

Exploration of Deep Learning and Neural Network Course Teaching Reform in Finance and Economics Colleges under the Background of New Engineering

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Abstract: In response to the new challenges that economic development poses for talent cultivation, China is actively promoting the construction of new engineering disciplines. Under the new engineering background, fostering students' comprehensive cross-disciplinary abilities, entrepreneurial spirit, and practical skills has become one of the main objectives of talent development. This paper analyzes the current state of teaching the "Deep Learning and Neural Networks" course and, guided by the concept of new engineering construction, explores teaching reforms specifically from aspects such as optimizing teaching content, innovating practical teaching, faculty development, and optimizing course assessment indicators.

Keywords: New Engineering; Financial and Economic Colleges; Artificial Intelligence; Teaching Exploration.

1. Introduction

With the continuous maturation of computer science and technology, the application of artificial intelligence technology in education, finance, healthcare, transportation, and other fields has become increasingly widespread, greatly facilitating people's lives and improving labor productivity. Artificial intelligence technology has become an important force leading industrial revolution and social change, a new engine driving high-quality economic development of the country, and an accelerator for social progress. The development of the economy and society is inseparable from talent support. Faced with the future development trend of industrial intelligence and data, many colleges and universities have begun to focus on the training of artificial intelligence professionals, aiming to improve students' comprehensive quality and enhance their ability to create and innovate, to cultivate comprehensive application-oriented technical talents with innovation ability and cross-disciplinary integration ability to meet the needs of social development [1].

In order to actively respond to the opportunities and challenges in the data age, the Ministry of Education issued the "Artificial Intelligence Innovation Action Plan for Colleges and Universities" in May 2018, accelerating the promotion of new engineering construction and requiring colleges and universities to leverage their advantages in discipline development and talent training. They are encouraged to cooperate with governments, enterprises, and research institutes to cultivate new types of engineering talents to support China's economic development and industrial upgrading [2]. To adapt to the teaching requirements and social development trends under the background of new engineering, many finance and economics colleges have begun to actively introduce artificial intelligence-related courses to cultivate students' data analysis, digital decision-making, and cross-disciplinary and cross-domain abilities.

The content of the "Deep Learning and Neural Networks" course includes the basic principles, basic models, and

advanced models of deep learning and neural networks, which is a core curriculum for learning computer science. The course integrates professional knowledge such as data statistics and programming languages. It is a professional course that combines theory with practice and methods with technology[3].

This paper starts from the cultivation of new engineering composite innovative talents, and on the basis of comprehensively analyzing the current state of teaching the "Deep Learning and Neural Networks" course in finance and economics colleges, it has specifically explored the teaching reform measures of the "Deep Learning and Neural Networks" course in finance and economics colleges.

2. Current Teaching Status of "Deep Learning and Neural Networks" Course in Finance and Economics Colleges

"Deep Learning and Neural Networks" as an important research direction in the field of computer science research and machine learning has become a research focus of artificial intelligence technology. The "Deep Learning and Neural Networks" course systematically introduces the basic knowledge system and practical methods of deep learning and neural networks, explains various mainstream neural network models, and covers content such as an overview of artificial intelligence knowledge, basic knowledge of machine learning, basic neural network models, and deep learning models. It can cultivate students' ability to use deep learning methods to explore model construction and optimization technology in specific scenarios such as image recognition and natural language processing. Currently, among the finance and economics colleges that offer the "Deep Learning and Neural Networks" course, some schools adopt the traditional offline teaching mode, while others use platforms such as Xuexitong and MOOC for online teaching.

2.1. Insufficient Integration with Finance and Economics Disciplines, Not Distinctively Financial and Economic

The basic knowledge in the "Deep Learning and Neural Networks" course can improve students' scientific literacy and help students develop a data-oriented mindset. However, many finance and economics colleges only focus on explaining the basic general knowledge of the course, without combining the "Deep Learning and Neural Networks" course with the characteristics of finance and economics professional courses. This leads to knowledge isolation between the course and other finance and economics professional courses, and a disconnection between general basic knowledge teaching and professional background and practical engineering problems. As a result, students often lack a comprehensive understanding of the course knowledge and the ability to use comprehensive knowledge to solve professional problems. They are not aware of the application of artificial intelligence technology in financial and financial work, and it is difficult to stimulate students' interest in learning the "Deep Learning and Neural Networks" course. Therefore, optimizing the course teaching content and enhancing the fit of the "Deep Learning and Neural Networks" course with finance and economics disciplines is a problem that needs to be solved.

2.2. Lack of Practical Teaching Link, Not Innovative Enough

"Deep Learning and Neural Networks" is a course with strong professionalism and practicality. Students must deepen their understanding of theoretical knowledge through practical training and exercise the ability to use the basic knowledge to deal with practical problems. At the same time, with the increasingly mature artificial intelligence technology, the cutting-edge deep learning algorithms and neural network models in the field of computer science are also continuously optimized, and the development of artificial intelligence is changing with each passing day. However, in the existing practical teaching link, students often only simulate practical cases according to the practical cases in the textbooks, and do not fully consider the basic knowledge involved in the practical cases, so they cannot fully master the ability to use "Deep Learning and Neural Networks" knowledge to solve practical problems. Moreover, some of the practical cases in the textbooks are out of date with the cutting-edge hot issues, and the innovation is not high. The existing course teaching practice content is out of step with the development trend of the financial and financial industry, and the students' practical ability is out of step with the actual work requirements. The practical teaching link is not innovative enough and other dilemmas, leading to many college graduates feeling that the knowledge learned is outdated and eliminated after work, and cannot be used in actual work. Therefore, it is urgent to reform the current course practical teaching.

2.3. Students' Attention to the Course is Insufficient

The "Deep Learning and Neural Networks" course covers a wide range of knowledge and has a large knowledge system, which has certain requirements for students' information processing ability and programming ability. Some students with a relatively weak computer foundation will find the course dull and easy to generate aversion to learning. Due to the insufficient combination of the "Deep Learning and

Neural Networks" course with finance and economics disciplines, and the relatively outdated practical teaching topics of the course, some students cannot understand the impact of artificial intelligence technology on finance and economics disciplines, and cannot realize the importance of the "Deep Learning and Neural Networks" course for dealing with financial problems in work after graduation. At the same time, the lack of dual-teacher-type teachers and the traditional assessment method of "usual score + final score" cannot truly reflect the students' learning effect and other factors will also lead to students' insufficient attention to the "Deep Learning and Neural Networks" course, thinking that the course learning is "dispensable", and there are negative phenomena such as inattention in class and "filling duck" passive learning [4].

3. Deep Learning and Neural Network Course Reform Plan

In response to the current state of teaching "Deep Learning and Neural Networks" courses, which is limited to imparting basic knowledge and lacks practical innovation, the author has explored teaching reform for the "Deep Learning and Neural Networks" courses in finance and economics colleges according to the talent cultivation goals under the background of new engineering construction.

3.1. Guided by Industry-Education Integration, Carry Out School-Enterprise Cooperation, and Optimize Teaching Content

Comprehensively consider the recruitment requirements of financial and financial industry talents for colleges and universities, and the talent training goals of finance and economics professional colleges, and appropriately adjust the teaching content of the "Deep Learning and Neural Networks" course. That is, on the basis of retaining the basic knowledge and basic model algorithms of the course, transform the cutting-edge technology in the field of artificial intelligence and the latest application situation in the financial and financial industry into course knowledge to teach students, so that students understand the new developments and development trends in the field. Select and refine the original knowledge system of the "Deep Learning and Neural Networks" course to conform to the latest research dynamics in the field of artificial intelligence and the application practice of finance and economics disciplines, and place the teaching focus on practical application on the basis of ensuring that students master the basic course knowledge, so as to improve the knowledge connection between the "Deep Learning and Neural Networks" course and other finance and economics professional courses. At the same time, cooperate with off-campus enterprises to build a technology innovation alliance, accelerate the transformation and upgrading of local industries and economic development, and provide more internship opportunities and a broader experimental platform for students, which is conducive to students applying theoretical knowledge to practice for verification and exercising students' practical ability. After the basic course knowledge teaching is over, students are assigned to off-campus cooperative enterprises for internships, allowing students to participate in the design and operation of enterprise projects, which facilitates students to understand the role of artificial intelligence technology in finance and

economics disciplines, deepen the understanding of course basic knowledge, stimulate students' innovative consciousness, and enable students to clearly use the "Deep Learning and Neural Networks" knowledge to solve the actual conditions of application problems. In addition, industry-education integration can further optimize teaching content and enrich classroom cases, so as to achieve "theory is connected with practice" and "teaching and doing are integrated", and promote the teaching reform of the "Deep Learning and Neural Networks" course.

3.2. Establish Innovative Practical Teaching to Improve the Connection Between Theoretical Knowledge and Practical Ability

The goal of practical teaching in the "Deep Learning and Neural Networks" course is to deepen students' understanding of basic theoretical knowledge, improve students' practical hands-on ability, and stimulate students' interest in learning. Students can only deeply understand the theoretical knowledge they have mastered and flexibly use knowledge to deal with practical application problems through the experimental practical link. However, the existing course practical teaching link is mostly basic verification experiments, and the practical topics are relatively outdated, which cannot match the cutting-edge technology in the field of artificial intelligence and cannot effectively apply course knowledge to actual situations. Colleges and universities can increase the time and opportunities for practical teaching links, increase the proportion of practical teaching parts in the overall teaching of the "Deep Learning and Neural Networks" course, and open more practical courses such as experimental courses and training courses, so that students can better master and use theoretical knowledge in practice. In addition, colleges and universities should strengthen cooperation and exchanges with off-campus enterprises, allowing students to understand the latest development trends of the financial industry and the cutting-edge technology in the field of artificial intelligence, enrich and update course practical cases, so as to better meet market demands and cultivate high-quality innovative talents [5]. After students understand the development trends of the industry, colleges and universities can also carry out various forms of innovative ability training projects, such as entrepreneurship practice, innovative design competitions, etc., to allow students to exercise innovative thinking and innovative ability in practice[6]. Based on the important knowledge points of the course and the application direction of the course in finance and economics disciplines, design discipline competition projects or practical teaching courses that conform to the development trend of the industry and have strong comprehensiveness, to mobilize students' enthusiasm for learning, create students' innovative consciousness and practical ability, and enable students to more deeply understand and digest the basic knowledge they have learned, and face the needs of their studies and future work more calmly.

3.3. Cultivate Dual-Teacher-Type Teachers, Optimize Course Assessment Methods, and Mobilize Students' Enthusiasm

In order to let students understand the importance of the "Deep Learning and Neural Networks" course, teachers should not only explain the connection between the "Deep

Learning and Neural Networks" course and finance and economics professional disciplines to students at the beginning of the class, and clarify the course assessment indicators, but also choose teaching content reasonably and lead students to complete rich and novel course practical cases during the teaching process, to mobilize students' enthusiasm for learning. This requires teachers to have excellent professional knowledge literacy and strong practical teaching ability. Therefore, teachers should be trained through enterprise research and course training to upgrade their enterprise research and application skills, and cultivate dual-teacher-type teachers with both teaching ability and practical ability that meet the development needs of the new era [7]. In addition, teachers can introduce the impact of artificial intelligence technology on finance and economics work to students in the first class, such as how artificial intelligence technology has played an important role in risk identification, assessment, and prediction in financial risk management, and how the use of advanced technologies such as machine learning and big data analysis can help enterprises significantly improve the accuracy and efficiency of risk management [8]. This can be used as a course guide to enable students to understand the impact of artificial intelligence technology on finance and economics disciplines, stimulate students' interest in the "Deep Learning and Neural Networks" course, let students fully realize the importance of the course, and improve their attention to the course. In addition, the traditional course assessment method of "usual score + final score" can no longer truly reflect the students' understanding and mastery of the course knowledge. Colleges and universities should optimize the course assessment method and establish a comprehensive course evaluation index framework that should consider not only the usual assessment and final score but also comprehensively consider students' practical skills, innovative ability, and comprehensive quality and other evaluation indicators, to fully reflect students' comprehensive ability, and focus teaching on cultivating students' ability to analyze and solve problems. Teachers can use online questionnaires, individual interviews, and other forms to assist in the implementation, understand students' feedback on teaching content and methods, and adjust teaching strategies in time to improve teaching effectiveness and meet the personalized development requirements of students at different levels [9]. Ensure students' enthusiasm and attention to the "Deep Learning and Neural Networks" course.

4. Conclusion

Under the background of new engineering construction, the exploration of teaching reform of the "Deep Learning and Neural Networks" course in finance and economics colleges is an important and urgent task. Based on the existing problems in the teaching of the "Deep Learning and Neural Networks" course, this paper has discussed the improvement of teaching methods, and proposed industry-education integration, optimizing teaching content, establishing innovative practical teaching, strengthening teacher strength, and optimizing course evaluation indicators and other course teaching reform methods. It aims to solve the problem of insufficient combination of the "Deep Learning and Neural Networks" course with finance and economics disciplines in finance and economics colleges, to improve students' innovative practical ability, and to provide talent strategy support for the high-quality economic development of the

country. Curriculum reform is a long-term and complex process that requires continuous exploration, innovation, and practice. We should promote the continuous deepening and development of curriculum reform with an open attitude and a positive attitude.

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