

Application of Intelligent Collaboration Technology in Skill Training and Job Docking of Data Tagger

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Abstract: With the rapid development of artificial intelligence and machine learning technology, the role of data tagger has become more and more important, responsible for providing high-quality annotated data for training algorithms, but traditional skills training and job docking methods cannot meet the needs of the rapid development of the industry. This paper studies the application of intelligent collaboration technology in improving the skill training efficiency of data taggers and promoting its effective docking with the post. By using the literature review method, in-depth interview method, and case analysis method, this paper analyzes the current challenges faced by data taggers, including skill gaps, insufficient training resources, and rapid changes in market demand. The results show that the application of intelligent collaboration technology can not only improve the skill training efficiency of data taggers but also promote effective docking between them and their positions, bringing a positive impact to the data tagging industry.

Keywords: Intelligent cooperation technology; Data tagger; Skill development; Post-docking

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1. Job demand analysis for data taggers

In today's digital era, data has become a crucial element driving the development of artificial intelligence and machine learning. Data taggers, as an indispensable role in this process, are responsible for providing labeled data that machines can learn from. With technological advancements, Intelligent Collaboration Technologies (ICT) have begun to transform traditional data labeling processes, enhancing the quality and efficiency of data annotation through automated tools and algorithms^[1]. Nevertheless, the skill development and job alignment of data taggers still face challenges, particularly amidst the rapidly evolving technologies and market demands^[2]. This study aims to explore how ICT can be applied to the skill development and job alignment of data taggers, thereby improving their work efficiency and ensuring their effective adaptation to the ever-changing job requirements^[3].

2. Enhancing skill cultivation efficiency of data taggers through intelligent collaboration technologies

2.1. Analysis of technical tools and platforms

2.1.1. Automated and assisted annotation

Automation and assisted annotation have significantly improved the efficiency and accuracy of data labeling through the integration of advanced technologies such as reinforcement learning, self-supervised learning, transfer learning, semi-supervised learning, and joint models. Semi-supervised learning methods like MixMatch, UDA, and FixMatch have reduced the workload of fully manual annotation while ensuring labeling quality^[4]. Furthermore, the innovative application of joint models has not only improved the accuracy of single-modal annotation but also effectively tackled complex multi-modal annotation tasks, further expanding the application scope of automated annotation. The comprehensive application of these technologies has brought revolutionary improvements to the field of data labeling, enabling data taggers to complete annotation tasks more efficiently and accurately, thereby meeting the urgent demand for high-quality labeled data in modern Artificial Intelligence (AI) development^[5].

2.1.2. Real-time quality monitoring

Real-time quality monitoring systems play a pivotal role in intelligent collaboration technologies, significantly enhancing the efficiency and accuracy of data labeling. A continuous mindset of quality improvement fosters a positive cycle that continually elevates work standards and quality. Real-time monitoring also strengthens decision support, providing management with insights into team efficiency and problematic areas, thereby optimizing processes and resource allocation. In terms of teamwork, the sharing mechanism encourages members to jointly analyze errors, learn from best practices, and improve overall work efficiency and quality. Additionally, real-time monitoring serves as an incentive mechanism, maintaining taggers' work motivation and professional interest while reducing the risk costs associated with low-quality annotations.

2.1.3. Reinforcement learning tool

Reinforcement learning tools offer immersive experiences that simulate real-world work environments, enabling data taggers to rapidly master complex annotation skills through a practice-oriented approach. In this interactive and real-time feedback learning environment, taggers can instantly correct errors and engage in personalized learning through customized learning paths. This technological application not only accelerates the skill enhancement process but also enhances learning motivation and engagement through remote collaboration and gamification elements, significantly improving the efficiency of data tagger skill cultivation without incurring additional costs.

2.1.4. Personalized training plan

Personalized training programs leverage advanced artificial intelligence technologies to accurately assess the skill levels of data taggers, thereby designing customized learning paths for them. These learning paths take into account each individual's abilities, progress, and learning styles, providing targeted learning materials and real-time feedback mechanisms. This allows the learning process to dynamically adjust based on individual performance, avoiding the waste of time in areas of proficiency while ensuring focused support where assistance is needed. Furthermore, this personalized approach encourages self-directed learning, optimizes the allocation of educational resources, reduces training costs, enhances teamwork and communication, and continuously

improves the quality and effectiveness of training through ongoing tracking, evaluation, and feedback loops.

2.2. The change of training mode

2.2.1. How can intelligent collaboration technology change the training model and learning path of data taggers

Intelligent collaboration technology is completely changing the training mode of data taggers. By analyzing the learning history, abilities, and preferences of students, personalized learning paths are customized for each student to ensure that the learning methods meet individual needs to the greatest extent possible. This technology also provides real-time feedback and coaching, which can correct errors in real-time and guide students to deepen their learning. Additionally, through gamified learning and community interaction, intelligent collaboration technology enhances the fun and participation of learning and promotes knowledge sharing and collaborative learning. Finally, the automated evaluation and certification mechanism simplifies the evaluation process of learning outcomes, reduces costs, and accelerates the skill certification of learners, thereby promoting the efficiency and quality of talent cultivation in the data annotation industry.

Intelligent collaboration technology has played a key role in optimizing the learning path of data taggers. It not only guides beginners to gradually master advanced skills from basic knowledge and grow into experts in the field of data annotation but also helps students learn cross-disciplinary skills such as data privacy protection and data management by analyzing industry trends and job requirements, enhancing their market competitiveness^[6,7]. Moreover, with the development of the industry, these technologies provide continuous resource updates and skill upgrades, supporting students' lifelong learning and career development, and ensuring that they can continuously adapt to the ever-changing data annotation industry.

3. Intelligent collaboration promotes the effective docking of data taggers and post

3.1. Job matching mechanism and career development support

3.1.1. Data analysis and matching

Intelligent collaboration technologies significantly enhance the effective alignment between data taggers and job positions through data analysis and matching, real-time feedback and adjustment, predictive talent management, enhanced communication and collaboration, automated process management, and continuous learning and development support. Firstly, by deeply analyzing individual skills and experience and matching them with corporate job requirements, it ensures optimal talent allocation. Simultaneously, the intelligent collaboration system provides real-time work feedback and performance evaluation, enabling data taggers to promptly adjust their work strategies and enhance productivity^[8]. Furthermore, through predictive talent management, the system anticipates future talent demands, assisting data taggers in preparing and adapting to new work challenges ahead of time. Coupled with powerful communication and collaboration tools, along with personalized training plans, intelligent collaboration not only optimizes current workflows but also supports the continuous professional development of data taggers, thereby ensuring that enterprises maintain an efficient and highly skilled data labeling team over time.

3.1.2. Skills gap identification and training suggestions

Intelligent collaboration technologies demonstrate remarkable efficiency in skill assessment and demand comparison. Constructing a detailed skill map, not only provides enterprises with a comprehensive platform

to understand employees' skill status but also offers valuable insights for individual employees' career development. The real-time update and dynamic evaluation functions ensure that enterprises can promptly grasp employees' latest capabilities and adjust talent strategies and work assignments accordingly. Additionally, the industry benchmark comparison feature helps enterprises clarify their positioning and competitive advantages within the industry, enabling them to develop more targeted talent development strategies^[9].

In terms of customized training recommendations, intelligent systems design personalized learning paths based on each employee's specific skill gaps and career development goals, integrating diverse learning resources and prioritizing them to help employees plan their study time effectively. The progress monitoring and effect evaluation functions are established through intelligent learning monitoring systems and feedback loops, providing strong support for continuously optimizing learning paths and recommendation algorithms^[10].

Ultimately, intelligent collaboration technologies not only focus on employees' short-term skill enhancements but also strive to cultivate their autonomous learning habits and team collaboration abilities. By integrating corporate culture and values into learning content, these technologies align strategic objectives with talent strategies, providing solid support for enterprises' long-term development and the cultivation of high-potential talents.

3.1.3. Virtual practice and simulation

Intelligent collaboration systems integrate Virtual Reality (VR) and Augmented Reality (AR) technologies to provide data taggers with a highly simulated work environment for effective job alignment^[11]. These systems mimic real-world work scenarios, offering interactive operational experiences and setting up specific scenario-based simulation training, such as emergency data processing and high-pressure decision-making, to enhance data taggers' work capabilities and mental resilience. During virtual internships, the system provides real-time feedback and guidance based on users' performance, dynamically adjusting learning paths to ensure that each user learns at their own pace and level.

Furthermore, the system supports cross-regional collaboration skill development, systematic enhancement of professional abilities, as well as psychological adaptation and emotion management. Through continuous education and updates, the system regularly refreshes simulation training content, ensuring that data taggers stay up-to-date with the latest industry knowledge and technologies^[12]. Innovative thinking training, case studies, and analyses, along with problem-solving in teamwork, further cultivate data taggers' innovative thinking and problem-solving abilities.

3.1.4. Personalized career planning

Intelligent collaboration technology effectively promotes the efficient alignment of data taggers with job positions through personalized career planning services. This service not only takes into account individuals' professional interests and long-term career goals but also integrates market trends, offering customized career development paths for data taggers. In terms of personalized assessment, intelligent collaboration technology is capable of evaluating data taggers' professional interests, ensuring that they are matched with personally appealing work content.

Concurrently, by analyzing the development trends in the AI industry, intelligent collaboration technology can guide data taggers toward rapidly growing areas of demand, such as autonomous driving, smart security, and others^[13]. This approach not only enhances their job satisfaction but also positions them at the forefront of

emerging technologies, maximizing their potential for professional growth and success.

3.1.5. Online interview and assessment

Intelligent collaboration technology significantly enhances corporate recruitment efficiency through online interviews and automated assessment tools. It enables the simultaneous conduct of online interviews for hundreds of thousands of candidates, thereby shortening the recruitment cycle, improving attendance rates, reducing human resource costs, and eliminating repetitive tasks and communications. This technology also conducts multi-dimensional evaluations of candidates based on an enterprise's personalized recruitment requirements, achieving a scientific and accurate quantitative assessment with an accuracy rate of up to 95% ^[14,15].

Furthermore, by showcasing corporate culture and work environments through videos, intelligent collaboration technology boosts candidates' enthusiasm and enhances their overall experience. Candidates receive immediate feedback after undergoing automated assessments, allowing them to understand their performance and identify areas for improvement.

In the context of the digital economy, intelligent collaboration technology provides a wealth of talent data information, enabling enterprises to accumulate a video-based talent pool and offer digital assessment reports for a better understanding and management of human resources. Whether for campus recruitment, social recruitment, or large-scale hiring for entry-level positions, intelligent collaboration technology enhances the efficiency and precision of interviews, giving companies a competitive edge in the fierce talent market.

4. Challenges encountered in the implementation of intelligent collaboration technologies

When implementing intelligent collaboration technology, enterprises face multifaceted challenges. On the technical side, ensuring data integrity and quality, developing accurate and reliable algorithms, and maintaining model scalability are fundamental. Additionally, social and ethical issues such as privacy protection, employment impacts, and ethical norms cannot be overlooked.

In terms of human-computer interaction, optimizing user experience and fostering human-machine collaboration is crucial. Within organizations, change management and cross-departmental collaboration are key factors, while technology adaptation and integration pose challenges to existing systems. Economically, cost-benefit analysis and the need for long-term investments test corporate financial decision-making. Compliance with legal regulations is also a mandatory standard for enterprises to adhere to.

Lastly, the technology and talent gap is one of the challenges that businesses need to proactively address. Bridging this gap requires investments in training and upskilling current workforces, as well as attracting and retaining skilled professionals who can effectively leverage intelligent collaboration technologies.

To overcome these challenges, enterprises must adopt a holistic approach, involving stakeholders across all levels and functions. This includes developing robust data governance policies, enhancing technical capabilities through R&D investments, fostering a culture of continuous learning and adaptation, and ensuring ethical and legal compliance throughout the implementation process. By doing so, enterprises can harness the full potential of intelligent collaboration technology while mitigating associated risks and challenges.

5. Future research direction

The research into explainable AI and model transparency aims to enhance user trust in intelligent systems by providing clarity and understanding of how these systems make decisions. Meanwhile, the establishment of ethical AI principles and moral decision-making frameworks ensures that technology is applied in a morally responsible manner. These efforts are crucial for fostering public trust and confidence in AI-driven solutions.

Parallel to this, research on education and skills retraining is focused on bridging the digital divide, assessing the impact of AI on employment, and preparing workers for technological shifts. This includes initiatives to upskill and reskill the workforce, ensuring that individuals have the necessary competencies to thrive in an AI-augmented world.

Furthermore, new approaches to data security and privacy protection are being explored to safeguard individual privacy and uphold data governance standards. These advancements are essential for fostering a secure and trustworthy environment for AI applications.

In terms of emerging technologies, research spans enhanced reality (AR/VR), Internet of Things (IoT) integration, machine learning optimization, advancements in Natural Language Processing (NLP), and blockchain technology applications. AR/VR collaboration platforms and virtual environments are poised to revolutionize remote work experiences, while IoT and edge computing integrations will drive more intelligent data processing. Adaptive learning systems and deep learning optimizations will enhance the adaptability of AI systems, while NLP's advancements in semantic understanding will improve human-machine interactions.

Blockchain technology, with its ability to strengthen data security and collaboration protocols, will be leveraged to enhance automation through smart contracts. These technological advancements will collectively propel the development of intelligent collaboration technologies, making them more efficient, equitable, and sustainable.

Overall, this research agenda underscores the importance of addressing both the technical and societal aspects of AI to ensure its beneficial and responsible integration into our lives and work.

6. Conclusion

Intelligent collaborative technology has played a significant role in enhancing the efficiency of skill development for data annotators and facilitating their effective alignment with job positions. With continuous advancements in technology and the expansion of application scenarios, intelligent collaborative technology is expected to bring even more positive impacts to the data annotation industry, driving the sustained development of artificial intelligence and machine learning technologies.

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Disclosure statement

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