Image Search System Based on Machine Learning

HongLin Wang1,*
1School of Information Engineering, Yancheng Teachers University, Yancheng, Jiangsu, China, 224002
*Corresponding author e-mail: wanghl@yctc.edu.cn

Abstract. Since the 21st century, with the continuous maturity of network technology and its integration with the education field, traditional face-to-face communication has gradually expanded to the virtual network environment. In the online learning environment, students can use the online platform to communicate directly with teachers, no longer limited by time and region. The time and space breakthrough of teacher-student interaction has brought development opportunities for teachers to constantly contact students with a long-term management mechanism. Based on this situation, this article uses artificial intelligence technology to build a network communication platform. This article first analyzes the application status of artificial intelligence technology in the network communication platform, and then introduces the artificial intelligence technology applied in this article. Then, this article uses artificial intelligence technology to design a network communication platform, and test the function and performance of the platform. The test results show that the function of the system is very accurate and reliable, and the performance of the system is sufficient to support nearly 10,000 users at the same time.

Keywords: Artificial Intelligence, E-learning, Long-term Management Mechanism, Network Communication Platform

1. Introduction
In recent years, the Ministry of Education has clearly proposed the use of the network environment to provide college students with high-quality study, life and employment services. Combining with my country's traditional ideological education model, create a network communication platform based on artificial intelligence to enable multiple interactions between teachers and students, highlighting the deep integration between teachers and students [1-2]. Facing the requirements of online party building work under the new situation, how to strengthen the communication and interaction between teachers and students, correctly guide college students to use their strengths and avoid their shortcomings, and provide them with a safe, stable and pure network communication platform. New issues facing the current ideological and political education in colleges and universities. Teachers should use the advantages and characteristics of the network platform to communicate and interact with students to further promote the organization and informationization of grassroots party building [3-4]. The application of the network communication platform based on artificial intelligence technology can enable in-depth communication between schools, teachers, students and society and other parties, so that students can understand the society and prepare and plan for employment. Let teachers keep
abreast of students' thinking, study and life dynamics in time, and provide targeted guidance. Let the school provide a better teaching environment, find the deficiencies of teachers in their work, and form the joint force of teachers and students to build a safe and harmonious campus [5-6].

Chinese scholar Liang Kangli believes that with the development of information technology and network technology, both the teaching of teachers and the learning of students have gradually used more and more cyberspace learning platforms. The use of the online learning space platform can more fully meet the learning needs of students, improve the learning effect, and help teachers to carry out efficient teaching [7]. Gong Yanchao believes that relying on the online teaching platform for course teaching is a teaching mode that is currently being promoted by colleges and universities. It can integrate rich online course resources to form a course-centered and student-learning-based main body. Finally, teaching resources are shared, which greatly improves the quality and efficiency of teaching [8]. Peng Caiwang believes that with the rapid development of the Internet and information technology, the use of online teaching platforms for mixed teaching has become the development trend of college classroom teaching. The application of mixed teaching mode based on the network teaching platform will promote the further development of college classroom teaching reform [9].

The development and application of a network communication platform based on artificial intelligence technology has promoted the reform and innovation of ideological and political work in colleges and universities into the Internet, and solved the new challenges faced by traditional ideological and political education. In today's informationized campus, the establishment of a network communication platform is the requirement of the times, and it is also the inherent need of the work of colleges and universities [10-11]. Among colleges and universities, teachers are the education element that has the greatest impact on college students. Our country has also been committed to exploring the role of teachers and promoting the healthy development of students through the efforts of teachers. Through the network communication platform, the active role of teachers can be brought into full play to make up for the lack of full-time staff [12]. As a group of intellectual elites in colleges and universities, in the process of communicating and interacting with students, with their profound knowledge and perfect teaching, they can touch the hearts of students. Carry out advanced ideas and exquisite business to the student group, and at the same time promote the smooth progress of student party building work. Due to the openness of online learning, the network communication platform based on artificial intelligence technology will not be restricted by time or region. The network communication platform integrates learning materials, teaching courseware, and student works into one, which not only realizes resource sharing but also stimulates the enthusiasm of teachers and students for innovation. Through the network communication platform, opportunities for mutual understanding have increased. It not only enhances students' interest in learning, solves the problems encountered in practice, but also enhances the autonomy and independence of students in learning.

2. Use artificial intelligence technology to build a network communication platform

2.1. Natural language understanding

Human beings are intelligent creatures with many intelligent behaviors, the most important of which is language. The technology of obtaining human thoughts through computer technology is called natural language processing, which can imitate human language ability, including languages of different countries and dialects of different regions. If a machine system can interpret natural language information, then this machine system can replace humans to do some tasks that require language skills. Nowadays, natural language understanding technology has been widely used in the field of language teaching and has great potential value. The emergence of natural language understanding technology provides a brand-new interface for machine intelligence systems and brings a huge revolution to the field of human-machine intelligence. Natural language understanding technology is mainly used in the fields of speech recognition and text recognition. In the teaching system, the main function of natural language understanding technology is to translate and interpret the language. For example, in the process of English teaching, voice communication is carried out through the
human-machine interface of intelligent robots, which makes the interaction between humans and machines more convenient, creating good conditions for human-machine voice communication.

2.2. Machine learning
Machine learning is an important research direction of artificial intelligence technology. Machine learning mainly analyzes existing data to draw corresponding information conclusions, reconstruct the information content of the conclusions, and finally store all the information in the system. If a system does not have the ability to learn, the system is not intelligent. Machine learning has a huge impact on people, and the education industry is no exception. Moreover, an important function of machine learning is to obtain the information contained in the data, which can also be called data mining. For example, machine learning can be used to analyze the revenue data of a certain company over the past year, obtain corresponding information, effectively analyze the reasons for the formation of the company's profit and loss, and give corresponding development strategies. To put it simply, machine learning is to learn from the problems that have occurred before in the work, obtain a lot of information, and complete the work quickly and effectively from all the information.

2.3. Smart search
The 21st century is an information age, and all areas of society are flooded with a lot of information, especially on network platforms. The large amount of information on the Internet makes it difficult for people to focus their attention, making it difficult to find the information they want. Therefore, people especially hope that there is a way to quickly find accurate information on the Internet to help them complete their query work. In response to this problem, intelligent search in the field of artificial intelligence has been developed. Smart search is a brand-new search technology that can accurately find the content you need from a large number of information systems very quickly. The most common type of artificial intelligence is intelligent search, which is also an indispensable technology in intelligent query. In other words, intelligent search is a method of logical reasoning in order to complete the search task. The advantage of intelligent search is that it can intelligently judge the corresponding information based on previous traces, delete incorrect content, and quickly present the answer to people.

3. Realization of network communication platform based on artificial intelligence technology

3.1. Long-term management mechanism for teachers to contact students
The network communication platform based on artificial intelligence technology is used for teachers to contact students, and a long-term management mechanism should be formed from the following four aspects:

(1) Organizational guarantee. Strengthening teacher awareness and establishing a connection mechanism with students can further promote the ideological education of college students and enable teachers to actively and consciously contact students.

(2) Quality assurance. Teachers with high professional quality and professional ability are the key factors. Gradually establish a high-quality teacher database on a network platform, so as to better ensure the development of teacher-student interaction and avoid it becoming a mere formality.

(3) Feedback mechanism. After the teacher assigns tasks and determines the contact person, it is necessary to rely on the network platform to provide guidance and answer questions for students, so that they can achieve a qualitative leap in life, study, and thinking.

(4) Reward and punishment mechanism. Teachers are regularly trained, and communication should be strengthened between teachers and teachers, so that teachers have a better working ability, working methods and working art to carry out students' ideological education. With students as the core, build a communication and interactive network platform to form a long-term mechanism for teacher-student contact. Make the way and channel of teacher-student contact and communication more smooth, better serve students, and help students deal with difficulties in life and study more effectively.
used in the long-term management mechanism are:

\[ f(x) = \frac{1}{1 + e^{-x}} \]  

(1)

\[ E = \frac{1}{2} \sum_{k=1}^{n} (d_k - o_k)^2 \]  

(2)

3.2. The main form of interaction between teachers and students

Based on the exchange and interactive network platform, teachers can carry out a series of activities such as topic seminars, online communication, and professional Q&A. Through the exchange and interactive network platform, it is convenient for teachers to get a more timely and comprehensive understanding of students' learning and mental performance. The heart-to-heart talk activities through the exchange and interactive network platform also overcome the limitations of geographic location. Teachers should guide students to complete social practice reports, form a highlight area on the exchange and interactive network platform, and form a good atmosphere for students to actively participate in social practice to improve their abilities and accomplishments. Teachers should base themselves on entrepreneurship and employment, and take the initiative to help students prepare and plan. Relying on the exchange and interactive network platform to plan job search and employment cases, release employment guidance information, and interpret entrepreneurship and employment policies. Improve students' job hunting ability and stimulate students' initiative and initiative in self-employment. To enable students to have an in-depth understanding of their future careers, focus on their current studies and future careers, prepare for them, and strive to improve themselves. In the process of contacting students, teachers should make video materials of successful experiences, effective practices, typical characters, and advanced deeds in time, and upload them to the exchange and interactive network platform. As a modern media, the internet has a huge influence on college students. However, various websites are now complex, and a variety of novel social thoughts are always surrounding contemporary college students, which profoundly affects the political progress and growth of college students. Teachers should make full use of the exchange and interactive network platform to publicize the political advantages of the party, and build the school's red cultural front with the teacher-student exchange and interactive network platform, so that teachers and students can unite closely to build a civilized, harmonious and smart campus.

3.3. Student user

The network communication platform based on artificial intelligence technology involves school teachers, students and administrators, and the number of users is very large. To be able to meet online communication, the platform needs to have a good guarantee in terms of security and response speed, so the platform architecture uses AJAX technology. AJAX technology has outstanding advantages that are different from traditional applications. All interactive pages do not need to be refreshed, so that data acquisition does not require reconnection to the server. This not only reduces the access pressure of the server, but also improves the page refresh speed, making the interaction between users smoother. Since there are many interactions and frequent data reading in this system, the advantages of AJAX in asynchronous interaction and dynamic update can be fully utilized. AJAX reads data as needed, avoiding data redundancy and waste, and reducing the load on the server. The interaction between the user and the server does not require operations such as refreshing the page, which greatly improves the user experience. In the layout design of the page, the master page technology is adopted. Using the master page can create a consistent style and layout for the website. It only needs to be compiled once and it can be applied to all pages. It can be used to integrate the common parts of each page into the master page to achieve a consistent page layout. Learn about relevant policies and regulations through wonderful reading, grasp the dynamics of the school, and solve the daily problems that students pay close attention to. The comment column collects student feedback, and provides students with a fast
channel for understanding information and benign interaction.

4. System test

4.1. Function test

| Test results      | Frequency | Percentage |
|-------------------|-----------|------------|
| Function correct  | 12        | 80%        |
| Function error    | 1         | 6.7%       |
| No response       | 2         | 13.3%      |

According to Table 1 and Figure 1, we can know that the system function is tested 15 times, and the test results show that: 12 times the function is correct, accounting for 80%. There was 1 function error, accounting for 6.7%. There were 2 non-responses, accounting for 13.3%. In-depth analysis of the functional error and non-response situation revealed that the functional error was caused by the incorrect function path collocation, and the non-response was caused by the network stuck. Therefore, excluding reasons other than the system, the function of the system is very accurate.

4.2. Performance testing

| Number of connections | Memory footprint (MB) |
|-----------------------|-----------------------|
| 200                   | 292                   |
| 400                   | 327                   |
| 600                   | 378                   |
| 800                   | 422                   |
| 1000                  | 405                   |
According to Table 2 and Figure 2, as the number of connections increases, the memory footprint of the server also increases. When the server maintains 1000 connections, the memory footprint does not exceed 450MB. Since servers generally have a memory capacity of tens of GB to tens of GB, the performance of this system is sufficient to support nearly 10,000 users at the same time.

5. Conclusion
The network communication platform based on artificial intelligence technology, as an important auxiliary means for teachers to contact students with a long-term management mechanism, has become an indispensable and important support in the process of communication between teachers and students. Therefore, based on the campus network environment, establishing a network platform to form a good communication and interaction environment is a task and work that the school needs to pay attention to. In this paper, based on the needs of our country's colleges and universities informatization construction as the background, this paper proposes a design scheme of an interactive network platform for teachers to contact students based on artificial intelligence technology, and develops and realizes an interactive network platform based on the design scheme.

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