



# Innovation and Entrepreneurship Development of Artificial Intelligence(AI) based on Big Data and Cloud Computing(CC)

Xiaojian Han<sup>1, 2, \*</sup>

<sup>1</sup>*Xi'an Academy of Fine Arts, Xi'an, 710065, Shaanxi, China*

<sup>2</sup>*Shaanxi Normal University, Xi'an, 710062, Shaanxi, China*

*hanxiaojian\_001@126.com*

## Abstract:

With the comprehensive application of BD and CC technology and the vigorous development of Art Majors in Colleges and universities across the country, the emerging course of Innovation and Entrepreneurship(IAE) needs more and more talents with innovation ability to tap their productivity, and more and more art professionals with IAE ability. Based on the development of AI IAE Based on big data(BD) and CC, taking the IAE of Art College as an example, this paper discusses the resource construction of art education IAE platform in the era of BD, puts forward the intelligent analysis technology based on BD and the Shenjing network algorithm of CC platform, and investigates and analyzes the IAE needs of students of eight art colleges, Verified that the AIbased on BD combined with CC has created a broad development space for college students of the Academy of fine arts to carry out artistic creativity and entrepreneurship.

**Keywords:** *Big Data, Cloud Computing, Artificial Intelligence, Innovation and Entrepreneurship Development*

## 1 INTRODUCTION

With the deepening of the reform of China's higher education system, the continuous improvement of market economy and the continuous development of IAE, the cultivation of innovative talents in art majors will occupy a pivotal position in running colleges and universities. The research results on the cultivation of innovative talents in art majors can not only drive the improvement of the IAE education system of the University, but also bring positive external benefits to the teaching mode reform of non art majors in other domestic colleges and universities, and bring new energy to the IAE of the whole country.

Sandhuak compares and analyzes various cloud based BD frameworks. Various research challenges are defined in terms of distributed database storage, data security, heterogeneity and data visualization. CC services provide a powerful environment for storing a large amount of data. Processing BD is a time-consuming task. Large computing clusters are needed to ensure successful data storage and processing [6]. Obschonkam used a machine learning model based on 5.25 million users and 1.5

billion tweets to estimate the five personality characteristics and entrepreneurial personality characteristics of 1772 U.S. counties. The personality assessment based on twitter shows that it is closely related to county-level entrepreneurial activities. It is found that it has preliminary enlightenment for the research and practice of entrepreneurial regions and ecosystems, as well as the regional economic results interacting with local culture [5].

The era of BD can provide a good practice environment and corresponding technical support for the construction of entrepreneurship practice platform for art majors. The application of CC technology can meet the real-time and large-scale supply of resources. Taking the era of BD as the background, on this basis, make full use of CC technology to realize the optimal presentation of all links of the platform, so as to meet the more convenient and effective learning experience of art students on the IAE platform, more effectively integrate and use all kinds of entrepreneurial resources, improve learning quality and efficiency, combine teaching with fun, and realize the timely experience from two-dimensional to three-dimensional, visual to auditory [4] [7].

## 2 AI IAE DEVELOPMENT OF BD COMBINED WITH CC

In traditional university teaching, although most university courses are open and non professional students are allowed to participate, this mode still has concentrated teaching resources. University education resources can only be concentrated in universities, which can not be spread by other universities and society. Network teaching faces a wider audience. Students and social personnel give lectures in universities or other universities, so education is no longer limited to universities. In fact, there are many online teaching modes. The impact of online teaching mode in the era of big data and management of higher education is far-reaching. It requires not only traditional classroom education management, but also online teaching to ensure good teaching results.

### 2.1 Neural Network based on CC Platform

Artificial neural network is a theoretical mathematical model simulating human brain activities. It is a nonlinear signal processing system characterized by self-organization, self-adaptive and large-scale distributed parallel computing. It not only has strong ability of pattern recognition, classification and functional approximation, but also has good fault tolerance. The learning of BP neural network is completed by solving an optimization problem. In essence, BP neural network realizes classification and recognition by modeling the sample data set, that is, establishing the corresponding relationship between input and output [2]. A unit can be regarded as a nerve, which can be expressed as:

$$G = \int (EP + Q) \quad (1)$$

e represents the weight vector, Q represents the threshold vector, P represents the input vector, which  $\int$  is the transfer function.

BP neural network needs to select training rules for training. In this process, the weight of the connection is adjusted to minimize the error between the expected output (actual operating conditions) of all training data sets and the output (calculated operating conditions) of the network. The learning of BP neural network is completed by specific training algorithm, which is obtained by imitating the learning rules of biological system learning mechanism. In order to get the performance parameters of training set and verification set, check whether there is a new network topology every time.

### 2.2 IAE Development of Art Major Based on BD and CC

The contents of university IAE plan mainly include the following two aspects: establishing reasonable entrepreneurship training objectives and setting up appropriate courses. Because the quality standard of entrepreneurship training objectives and the setting of courses are closely related to the development of talents [3].

The establishment of the IAE Model of art major in the era of BD requires four steps. The first step is to locate the target population. The original intention of the construction of this platform is to cultivate more high-quality art talents and supply them to the society. Therefore, in the positioning of the crowd, we should always focus on the learning personality and educational needs of art students. We should take the group of art students as the goal and the educational needs of art students as the core. The formulation of all links and contents of the platform always focus on the needs of students, take meeting the educational needs of art students as our own responsibility, and set professional courses and other plates as the center. The second step is the orientation of people's needs. While meeting the needs of art education, we should always follow and learn from the Internet giants' grasp of the market and people in the direction of platform planning, and firmly grasp the three basic elements of the Internet platform, namely, people and people, people and information, people and goods, so as to enrich and deepen the construction and planning of art education platform. The third step is to collect all needs and basic elements after in-depth understanding of user needs, use the assistance of technology and network to realize the construction of art education platform, further modify and improve the use of the platform by means of art, and organically integrate art, technology and demand to realize the preliminary construction of the platform. Step 4: when the infrastructure and planning are complete, the platform will combine the latest technology to provide more optimized use methods and the most fresh and interesting use and interaction links [8]. At the same time, it will also use the latest technologies and concepts to launch new technology platform windows such as 3D Museum, so as to provide art students with a more direct and comprehensive knowledge system and resources.

#### 2.2.1 Resource Construction of Art Education IAE Platform in the Era of BD

The art platform in the era of BD can quickly and massively integrate and integrate various resources, and present them in the form of a platform according to a certain form and distribution. Therefore, in terms of resource construction of the platform, the platform will provide high-quality resource courses for teachers from

various art colleges and universities at home and abroad. At the same time, it will also provide corresponding tutor exchange columns in the course, similar to the form of microblog big v. students can leave messages for teachers under the course, and teachers can select corresponding questions from the messages to communicate with students. By providing diversified teacher resources to meet the growing needs of art students. After that, real-time online video open courses will be started one after another to realize face-to-face courses on the network platform, and use three-dimensional images to create a sense of experience and improve the success rate of entrepreneurship [9]

### 2.2.2 Inevitability of innovation and entrepreneurship education in Art Colleges

Art students are different from those in other basic disciplines. They have active thinking, rich imagination and innovative consciousness. They can perfectly combine their creativity and artistic sense with modern science and technology, design, produce or create works with artistry, spirituality and creativity, and have the unique advantages of realizing discipline professional entrepreneurship. Whether considering the development needs of art education or the professional characteristics of the Academy of fine arts, it is imperative to carry out innovation and entrepreneurship education in the Academy of fine arts.

From the commonness of art major, art major has strong practicality and creativity, which requires students to constantly use innovative thinking and transform good creative ideas in the learning process. Through professional learning, students can obtain comprehensive abilities such as aesthetics, perception, innovation and practice. Such comprehensive quality is essential for innovation and entrepreneurship [1].

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From the perspective of the design majors in the fine arts major, the design majors have strong applicability and universality, covering many art fields such as environmental art, visual communication, clothing, industry, animation, etc., which are widely related to people's basic necessities of life. These characteristics determine that art and design graduates have a broad space for innovation and entrepreneurship, and can choose the best according to their professional advantages.

From the perspective of painting majors among the fine arts majors, the students of the Academy of fine arts have novel creative ideas and do not need to be put into production on a large scale. As long as they can bring aesthetic enjoyment to people, they can create all kinds of works. Compared with the products of other industries, the production cycle of each work of art is significantly shorter. The essence of art entrepreneurship is an industry that sells majors and creativity. As long as they have creativity, they can create new products, This kind of entrepreneurial renewal speed is much higher than that of other industries. We must deal with the relationship between artists and how to serve the society.

From the perspective of the rapid development trend of innovation and entrepreneurship education, with the strong policy support of the state and Society for innovation and entrepreneurship, it also creates a broad development space for college students of the Academy of fine arts to carry out art innovation and entrepreneurship. As a professional art talent receiving systematic art education, art students will be more willing to choose to carry out entrepreneurial activities during school or after graduation.

## 3 INTELLIGENT ANALYSIS TECHNOLOGY BASED ON BD

Approximate entropy has the advantages of less data points, strong anti-interference ability and wide application range. It is suitable for deterministic and random signals. Therefore, approximate entropy can be used as a characteristic parameter to reflect the development of IAE.

Let the data with length  $m$  be represented by  $x = [x(1), X(2), \dots, X(m)]$ . The specific algorithm of approximate entropy of data  $X$  is as follows: given the threshold  $s$ , count the number that the distance between each row and other rows is less than the threshold  $R$ , that is,  $d[x(I), X(J)] < s$  is recorded as  $\min(s)$ , that is

$$M_i^n = \sum_{\substack{j=1 \\ j \neq i}}^n K(d[X(i), X(j)] - s) \quad (2)$$

Compare  $\min(s)$  with the total distance  $m - n$  to obtain

$$C_i^m(s) = \frac{M_i^n(s)}{M - n}, i = 1, 2, \dots, M - n + 1 \quad (3)$$

Find the logarithm sum of  $CIN(s)$ , and then find its mean value, i.e

$$\tilde{\lambda}^n(s) = \frac{1}{M - n + 1} \sum_{i=1}^{M-n+1} \ln C_i^n(s) \quad (4)$$

### 4 EXPERIMENTAL TEST AND ANALYSIS

IAE consciousness is the strong desire of students in the process of IAE, and the will, interest and attitude shown in their behavior. It is not only the source of creativity in people's thinking consciousness, but also the internal driving force for IAE. The survey found that there are problems in the IAE awareness of students in the eight art colleges, as shown in Table 1 and figure 1.

Table 1. Statistical table of IAE awareness of college students in eight Art Colleges

	Number of people	Proportion (%)
Clear understanding	184	24.07%

have interest in	176	22.78%
Necessary and rewarding	116	14.96%
Understand relevant policies	85	11.18%
Entrepreneurship is far away from yourself	477	64.23%
Have an idea	311	40.35%
Number of students who have started a business	57	5.88%
Driving employment	13	1.96%

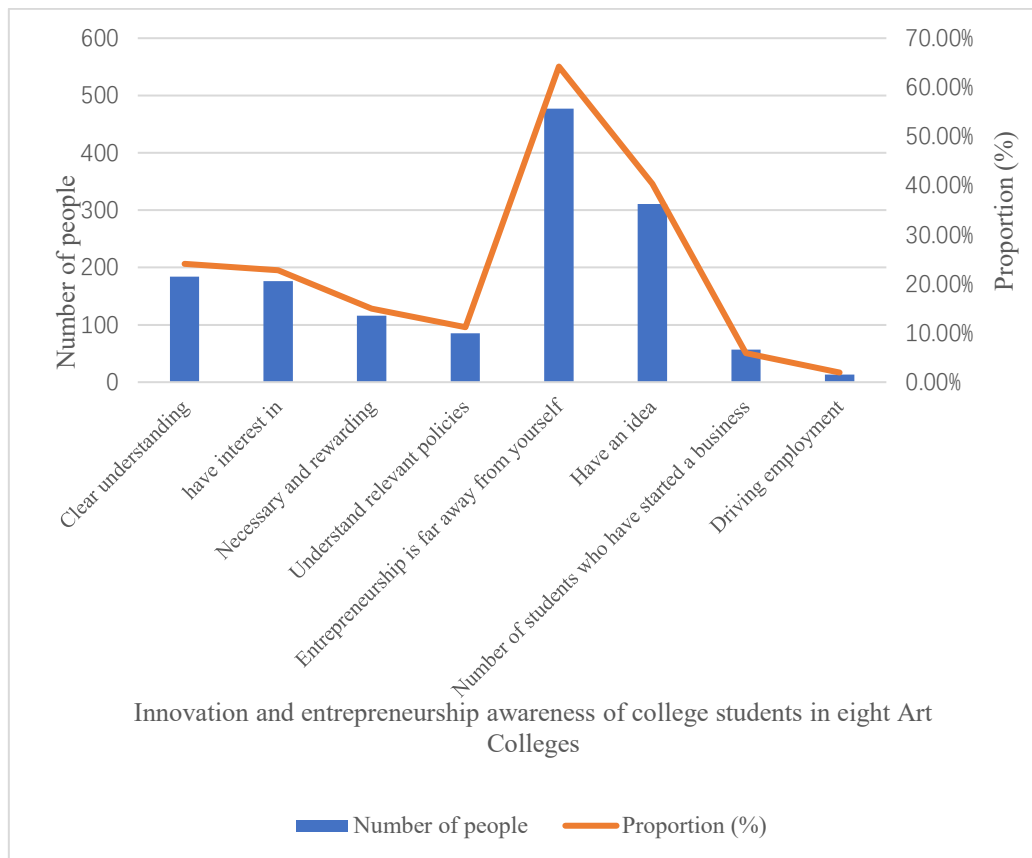


Figure 1. IAE awareness of college students in eight Art Colleges

According to the survey data, 24.07% of the students have a clear understanding of the concept of IAE, 22.78% are interested in IAE activities, 14.96% think it is necessary and fruitful to participate in IAE activities, only 11.18% of the students understand entrepreneurship related policies, and 64.23% of the students think entrepreneurship is far away from themselves, so they think IAE education is dispensable. 40.35% of the students have their own entrepreneurial ideas, while only 5.88% of the students actually start a business, and only

1.96% of the employment driven by entrepreneurship. It can be seen that there is a certain deviation in the cognition of art college students about IAE, but their interest in IAE is significantly higher than that of students in other colleges and universities. There are more students with entrepreneurial ideas, and the proportion of students who have started a business is also significantly higher than that of students in other colleges and universities.

Next, a survey was conducted on the entrepreneurship of students participating in IAE under traditional education and AI(improving interest, maintaining learning, improving learning efficiency, improving

practical ability and entrepreneurship success rate). The survey results are shown in Figure 2

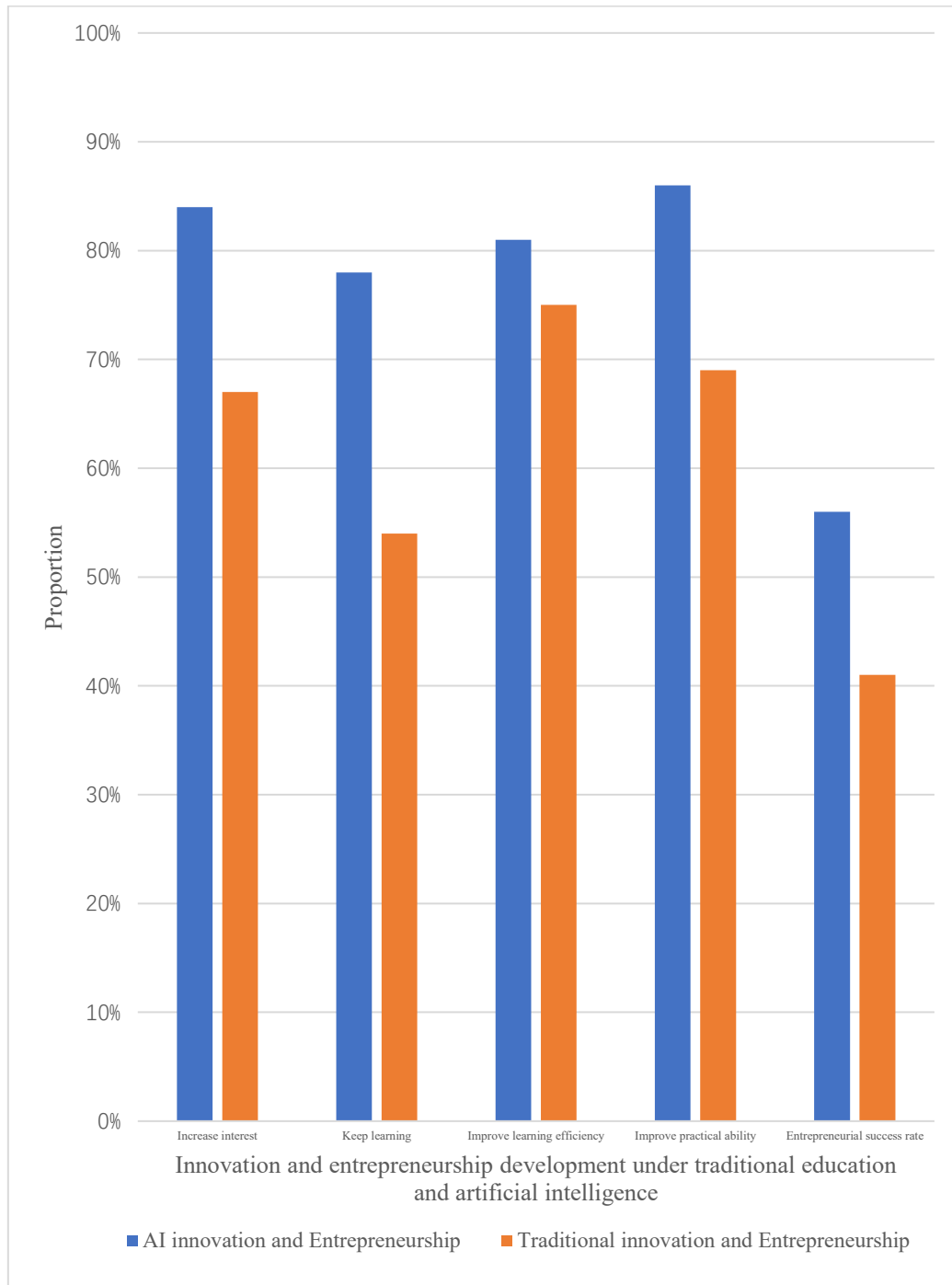


Figure 2. IAE development under traditional education and artificial intelligence

The survey shows that 84% of students said that IAE Education under AI can improve learning efficiency and 56% of entrepreneurship success rate, while only 67% of students thought that IAE Education under traditional education can improve learning efficiency and 41% of entrepreneurship success rate. It can be seen that the development of AI IAE Based on BD and CC has improved the success rate of entrepreneurship. It is

imperative to carry out IAE education in the Academy of fine arts.

### 5 CONCLUSIONS

Based on the IAE development of AI combined with BD and CC, taking the IAE development of students in the Academy of arts as an example, this paper discusses

and analyzes the establishment of IAE development of art major combined with BD and CC, as well as the inevitability of IAE education in art colleges. The art platform in the era of BD can quickly and massively integrate and integrate various resources, and according to a certain form and distribution, it is presented in the form of platform, which is conducive to the development of IAE. However, there are also some deficiencies. This paper mainly discusses the IAE development of Art College under the combination of BD and CC. The IAE development of AI needs to be further studied.

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