



Application of Artificial Intelligence Technology in the Information Service of Universities

Pingping Zhang*

Chongqing College of Architecture and Technology, Chongqing, China

ABSTRACT

The development of Internet technology is getting faster and faster, and technologies such as Internet + and cloud computing have been improved in many fields. The educational informatization department of colleges and universities is responsible for the informatization of college education, and the ultimate goal of educational informatization is materialization. The research purpose of this paper is the application of artificial intelligence technology in the information service of colleges and universities. A questionnaire survey was used to compare and analyze the satisfaction of teachers and students with the informatization service of artificial intelligence technology in colleges and universities. The experimental results show that the lowest satisfaction of faculty users and student users are service products, and information service products are particularly important for students, so the satisfaction of work products needs to be improved rapidly.

CCS CONCEPTS

• **Information systems** → Information systems applications; Decision support systems; Data analytics.

KEYWORDS

Artificial intelligence technology, University informatization construction, Informatization service, Application and analysis

ACM Reference Format:

Pingping Zhang*. 2022. Application of Artificial Intelligence Technology in the Information Service of Universities. In *2022 The 4th international Conference on Intelligent Science and Technology (ICIST) (ICIST 2022), August 10–12, 2022, Harbin, China*. ACM, New York, NY, USA, 4 pages. <https://doi.org/10.1145/3568923.3568932>

1 INTRODUCTION

The focus of government work has gradually shifted to the informatization work of colleges and universities. Not only do information departments have to carry out high-level, informed project planning, but more importantly, make sure they are put to good use by users. However, as an emerging technology, what role will education informatization play in existing universities, and how college

students will accept and cooperate with university informatization construction are the practical problems faced by university informatization construction [1].

In recent years, people's interest in satisfaction research has been growing, especially in the service industry. Satisfaction research has become one of the important ways for service providers to find problems and improve services. According to Basaif AA, artificial intelligence (AI) is receiving increasing attention. Therefore, there are applying artificial intelligence to analyze the risks. However, for some, it is unknown, with understanding of current risk management approaches. Therefore, this study aims to professionalism of industry workers in the use of artificial intelligence for risk analysis. A survey of 184 employees of the company found that very few employees understand AI and its role in risk analysis; there is no automation or use of AI in operations; and a large percentage do not employ AI. Study or take some courses at university; many companies do not offer many or few AI projects [2]. Lawlor B presents highlights the Place in Research, Discovery and Deployment of Intelligence" in Alexandria, VA. The purpose is to explore the application in various fields of education. Topics covered include; the challenges of building effective models for AI and machine learning; how publishers can use AI and machine learning to improve Search and User Experience. Synthesized research experience; practical case studies of the use of AI and machine learning in machine learning improvement [3]. Conduct research activities to effectively improve service quality and provide support for college informatization services.

This paper studies the definition of artificial intelligence concept, widely used in the university information service of artificial intelligence technology, artificial intelligence technology and modern information technology differences and the university information management system. In the experiment, the questionnaire was used to compare and analyze the satisfaction of staff users and students.

2 RESEARCH ON THE APPLICATION OF ARTIFICIAL INTELLIGENCE TECHNOLOGY IN UNIVERSITIES INFORMATIZATION

2.1 Definition of artificial intelligence concept

In everyday life, the definition of artificial is man-made. We must also understand the definition of intelligence in order to understand the concept of artificial intelligence. Intelligence is the cognitive ability of an individual to learn and remember from experience [4]. Artificial intelligence is the representation and execution of human intelligent activities by computers.

Permission to make digital or hard copies of all or part of this work for personal or classroom use is granted without fee provided that copies are not made or distributed for profit or commercial advantage and that copies bear this notice and the full citation on the first page. Copyrights for components of this work owned by others than ACM must be honored. Abstracting with credit is permitted. To copy otherwise, or republish, to post on servers or to redistribute to lists, requires prior specific permission and/or a fee. Request permissions from permissions@acm.org.

ICIST 2022, August 10–12, 2022, Harbin, China

© 2022 Association for Computing Machinery.

ACM ISBN 978-1-4503-9723-0/22/08...\$15.00

<https://doi.org/10.1145/3568923.3568932>

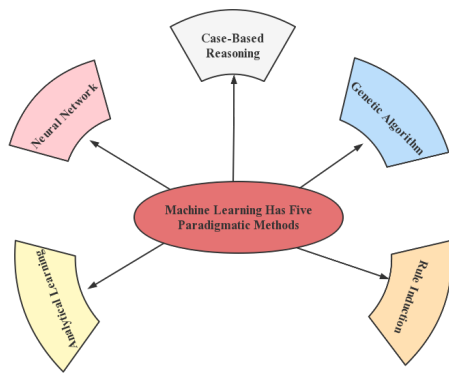


Figure 1: Machine Learning Has Five Paradigmatic Methods

2.2 Artificial intelligence technology widely used in college informatization services

In recent years, the research field of artificial intelligence has been expanding. There are so many branches of artificial intelligence research, and there are countless algorithms under each branch. Due to the limited knowledge of the author, this paper only selects a few informatization services in colleges and universities in recent years. Artificial intelligence technology, which is widely used in the field and has relatively mature technology, will be explained.

(1) Computer Vision

Computer Vision, or CV for short [5]. The development of computer vision is advancing by leaps and bounds, and computer vision has paved the way for the development of artificial intelligence. In layman's terms, computer vision is the study of computer vision capabilities. ①Computer vision usually involves the evaluation of images or videos. The British Association for Computer Vision defines computer vision as "the automatic extraction, analysis and understanding of useful information from a single image or series of images". ② In simple terms, the main process of computer vision recognition is to extract image feature information from images, videos, etc., and then learn feature values through different algorithm models, and finally match and recognize objects, so that the computer has the ability to recognize objects (referring to any object). Ability. For example, face recognition is one of them. In recent years, the development direction of computer vision has mainly turned to deep learning algorithms, and face recognition technology has also been widely used [6]. Because the traditional library "swipe card" method is prone to loss of cards or certificates, information forgery or theft by others, this method of using objects for identity verification still has obvious shortcomings. ③ Compared with this, it is much safer and more reliable to use one's unique biometric information for identity verification. Today's face recognition technology can capture images in any natural state of people, and the recognition success rate is very high, and people do not need any physical contact with the machine, which can be described as accurate, safe and hygienic. At present, many university libraries across the country have applied face recognition technology.

(2) Speech recognition technology

Talking is an effortless and extremely efficient form of communication [7]. The speech dialogue and retrieval we use in our daily life are applications of speech recognition technology. Speech understanding is a function that enables a system to understand spoken input from a microphone and respond correctly, which is called speech recognition technology. The development of speech recognition begins with machine translation, and the three early methods are direct translation method, transformation method and intermediate language method. ① But today's speech recognition mostly uses feature extraction methods. Feature extraction helps to disambiguate words by extracting relevant information from speech. It uses feature vector sets, analog-to-digital conversion products to understand speech and correctly label sounds. ②Simply put, speech recognition first samples the sound, extracts feature values, quantizes each sampled value, and produces a compressed digital representation of the sound wave. Once the sound source is reduced to a set of features, the next task is to identify the words represented by these features. The basic steps are: firstly, starting from the sound wave analysis, extract the features related to the pronunciation units that make up the word; the clear characteristics of the pronunciation units are uncertain, in the final word recognition stage, a model is used to combine the refined pronunciation unit sequence. Match against sequences of words. The input to the recognition system is a sequence of features, and if you want to analyze a large word bank, you can use a Markov model. Speech recognition technology has made rapid progress in recent years, such as WeChat input speech can be directly converted into text, Apple's Siri intelligent dialogue system, etc. are prominent representatives.

(3) Machine Learning

The roots of machine learning can be traced back to playing checkers. Cramming is where the program remembers good moves from previous games. Insights into checkers were obtained by interviewing human checkers players and embedded in the program. In this way, games became the place where machine learning originated [8]. Up to now, Machine Learning Has Five Paradigmatic Methods: (1) Neural Network; (2) Case-Based Reasoning; (3) Genetic Algorithm; (4) Rule Induction; (5) Analytical Learning (see Figure 1). Deep learning is a method of machine learning. Below we will briefly introduce this method of machine learning.

Deep learning is one of the most widely used main branches in the field of machine learning in recent years. It is based on the principle of biological brain neurobionics, and is based on a large number of sample training. It is a further development of artificial neural networks. In recent years, with the advancement of artificial intelligence technology, the computing power has been greatly improved, coupled with the massive data accumulated by the Internet and the wave of big data, deep learning has ushered in an unprecedented development. Deep learning gradually evolved from artificial neural networks. After fifty or sixty years of development, many classic network types have been formed and have been widely used in many fields. Deep belief networks, automatic encoder-decoder networks, and generative adversarial networks belong to the category of unsupervised learning; recurrent neural networks are used to deal with time series forecasting problems. The convolution layer is the core component of the entire network.

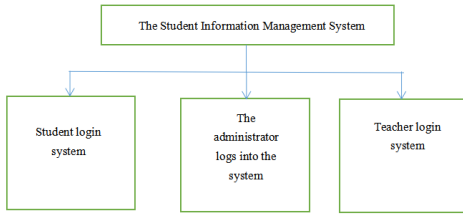


Figure 2: Block diagram of the Student Information Management System

It consists of several convolution kernels. Each convolution operation is the operation of the convolution kernel on a certain area on the input feature map, and the entire area convolution is completed by sliding. A convolution kernel generally extracts shallow features such as lines. Using multiple convolution kernels to extract simple features at the same time, the entire network can extract high-level abstract features, which can be used for visual tasks such as image recognition and target segmentation.

2.3 Differences and connections

Due to the continuous development of high technology in recent years, people's understanding of artificial intelligence and modern information technology is somewhat confusing. To more clearly define the concept of artificial intelligence technology [5], we will compare the two concepts here. The importance of modern information technology lies in the processing of information.

Artificial intelligence technology is also an information processing technology, so there is a certain overlap in functions. Since there may be different solutions to the same problem, the difference between them is that many modern information technologies are based on traditional technical methods, especially in terms of algorithmic methods and models, mainly one-off calculations and mathematical modeling [6]. Artificial intelligence technology shows its "intelligent" problems, manifested in the most powerful computing power of artificial intelligence technology, more optimized and innovative algorithms, more complex and deeper structures, and massive data, processing data in various ways. This is moving this is especially popular in the age of the Internet and data sharing. So obviously different techniques are designed to solve different problems. Compared with current information technology, artificial intelligence technology is better at dealing with some large-scale problems and better at dealing with unstructured data problems. Decide. In addition, artificial intelligence technology also tends to solve problems that integrate a large amount of human intelligence, such as medical research, two-player games, etc., and has achieved some brilliant results [7]. Therefore, the development and development of artificial intelligence technology is no different from the infrastructure and development of modern information technology.

2.4 University information and information management system

Along with our related teaching management work flow in teaching is bound to change. For this impossible situation, we leave some common interfaces in the first programming phase to ensure that

we can improve and upgrade later [11]. The block diagram of the student information management system is shown in Figure 2.

3 INVESTIGATION AND RESEARCH ON THE APPLICATION OF ARTIFICIAL INTELLIGENCE TECHNOLOGY IN THE INFORMATION SERVICE OF UNIVERSITIES

3.1 Investigation objects and methods

The object of this study is the users of the Information Department of M City University, including students and teachers. Since the research is about public service information, the questionnaire design is the same, and the survey is conducted through a questionnaire.

3.2 Sample size and data processing

Considering the number of students and university members and the needs of research questions, we selected a total of 400 questionnaires for students and teachers for investigation. A total of 400 questionnaires were recovered, and 380 valid questionnaires were recovered, including 300 for students and 80 for teachers. The t-test formula used in this paper is as follows:

$$t = \frac{\bar{X} - \mu}{\frac{\sigma X}{\sqrt{n}}} \quad (1)$$

$$t = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\frac{(n_1-1)S_1^2 + (n_2-1)S_2^2}{n_1+n_2-2} \left(\frac{1}{n_1} + \frac{1}{n_2}\right)}} \quad (2)$$

Among them, formula (1) is the single population test, which is the sample mean, s is the sample standard deviation, and n is the number of samples. Equation 2) is a double population test.

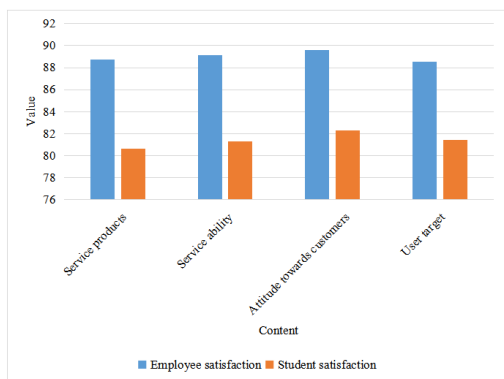
4 APPLICATION ANALYSIS AND RESEARCH OF ARTIFICIAL INTELLIGENCE TECHNOLOGY IN THE INFORMATION SERVICE OF UNIVERSITIES

The Satisfaction of Faculty Users and Student Users. Combined with the data on the importance of indicators, the information technology department should focus on improving the satisfaction of service products, improving the quality, and focusing on practical results. According to the survey data, from the four aspects of service products, service attitudes, service capabilities and user goals, this paper analyzes the teacher users and student users of the informatization service of a university in M city. Table 1 and Figure 3 show the specific comparison of satisfaction between faculty users and student users:

A survey on the satisfaction of teachers and students in the information service of a university in M city, the experimental results show that the satisfaction level of teachers is higher, and the satisfaction level of students is slightly lower. Among them, the biggest gap between teachers' satisfaction and students' satisfaction is service products, the satisfaction of teachers is 88.7, and the satisfaction of students is 80.6. The least satisfied teachers and students are service products, so this service needs to be improved.

Table 1: Comparison table of user satisfaction between faculty members and student users

Content	Employee satisfaction	Student satisfaction
Service products	88.7	80.6
Service ability	89.1	81.3
Attitude towards customers	89.6	82.3
User target	88.5	81.4

**Figure 3: Comparison chart of staff and student user satisfaction**

5 CONCLUSIONS

The basis of information is data security. Data centers can solve data security problems. Informatization construction should also solve the problems that will arise in the future. Education informatization is the only way for the renewal of higher education, and the process of informatization construction is long and arduous. The information construction plans of colleges and universities are large-scale and time-consuming. In the future, the development of educational informatization will penetrate deeply into the curriculum and learning process of colleges and universities, and there is still a long way to go. The basic information platform needs to be continuously optimized and upgraded to adapt to the college's informatization development plan. On the basis of the continuous operation of the current platform, we need to study the impact

of a large amount of data on actual work and enter the advanced stage of educational informatization. This is the future direction of college informatization.

REFERENCES

- [1] Bissonnette V , Mirchi N , Ledwos N , *et al.* Artificial Intelligence Distinguishes Surgical Training Levels in a Virtual Reality Spinal Task. *The Journal of Bone and Joint Surgery*, 2019, 101(23):1-1.
- [2] Basaif A A , Alashwal A M , Mohd-Rahim F A , *et al.* Technology Awareness of Artificial Intelligence (AI) Application for Risk Analysis in Construction Projects. *Malaysian Construction Research Journal*, 2020, 9(1):182-195.
- [3] Lawlor B . An overview of the NFAIS Conference: Artificial intelligence: Finding its place in research, discovery, and scholarly publishing. *Information Services & Use*, 2019, 39(4):1-32.
- [4] Bibel W , Furbach U . Formation of a Research Discipline Artificial Intelligence and Intellectics at the Technical University of Munich. *KI - Künstliche Intelligenz*, 2019, 34(1):1-1.
- [5] M. A. Egorova, Minbaleev A V . THE MAIN FEATURES OF THE INTRODUCTION OF DIGITAL INNOVATIVE METHODS IN EDUCATIONAL ACTIVITIES AND THE SIGNIFICANCE OF THEIR APPLICATION FOR TEACHING FOREIGN STUDENTS. *Courier of Kutafin Moscow State Law University (MSAL)*, 2021, 2021(1):27-38.
- [6] Khalid N. Artificial intelligence learning and entrepreneurial performance among university students: evidence from Malaysian higher educational institutions. *Journal of Intelligent and Fuzzy Systems*, 2020, 39(4):5417-5435.
- [7] Viktorova L . Prospects for the application of modern technologies and artificial intelligence in higher education institutions with specific learning conditions. *Humanities Science Current Issues*, 2021, 2(35):180-186.
- [8] Barton D N , Kelemen E , Dick J , *et al.* (Dis) integrated valuation – Assessing the information gaps in ecosystem service appraisals for governance support. *Ecosystem Services*, 2018, 29(1):529-541.
- [9] Shtar G , Rokach L , Shapira B , *et al.* Artificial Intelligence – Game Changer in the Teratology Information Service. *Reproductive Toxicology*, 2020, 97(1):3-4.
- [10] L Schüler-Faccini, Moreira T D , Barbosa C , *et al.* Syphilis prevalence in the Brazilian population and calls to Brazilian Teratology Information Service. *Reproductive Toxicology*, 2020, 97(1):12-13.
- [11] Moyns, Emma, Williams, *et al.* The role of the UK National Poisons Information Service (NPIS) in the diagnosis of death in poisoned and non-poisoned patients. *Clinical toxicology: the official journal of the American Academy of Clinical Toxicology and European Association of Poisons Centres and Clinical Toxicologists*, 2018, 56(6):485-486.