29-30.
- [4] Arnold, P.Balkan, L.Meijer, S.Humphreys, R.L.Sadler, Machine Translation: An Introductory Guide[M] University of Essex,2015
- [5] Biber, Douglas, Susan Conrad and Randi Reppen. Corpus Linguistics[M]. Cambridge: Cambridge University Press,2013
- [6] Zhiwei Feng. Research on Machine Translation[M] Beijing: China Translation and Publishing Corporation,2004
- [7] Jiyong Jia. Discussion on the Application of Artificial Intelligence in Education abroad. Audio-visual Education in China ,2010,(7):113-118.
- [8] Nkambou R, Mizoguchi R, Bourdeau J. Advances in Intelligent Tutoring Systems[M]. Berlin: Springer Heidelberg, 2010.