

# Application of Big Data in Language Formation and Computing Science

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**Abstract**—This paper focuses on the background of big data, from the perspective of information and computing science professional experimental courses, enriches the information and computer science professional experimental courses, and further expounds the specific application on of big data in the information and computer science professional experimental course system. Among them, the artificial intelligence technology shown by big data in the experimental teaching helps students to better carry out professional experiments. Meanwhile, the data analysis can make the experimental information get rapid results, reflecting the characteristics of fast speed and high accuracy. The research goal of this paper is to achieve the role of new technologies created under the integration of big data technology and information and computing science major, especially data analysis in the information and computer major, as well as the data analysis technology applied in the experimental course.

**Keywords**—Big data; information and computing science; experimental courses; reform

## I. INTRODUCTION

As a new science and technology of the current society, big data leads each technology to obtain its great value technologies and services through the analysis and planning of massive information and data. Under the influence of big data, China is also actively carrying out educational experiments on big data in the field of education.<sup>[1]</sup> For example, multimedia classroom, smart online class, MOOC and other forms are all attempts to actively explore new teaching methods in the field of education. Of course, when these technologies can be extensive development and progress cannot leave the help of big data, if there is no big data then these technical conditions will not exist, through big data analysis of massive information can provide more comprehensive learning resources, and also related data extraction from students, secondary feedback for them. At present, the society speaks more about "big data", but also changes the change direction of many industries to make outstanding contributions to the development of all walks of life.<sup>[2]</sup>

## II. INFORMATION AND COMPUTATIONAL SCIENCE MAJORS INFLUENCED BY BIG DATA

The foundation of information and computing science major is computational mathematics, the purpose is to promote the development of society, the needs of scientific progress. Big data refers to the huge amount of data involved, such that we cannot manually complete the analysis, calculation and management of content information. Big data has opened a new direction of the technology of The Times, which is not changing

our lifestyle and thinking ability, and becoming the source of new inventions and new services. For the future social development, the demand for talents with big data management and analysis ability continues to increase. The main demand positions include big data system administrator, big data platform development engineer, data analyst and so on. At present, the talent training of information and computing science is also gradually increasing, but it can far from meet the needs of society and enterprises for relevant talents. Secondly, Chinese colleges and universities reform less information and computing science.<sup>[3]</sup> Some famous Beijing University of Aviation University and Chongqing University of Posts and Telecommunications have opened the experimental teaching reform of computer major in the era of big data. In the era of big data, more precise and faster professionals are needed, which coincides with the goal of information and computing science majors.<sup>[4]</sup> In order to combine the actual needs of this major and the society, to cultivate a large number of professional experienced talents for the future big data development market.<sup>[5]</sup> However, for information and computing science, while maintaining the professional advantages of mathematics science, we should actively integrate the technical and ideological changes in the era of big data, and strive to cultivate students' practical operation ability, comprehensive application ability and independent operation ability.

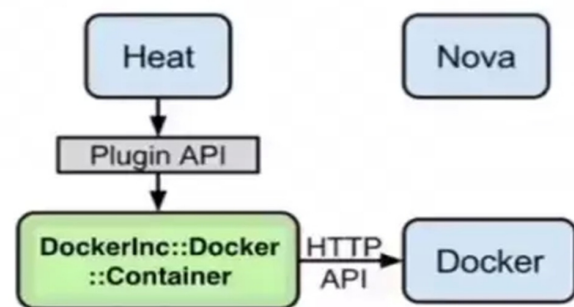


Figure 1. Schematic diagram of the application of big data technology

The employment direction of information and computing science is mainly information science, supplemented by computing mathematics; the direction is mainly mathematics, supplemented by information science. Students majoring in

information and computing science mainly learn the basic theories, basic knowledge and basic methods of information science and computing science, lay a good foundation in mathematics, receive relatively solid computer training, and initially have the ability to engage in scientific research, solve practical problems and design and develop related software in the field of information science and computing science. Information and computing science professional training with good mathematical knowledge, master the basic theories and methods of information science and computing science, by the preliminary training of scientific research, can use the knowledge and skilled' computer skills to solve practical problems, can engage in research, teaching, application development and management work in the science, technology, education and economy departments of senior professionals.

The employment direction of information and computing science is roughly divided into the following aspects: further study has mastered the methods and skills of information and computing science: information and computing science graduates can engage in teaching and research in colleges and research units, can continue to do teaching and research in information science and computing mathematics, or solve practical application problems with their excellent mathematical modeling ability and computing ability.

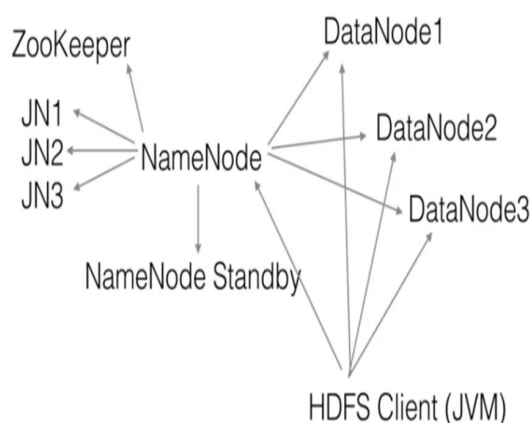


Figure 2. Big data memory mesh images

IT enterprise: Information and computing science graduates entering IT enterprises is an important employment direction.<sup>[6]</sup> In terms of majors: information and computing science is a new science major under the mathematics discipline.<sup>[7]</sup> On the one hand, it provides a new platform for China to train information and computing science talents, in line with the development of today's era. But on the other hand, the major has been opened for a short time, and graduates face a short-term imbalance between supply and demand, and there is no clear employment industry. From the development of the whole IT industry: the current annual growth rate of China's IT industry has declined.

Many IT enterprises continue to adjust themselves to adapt to the industry development and industrial reform, and constantly improve the quality requirements of employees.<sup>[8]</sup> Under the great adverse situation of the financial crisis, employment changes from the seller's market to the buyer's market. In the face of the crowded college students, employers generally raise the threshold and reduce the starting salary. Some employers overemphasize English experience; some employers unilaterally extend the employment probation period for graduates. The sharp drop in starting salaries in the IT market is one of the major challenges facing college students today.<sup>[9]</sup>

### III. INFORMATION AND COMPUTATIONAL SCIENCE MAJOR FACES CURRENT PROBLEMS

#### A. The corresponding training protocol is lacking

Information and computing science is a new major issued in 1998 in China, and it is a compound major formed by the cross-penetration of information science, computer mathematics and transportation research.<sup>[10]</sup> Because of the short establishment time of this major, there are still many shortcomings in the information and computing science major of major universities in the teaching content. First of all, the teaching content was not clear about the curriculum system and structure of information and computing science, and did not form the professional characteristics of the school. For example, a total of 22 universities in Liaoning have majored in information and computing science, but due to the lack of a unified teaching system, major universities are facing many curriculum problems.<sup>[11]</sup> Second, colleges and universities are not clear about the teaching setting, nor do not know what the key points and training objectives are.<sup>[12]</sup>

There are considerable problems about whether these courses meet the needs of social development and the goals of training professionals. Secondly, many schools only pay attention to teaching theory and ignore practical operation, and the operation of teaching methods and content compared with backward.<sup>[12]</sup> The purpose of practical teaching is to verify the course theory, the teaching mode is single, and the content is boring.<sup>[13]</sup> So in the professional setting and talent training at the same time should be combined with the pace of computing science and social development to improve the curriculum teaching system, improve the students' learning enthusiasm, improve the employment quality of fresh graduates, at the same time the development of the major produces good benefits, and constantly for the national information technology industry to cultivate more excellent professionals. At the same time, there is a lack of double-teacher teachers, and the overall connection between information and computing science and society is not close enough. At the same time, teachers lack certain experience in teaching practice, knowledge structure has not formed a complete knowledge system, and lack of professional setting, both in practice and theory.<sup>[14]</sup>

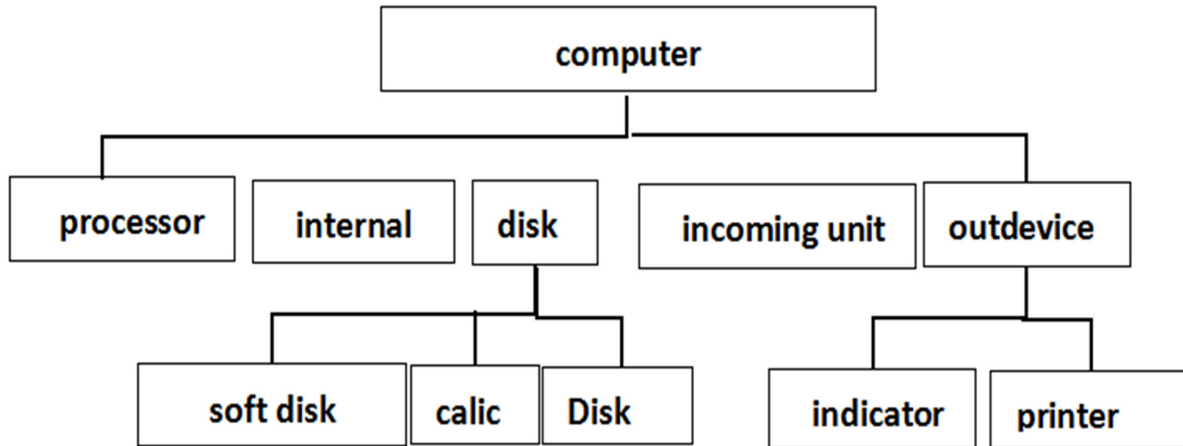


Figure 3. Information and Computational Science flow chart

### B. Solution ideas

In view of these problems, colleges and universities should reflect on how to effectively integrate information with computing science major into the development of society, and what kind of talents to cultivate.<sup>[15]</sup> Big data emphasizes on the development of commercial value, and we need to master data warehouse, data security, data analysis and other skills. However, the traditional experimental teaching of frontal information and computational science has less related experimental teaching. As a data analyst, not addition to master more knowledge and mathematical analysis ability, but also to strengthen the cultivation of ability in various aspects to promote its all-round development.

Colleges and universities strengthen the basic experimental link of theory, because the theoretical basic laboratory and professional basic courses. It mainly includes programming design, mathematical models, mathematical experiments. The experimental link of the theoretical foundation is the key to improve the quality of the experimental curriculum. Therefore, it is necessary to open closely around the professional basic courses, deepen the grasp of the theory through the experiment, so as to meet the requirements of "proficiency", improve the students' hands-on operation ability and the ability to deal with problems. The experimental link of big data analysis is according to the direction of data analysis, and tries to solve the industry positioning of information and computing science. Including database technology, massive data mining, data modeling and other courses, is the computer application experimental link. At the same time, colleges and universities should also reform the real assessment methods, and adopt different assessment methods according to different experimental types and types. For example, the understanding of class experiments focuses on students' understanding of experimental principles and the proficiency of experimental technology. The computational application experiments can be

evaluated in the form of scientific papers. The experimental links of big data analysis can require students to jointly develop experimental plans in groups. Through different assessment mechanisms, fully stimulate the students' learning enthusiasm, improve the quality of classroom teaching. In addition to usually paying attention to theory, students should also be encouraged to participate in various professional and technical competitions. Guide students to apply for college student innovation experiment project and college student scientific research training program project, and participate in all kinds of college student modeling competitions.

According to the data of students' learning behavior, teachers can record and manage students' professional ability, constantly update and analyze students' thinking habits, and create psychological scale. Different training programs are adopted for each student according to their learning priorities and the content of their learning progress. Similarly, each student's performance and feedback will be recorded and the integrated management of large-scale learning behaviour data will be classified with the help of the system. The mathematical literacy of students is the potential mathematical thinking mode of students. The mathematical training of students is not formed through the indoctrination of mathematics and knowledge, but through continuous efforts, through hard study and training to improve the way of thinking and self-cognitive ability of students. Developing students' mathematical literacy can further improve the quality of information and computational science courses.

### IV. CONCLUSION

In the big data environment, our lives and environment have changed dramatically. In this paper, the information and computer science has application oriented practice teaching mode, phase penetrating various multidisciplinary knowledge evaluation way, not only can cultivate students' independent consciousness of competition, more important is to cultivate

students' interest in computer science information, strengthen the study direction, so that the students can determine the future direction of employment, information and calculation science specialized change, It is to improve the quality of information computing science and cultivate a large number of excellent talents.

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