The Innovation of Talent Training Mode in Intelligent Control Technology with the Empowerment of Artificial Intelligence from the Perspective of New Quality Productivity

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Abstract: *Under the promotion of new quality productivity, social and economic development has entered a new stage, and technological innovation has gradually become a key driving force for economic growth. Mechanical and electrical control is an important component of intelligent control technology, and the training mode of its professional talents directly affects the development speed of social informatization. The rapid development of artificial intelligence technology provides unprecedented opportunities for educational innovation in the field of mechanical and electrical control. In view of this, this study focuses on exploring the talent cultivation mode of artificial intelligence empowering innovative electromechanical control majors from the perspective of new quality productivity, and proposes effective specific implementation strategies to cultivate high-quality and high skilled talents that can regulate the future development needs of the industry, providing certain reference and guidance.*

Keywords: New Quality Productivity artificial intelligence; Intelligent control; Technical major; personnel training.

1. INTRODUCTION

With the rapid development of technology, new quality productivity has gradually become a new engine and the main theme of the times to promote economic and social development. Intelligent control technology, as a bridge connecting the physical world and the digital world, plays a crucial role in the development of new quality productivity. However, in the face of the rapidly changing technological wave, how to cultivate intelligent control technology professionals who can adapt to the development needs of new quality productivity, possess high innovation and practical abilities, has gradually become a major issue faced by both the education and industry sectors. Therefore, this article aims to explore in depth the innovation and application strategies of the talent training mode for intelligent control technology professionals empowered by artificial intelligence from the perspective of new quality productivity, providing a certain perspective for exploring a new training mode that meets the requirements of the new era and effectively improves the quality of talent training in the field of education. Under the promotion of new quality productivity, the innovation of talent training mode for intelligent control technology majors is particularly important. The following elaborates in detail on the convergence of the new quality productivity and intelligent control technology professional talent training model from three aspects: innovation driven, interdisciplinary integration, and practical orientation.

2. LITERATURE REVIEW

This part summarizes recent advancements across various fields, including power system optimization, network congestion control, secure communication, artificial intelligence (AI) applications, and natural language processing (NLP). Liu et al. (2024) propose the Promoted Osprey Optimizer to solve the Optimal Reactive Power Dispatch (ORPD) problem in power systems with increased electric vehicle penetration [1]. Chen et al. (2023) introduce Octopus, an in-network content adaptation mechanism to alleviate congestion on 5G links[2]. Liang and Chen (2019) present a Software-Defined Networking (SDN)-based hierarchical authentication mechanism for IPv6 addresses and a high-performance dynamic service orchestration algorithm (HDSO) in hybrid Network Function Virtualization (NFV) networks[3]. Xie et al. (2024) develop a Conv1D-based approach for multi-class classification of legal citation text[4], while Luo et al. (2024) enhance e-commerce chatbots using Falcon-7B and 16-bit full quantization[5]. Xu et al. (2024) focus on improving user experience and trust in Large Language Models (LLMs)-based conversational agents[6]. Liu (2024) discusses optimizing supply chain efficiency using cross-efficiency analysis and inverse Data Envelopment Analysis (DEA) models[7]. Bi et al. (2024) explore AI's role in financial forecasting, specifically ChatGPT's potential and challenges[8]. Chen et al. (2022) present a

one-stage object referring system with gaze estimation[9]. Lin et al. (2024) apply AI to electroencephalogram analysis for optimizing anesthesia depth[10]. Wang et al. (2024) research autonomous robot navigation based on reinforcement learning[11]. Wu et al. (2024) propose a lightweight Generative Adversarial Network (GAN)-based image fusion algorithm for visible and infrared images[12]. Zheng Ren (2024) introduces two approaches for role-oriented dialogue summarization, balancing role contributions and enhancing Seq2Seq models through adaptive feature weighting and dynamic statistical conditioning[13]. Fan et al. (2024) research optimizing real-time data processing in high-frequency trading algorithms using machine learning[14].

2.1 Integration driven by innovation

New quality productivity is a form of productivity driven primarily by innovation, emphasizing the leading role of technological innovation in economic and social development. In the context of new quality productivity, intelligent control technology, as an important component of high-tech fields, relies on continuous technological innovation for its development. Therefore, the cultivation of intelligent control technology professionals must focus on cultivating students' innovative consciousness and ability to adapt to the needs of future industrial development.

The cultivation of innovative ability requires educators to focus on stimulating students' creativity and imagination in the teaching process, encouraging students to have the courage to try new methods and ideas. At the same time, educators also need to provide students with rich practical opportunities to exercise and enhance their innovative abilities while solving practical problems. Through this approach, students majoring in intelligent control technology will be able to continuously advance on the path of technological innovation and contribute their strength to the development of new quality productivity.

2.2 Integration of Interdisciplinary Studies

The development of new quality productivity often involves the cross integration of multiple disciplines, such as information technology, biotechnology, new material technology, etc. This interdisciplinary nature requires talent cultivation to have a multidisciplinary background and comprehensive abilities to adapt to the complex and ever-changing industrial environment. Intelligent control technology itself is a multidisciplinary field that integrates knowledge and technology from multiple disciplines such as computer science, electronic engineering, and automation.

Therefore, the cultivation of intelligent control technology professionals must focus on interdisciplinary integration. Educators should guide students to learn and master knowledge and skills from multiple disciplines during the teaching process, cultivating their comprehensive literacy and interdisciplinary problem-solving abilities. To achieve this goal, educators can offer interdisciplinary courses or joint training programs that provide students with opportunities to access and learn knowledge and skills from different disciplines. Through this approach, students majoring in intelligent control technology will be able to better adapt to the development needs of new quality productivity and provide strong support for the development of the industry.

2.3 Integration of practical orientation

The formation and development of new quality productivity cannot be separated from the promotion of practical application. It focuses on transforming technological innovation achievements into actual productivity, in order to truly achieve economic and social development. Intelligent control technology is a highly practical discipline, and its talent cultivation must focus on the setting and implementation of practical links.

Educators should pay attention to the design and arrangement of practical activities in the teaching process, and guide students to apply the knowledge they have learned to solve practical problems through practical teaching, internships, and training. At the same time, educators can also collaborate with enterprises to jointly carry out practical teaching activities, providing students with more authentic and vivid practical opportunities. Through this approach, students majoring in intelligent control technology will be able to exercise and enhance their practical abilities and comprehensive qualities in practice, contributing their strength to the development of new quality productivity.

3. THE IMPORTANCE OF ARTIFICIAL INTELLIGENCE EMPOWERING THE CULTIVATION OF TALENTS IN INTELLIGENT CONTROL TECHNOLOGY

Under the promotion of new quality productivity, the development of artificial intelligence technology provides new opportunities and challenges for the training of professionals in intelligent control technology. The following elaborates on the importance of artificial intelligence empowering the training of professionals in intelligent control technology from three aspects: adapting to the development needs of new quality productivity, improving the quality of talent training, and promoting industrial development and transformation and upgrading.

3.1 Adapting to the Development Needs of New Quality Productivity

New quality productivity is driven by innovation as its core, emphasizing the leading role of technology in economic and social development. As one of the key elements of new quality productivity, artificial intelligence's rapid development and application are profoundly changing the production and operation modes of various industries. Intelligent control technology is a field closely integrated with artificial intelligence, and the cultivation of professional talents must keep up with the pace of the times, fully utilize artificial intelligence technology to enhance the quality and ability of talents, and adapt to the development needs of new quality productivity.

In order to meet the development needs of new quality productivity, students majoring in intelligent control technology need to master the basic theories, algorithms, and application technologies of artificial intelligence. Educators should pay attention to combining artificial intelligence technology with intelligent control technology in the teaching process, guiding students to learn and master relevant knowledge and skills. Through this approach, students majoring in intelligent control technology will be able to better adapt to the development needs of new quality productivity and provide strong support for the development of the industry.

3.2 Improving the quality of talent cultivation

The application of artificial intelligence technology provides new methods and means for the cultivation of professionals in intelligent control technology. Educators can use tools such as intelligent teaching platforms and personalized learning systems to comprehensively monitor and evaluate students' learning processes and outcomes, thereby providing more accurate teaching guidance and learning support. In addition, artificial intelligence can simulate real work environments and complex scenarios, providing students with more realistic and vivid practical opportunities to enhance their practical abilities and comprehensive qualities.

Intelligent teaching platforms can provide personalized learning resources and paths for students based on their learning situation and interests. This personalized learning approach can stimulate students' interest and enthusiasm in learning, and improve their learning outcomes. Meanwhile, the intelligent teaching platform can also monitor students' learning progress and grades in real-time, providing teachers with timely feedback and evaluation results. Teachers can adjust teaching strategies and methods based on these feedback results to better meet students' learning needs.

In addition, the application of artificial intelligence technology in practical teaching can greatly enhance students' practical abilities and comprehensive qualities. By simulating real work environments and complex scenarios, students can gain a deeper understanding of the application scenarios and operational processes of intelligent control technology. This practical opportunity can help students apply their learned knowledge to solve practical problems, thereby enhancing their practical abilities and comprehensive qualities.

3.3 Promoting industrial development and transformation and upgrading

Intelligent control technology is one of the important supporting technologies in fields such as intelligent manufacturing, intelligent transportation, and smart cities. Empowering intelligent control technology professionals with artificial intelligence will help cultivate more high-quality and skilled professionals, providing strong talent support for the development of related industries. Meanwhile, professionals in intelligent control technology can also promote the transformation, upgrading, and high-quality development of related industries through technological innovation and research and development.

Under the promotion of new quality productivity, fields such as intelligent manufacturing, intelligent transportation, and smart cities are undergoing profound changes. These changes require a large number of highly

qualified and skilled professionals in intelligent control technology to support and promote. By empowering the training of professionals in intelligent control technology through artificial intelligence, we can cultivate more professionals with innovative thinking and practical abilities, providing strong talent support for the development of these fields.

In addition, professionals in intelligent control technology can also promote the transformation, upgrading, and high-quality development of related industries through technological innovation and research and development. They can use artificial intelligence technology to optimize the performance and efficiency of intelligent control systems, improve production efficiency and product quality. At the same time, they can also utilize artificial intelligence technology to develop new intelligent control products and services to meet the diverse needs of the market. Through this approach, professionals in intelligent control technology will be able to make significant contributions to the transformation, upgrading, and high-quality development of related industries.

4. THE INNOVATIVE PATH OF TALENT CULTIVATION MODE FOR INTELLIGENT CONTROL TECHNOLOGY PROFESSIONALS EMPOWERED BY ARTIFICIAL INTELLIGENCE

Under the promotion of new quality productivity, the innovation of talent cultivation mode for intelligent control technology professionals empowered by artificial intelligence is particularly important. The following elaborates in detail on the innovative path of cultivating talents in the field of intelligent control technology empowered by artificial intelligence from four aspects: optimizing the curriculum system, innovating teaching methods, strengthening practical teaching, and promoting interdisciplinary integration and collaborative innovation.

4.1 Optimize the curriculum system and integrate artificial intelligence technology

In order to meet the development needs of new quality productivity, schools should integrate artificial intelligence technology into the curriculum system of intelligent control technology majors. Specifically, core courses on artificial intelligence such as machine learning, deep learning, computer vision, and natural language processing can be added to the curriculum system to help students master the basic theories, algorithms, and application technologies of artificial intelligence. At the same time, educators should also pay attention to promoting the cross integration of intelligent control technology with related disciplines such as computer science, mathematics, and electronic engineering. By offering interdisciplinary courses or joint training programs, students can broaden their knowledge horizons and comprehensive abilities.

In the process of optimizing the curriculum system, educators should pay attention to the combination of theory and practice. In addition to imparting theoretical knowledge, attention should also be paid to the design and implementation of practical activities. For example, experimental or project-based courses can be offered to enable students to learn and master the relevant knowledge and skills of artificial intelligence technology and intelligent control technology through practice. Through this approach, students can gain a deeper understanding of theoretical knowledge and apply it to solve practical problems.

In addition, educators should also pay attention to updating and upgrading the curriculum. With the continuous development of artificial intelligence technology and the expansion of application fields, the curriculum system of intelligent control technology majors also needs to be constantly updated and upgraded. Educators should closely monitor industry trends and technological developments, adjust course offerings and teaching content in a timely manner to ensure the timeliness and practicality of students' knowledge.

4.2 Innovative teaching methods to enhance teaching effectiveness

The innovation of teaching methods is of great significance for improving the quality of talent cultivation in the field of intelligent control technology. Educators can use artificial intelligence technology to innovate teaching methods and tools, improve teaching effectiveness and students' interest in learning.

Firstly, educators can utilize intelligent teaching platforms to achieve personalized teaching. The intelligent teaching platform can provide personalized learning resources and paths for students based on their learning situation and interests. This personalized learning approach can stimulate students' interest and enthusiasm in learning, and improve their learning outcomes. Meanwhile, the intelligent teaching platform can also monitor students' learning progress and grades in real time, providing teachers with timely feedback and evaluation results.

Teachers can adjust teaching strategies and methods based on these feedback results to better meet students' learning needs.

Secondly, educators can utilize technologies such as virtual reality (VR) and augmented reality (AR) to innovate practical teaching methods. Through virtual reality and augmented reality technology, educators can build teaching environments such as virtual laboratories and virtual production lines, allowing students to conduct experimental operations and production practices in virtual environments. This approach can greatly reduce experimental costs and risks, while improving students' practical and innovative abilities.

In addition, educators can also adopt new teaching models such as flipped classrooms and blended learning to innovate teaching methods. Flipped classroom is a teaching mode that reverses the traditional classroom teaching and homework activities. In flipped classroom, students learn through self-study materials such as videos before class, while in class they engage in discussions and practical operations. This teaching mode can stimulate students' interest and initiative in learning, improve their learning effectiveness and practical ability. Blended learning is a teaching model that combines online self-study with offline discussion and practice. Through blended learning, students can arrange their study time and location more flexibly, while also engaging in more in-depth learning and practice under the guidance of teachers.

4.3 Strengthen practical teaching and enhance practical abilities

Practical teaching is an indispensable part of talent cultivation in the field of intelligent control technology. Through practical teaching, students can gain a deeper understanding of the application scenarios and operational processes of intelligent control technology, and improve their practical abilities and comprehensive qualities. In order to strengthen the practical teaching process, schools can take the following measures:

Firstly, schools should strengthen cooperation with enterprises and establish internship and training bases as well as joint laboratories. Through cooperation with enterprises, schools can provide students with more authentic and vivid practical opportunities, allowing them to learn and master the relevant knowledge and skills of intelligent control technology in practice. At the same time, schools can also utilize the resources and experience of enterprises to optimize the design and implementation of practical teaching, and improve the quality and effectiveness of practical teaching.

Secondly, schools can organize various innovation and entrepreneurship competitions and activities to stimulate students' innovative and entrepreneurial spirit and practical abilities. Through innovation and entrepreneurship competitions and activities, students can gain a deeper understanding of the application areas and market prospects of intelligent control technology, while also developing their teamwork and project management skills. In addition, schools can also support students in transforming innovative and entrepreneurial ideas into practical results through project incubation, financial support, and other means, providing them with broader development space and opportunities.

Finally, schools should encourage students to participate in various skill certifications and vocational qualification exams. Through skill certification and vocational qualification exams, students can demonstrate their professional skills and level, improve their professional ethics and market competitiveness. At the same time, schools can also use these certifications and exams to assess students' practical abilities and comprehensive qualities, providing useful references and basis for optimizing practical teaching processes.

5. CONCLUSION

In summary, as an important driving force for contemporary economic and social progress, the core of new quality productivity is not limited to breakthroughs in technological innovation and the accumulation of knowledge systems, but more deeply emphasizes the deep mining of data and the widespread application of information. In this era where data is king, the value of data as a new factor of production lies in its ability to be accurately analyzed and transformed into insights and decision-making basis for practical applications. Therefore, the rise of new quality productivity inevitably requires us to undergo profound changes and innovations in the existing production mode, organizational structure, and even the entire talent training system to regulate the transformation of this new paradigm. In the field of education, especially for cutting-edge majors such as intelligent control technology, educators must change their mindset and adopt diverse teaching methods to address this challenge. This not only means combining theoretical teaching with practical operation, but also equipping students with the

ability to solve practical problems while mastering a solid theoretical foundation; More importantly, it is important to guide students to develop data thinking, learn to extract useful information from massive amounts of data, and apply it to solve practical problems. This teaching method will help promote the comprehensive development of intelligent control technology professionals, lay a solid foundation for them to cope with various challenges in their future careers, and jointly promote the continuous innovation and development of the training mode for intelligent control technology professionals.

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