Application of Correlation Analysis in Reconstruction College Curriculum System

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Abstract. This case takes IBM SPSS as a tool, takes the data of artificial intelligence courses and big data courses as samples, and uses the mathematical method of correlation analysis to process any of this information. According to the analysis results, a scheme of reconstructing artificial intelligence curriculum system proposed. This paper also clearly points out that in today's teaching reform, using advanced mathematical statistical analysis methods for teaching research is a scientific process and necessary method, which is conducive to accurate teaching. This paper also explains and introduces in detail how to use the algorithm of correlation analysis, the operation using IBM SPSS, and the calculation results output in tabular form.

Keywords: teaching Correlation analysis · application of IBM SPSS · teaching reform of artificial Intelligence course

1 Introduction

AI, the name for an emerging discipline, was formally proposed at the Dartmouth conference in 1956, and its developmental course, although it can be attributed to three stages of gestation, formation, and development, is still well recognized by industry as that year being the Meta Year of AI technology development. With the progress of the times, it has now been recognized that the following three points: first, mathematical based theoretical research is indispensable for AI technology; Their second is that the development of AI technologies is to rely on computer devices with super-computing and data analysis capabilities, and their third is the R & D field of modern science and technology, which is compatible and communicate. Beyond that, of course, and more importantly, it has been recognized that: including the AI technology itself, all progress with the age, with different understandings. A more comprehensive view of AI technologies began in the 1970s. It is now recognized that: intelligent technology is a burgeoning disciplinary field on the basis of multidisciplinary studies in computer science, cybernetics, information science, Neurology, philosophy, and linguistics. From an engineering perspective, AI is to use artificial methods to enable machines with functions related to human intelligence, such as: judgment, reasoning, proof, perception, understanding, thinking, recognition, planning, design, learning, and problem-solving, among other thinking activities. In that computer era, the scientific and technical workers, keen research questions mainly

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focus on how to improve the work efficiency of computers through parallel computing, distributed storage, and distributed computing. And AI technology researching, mainly focused on how various sectors can create expert systems or assist decision systems to replace or partially replace people's mental work and improve work efficiency [1].

2 Correlation Analysis

In April 2018, in order to implement the document (GF [2017] No. 35), the notice of the State Council on printing and distributing the development plan of the new generation of artificial intelligence is to guide colleges and universities to aim at the forefront of world science and technology, continuously improve the scientific and technological innovation ability, talent training ability and international cooperation and exchange ability in the field of artificial intelligence, and provide strategic support for the development of the new generation of artificial intelligence in China. The Ministry of education specially formulated the action plan for artificial intelligence innovation in Colleges and universities and issued a notice. Therefore, colleges and universities actively carry out curriculum construction and teaching research of artificial intelligence specialty [2]. The situation of domestic colleges and universities in recent years is summarized as follows.

The following Table 1 shows the statistics of the number of AI majors set up in colleges and universities approved by the Ministry of Education in recent years. The data was collected by the author on the Chinese Internet.

We use the professional data statistical analysis software IBM SPSS as a tool to make a detailed analysis of Table 1. Through the hypothesis test and the analysis algorithm of the correlation between the data, quite useful analysis results are obtained. These results can reveal and guide us to carry out the teaching reform of artificial intelligence curriculum system, that is, when we plan and formulate the curriculum system of colleges and universities, we should comprehensively consider the overall needs of national construction for all kinds of professional talents according to the overall national plan, and

Table 1. The data collected

Time	Undergraduate (Big data)	Undergraduate (AI)	Junior college (Big data)	Junior college (AI)
2016	3			
2017	32	5	64	
2018	253	35	212	
2019	256	180	460	171
2020	231	168 [50]	619	831
[50] Containing 38 Institutes				

Note: University with established independent AI colleges have reached 38 by the end of 2019, encompassing all undergraduate, postgraduate level specialties. As of 2022, there are more than 1000 colleges and vocational schools offering AI majors. The data in the Table 1 are collected and sorted out by the author from the Chinese Internet

improve the talent training plans at different levels, In order to meet the needs of current national construction [3]. The following Fig. 1 and Fig. 2 are the process of importing data.

Table 2 shows the results of statistical analysis.

In Table 2, Table 3, Table 4 and Table 5 shown, we have used the symbols v1, v2, v3 and v4 to represent the names of undergraduate big data majors, undergraduate AI majors, big data junior college education, and AI junior college education, to simplify the table of analysis results of their correlation.

Through the relevant data analysis results shown in Table 2, Table 3, Table 4 and Table 5, we have learned that the professional development of artificial intelligence is moderately related to the professional development of big data [4]. The development process of artificial intelligence specialty is more closely related to the development of data science and big data specialty. In other words, the advent of the era of big data has had a great impact on the development of artificial intelligence technology [7].

Further analysis, we can know the following four research results.

First, in Colleges and universities, the growth of artificial intelligence specialty and big data specialty shows a linear relationship and an upward trend. Second, in recent years, these two majors have been set up and enrolled in higher vocational colleges, which shows that these two professional technologies are rapidly popularized in China. At the same time, the growth trend of the number of artificial intelligence specialty

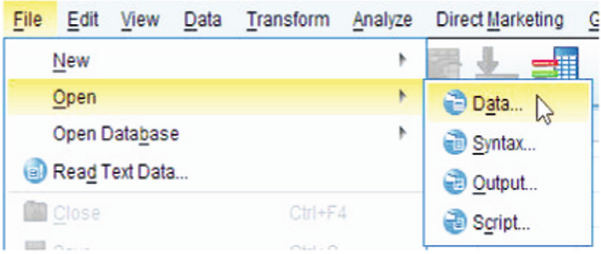

Fig. 1. The process of importing a dataset

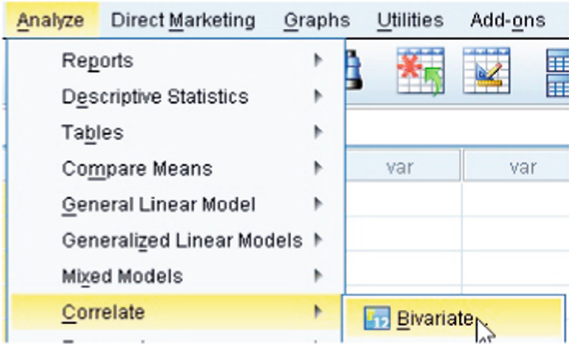

Fig. 2. Shows the parameter selection of analysis operation

Table 2. Data analysis results of correlation

Correlations

		V1	V3
v1	Pearson Correlation	1	0.684
	Sig.(2-tailed)		0.316
	Sum of Squares and Cross-products	63814.000	54918.000
	Covariance	15953.500	18306.000
	N	5	4
v2	Pearson Correlation	0.684	1
	Sig.(2-tailed)	0.316	
	Sum of Squares and Cross-products	54918.000	184794.750
	Covariance	18306.000	61598.250
	N	4	4

Table 3. Data analysis results of correlation

Correlations

		v3	v4
v3	Pearson Correlation	1	1.000
	Sig.(2-tailed)		
	Sum of Squares and Cross-products	184794.750	52470.000
	Covariance	61598.250	52470.000
	N	4	2
v4	Pearson Correlation	1.000	1
	Sig.(2-tailed)		
	Sum of Squares and Cross-products	52470.000	217800.000
	Covariance	52470.000	217800.000
	N	2	2

Table 4. Data analysis results of correlation

Correlations

		v2	v4
v2	Pearson Correlation	1	-1.000
	Sig.(2-tailed)		
	Sum of Squares and Cross-products	24238.000	-3960.000
	Covariance	8079.333	-3960.000
	N	4	2
v4	Pearson Correlation	-1.000	1
	Sig.(2-tailed)		
	Sum of Squares and Cross-products	-3960.000	217800.000
	Covariance	-3960.000	217800.000
	N	2	2

Table 5. Data analysis results of correlation

Correlations

		v1	v2
v1	Pearson Correlation	1	0.654
	Sig.(2-tailed)		0.346
	Sum of Squares and Cross-products	63814.000	19019.000
	Covariance	15953.500	6339.667
	N	5	4
v2	Pearson Correlation	0.654	1
	Sig.(2-tailed)	0.346	
	Sum of Squares and Cross-products	19019.000	24238.000
	Covariance	6339.667	8079.333
	N	4	4

in higher vocational colleges is greater than that of big data specialty. Third, colleges and universities usually start to prepare to set up artificial intelligence courses after establishing and setting up big data courses, and soon apply to the Ministry of education for filing. These data to the development plan formulated by the state and are being

reliably implemented. Fourth, although the research directions of the two disciplines are very different, they complement and promote each other in the field of application.

The above research results enlighten us: when planning and formulating the curriculum system of colleges and universities, we should comprehensively consider the overall needs of national construction for all kinds of professional talents according to the overall national planning, and improve the talent training plans at different levels, to meet the needs of current national construction.

"Precision teaching" is not only an educational concept, but also a teaching method. Based on this, we propose to smooth or reset the curriculum system of artificial intelligence specialty, and put forward relevant suggestions for the teaching of key courses.

3 Curriculum Reform Plan

3.1 Classification of Curriculum System

On March 30, 2019, the Ministry of education's notice on the publication of 2018 general higher education undergraduate specialty filing and approval results placed the AI specialty on the list of new undergraduate specialties. As a general higher school undergraduate specialty in China, artificial intelligence (AI) is an interdisciplinary discipline based on computer science and integrated by the multidisciplinary interdisciplinary integration of computer, psychology and philosophy. The discipline strives to understand the essence of intelligence and produce new intelligent machines that respond in a manner similar to human intelligence, and it includes robots, language recognition, image recognition, natural language processing, and expert systems, among others. AI is a comprehensive discipline and according to the general methods in the industry, AI can mainly be divided into several branches: pattern recognition, machine learning, Intelligent Algorithms. The artificial intelligence is an emerging specialty. Compared with the AI specialty, the curriculum system of the computer specialty is more biased toward the computer underlying operating system and compilation principles, and the curriculum content is computer-related. Whereas the AI profession values interdisciplinary applications and person related interaction behaviors more, it is demanding on the mathematical basis. Compared with the AI specialty, the traditional automation specialty is based on the theory of emerging cross-sectional disciplines such as systems science, control science, and information science, using advanced technologies such as Electrical technology, sensing technology and computers as the main means to achieve reproducible operations and target execution following established procedures. And the emergence of artificial intelligence specialties has helped solve the problem of having more personalized execution goals, such that the automated production process is no longer fully achieved through prior presets, but through artificial intelligence machines learning algorithms and enabling automated task execution. In addition, there is an extraordinary changed in smart manufacturing engineering, data science and big data technology, big data management and applications, and Robotic Engineering. Therefore, we must complete the task of classifying different curriculum systems [5].

3.2 Course System of Artificial Intelligence in Undergraduate

The curriculum system and curriculum design are set according to the talent training objectives of the school. The artificial intelligence engineering and technical personnel we train refer to the engineering and technical personnel engaged in the analysis, research and development of various technologies related to artificial intelligence algorithms and deep learning, as well as the design, optimization, operation and maintenance Aiming at the professional connotation, orientation and knowledge system of artificial intelligence undergraduate professional talent training in Colleges and universities, the industry has a relatively perfect curriculum system: Mathematics and statistics, science and engineering, computer science and engineering core, artificial intelligence core, cognition and neuroscience, advanced robot technology, artificial intelligence and society Artificial intelligence tools and platforms and other professional course groups, such a perfect eight course groups, have been perfectly designed. On the other hand, the teaching and teaching research of colleges and universities must serve the needs of local economic and social development and industrial transformation and upgrading. The setting of majors should also be consistent with this. At the same time, it should be combined with the advantageous majors of the University and have the characteristics of the University. Therefore, based on the above-mentioned perfect and idealized curriculum system, colleges and universities have also formulated their own distinctive talent training programs and their own curriculum plans.

For example, the curriculum system should include: Linux Basics, Fundamentals of programming, Fundamentals of Mathematics. Database foundation, Python data processing, Machine earning, Data analysis, Data Mining, Deep Learning, Natural language processing, computer vision.

3.3 Junior College Education

AI specialty of the junior college education is called artificial intelligence technology or technology service specialty. The training goal of junior college training is mainly based on technical types and can be competent for a certain aspect of work in the future. AI technology service is mainly aimed at AI application engineers, intelligent terminal software development, deployment and implementation of intelligent terminal system and other jobs required by AI industry and related enterprises and institutions, so as to cultivate innovative technical and skilled talents. The main professional abilities of students majoring in artificial intelligence technology service include: Ability to learn new knowledge and skills and innovation and entrepreneurship; Have the application ability of at least one mainstream artificial intelligence development framework; Have the ability to install, debug, operate and maintain artificial intelligence system; Have the ability of artificial intelligence technology integration and application; Ability to process artificial intelligence data sets, Have the ability of artificial intelligence product promotion, marketing and technical training. According to the talent training objectives, the artificial intelligence technology service specialty offers main professional courses: Java programming, artificial intelligence data set processing, python machine learning, in-depth learning, intelligent perception and understanding, computer vision, AI application project development, data visualization, etc. And the main courses: database

technology, python programming, artificial intelligence foundation, big data acquisition and analysis technology, machine learning foundation and application, deep learning technology and its application, computer vision technology, python data structure programming, Java programming, intelligent product marketing and service, intelligent mobile application development, intelligent application system development training. Their employment directions are: Platform operation and maintenance engineer, artificial intelligence trainer, artificial intelligence application system development engineer, product sales and consulting engineer, intelligent manufacturing engineering technician, industrial Internet Engineering Technician, etc. We must pay attention to the talent training of junior colleges [6].

4 Conclusions

Precision teaching is to use information technology to accurately design objectives, teaching contents and forms on the basis of accurately grasping curriculum standards and student development, to make the whole teaching process meet the requirements of accurate measurably, timely adjust and improve teaching work according to teaching needs, improve teaching quality as much as possible and achieve teaching objectives. This is the purpose of using IBM SPSS for data analysis.

In recent years, with the development of computer technology/network technology/big data technology, the application of artificial intelligence has made great progress. At present, while teaching big data technology, cloud computing, artificial intelligence technology and other majors in colleges and universities, their teaching research is also on going [8]. Precision teaching refers to the accurate design of objectives, teaching contents and forms by using information technology on the basis of accurately grasping the curriculum standards and student development, so that the entire teaching process can meet the requirements of precision and measurability, timely adjust and improve teaching work according to teaching needs, improve teaching quality as much as possible, and achieve teaching objectives. We used IBM SPSS as a tool for data analysis to make a new attempt at teaching reform, and achieved the intended goal.

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