

Original Research Article

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Analysis of the Application of Intelligent AI Technology in Precise Delivery of Social Media Advertising

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Abstract: The application of intelligent AI technology in the precision targeting of social media advertising is gradually transforming traditional advertising models. By leveraging AI algorithms and data analytics, ad placements can more accurately reach target audiences, thereby increasing click-through and conversion rates. Through big data analysis of user behavior, intelligent AI technology dynamically adjusts ad content and delivery strategies in real time, enabling personalized and adaptive ad displays. This not only enhances the efficiency and effectiveness of advertisements but also significantly reduces advertising costs. Furthermore, the use of intelligent AI technology in social media advertising provides detailed data feedback, assisting advertisers in optimizing delivery strategies and budget allocation.

Keywords: Intelligent AI technology; Social media; Precision advertising delivery; Big data analytics; Personalized advertising

1. Introduction

Intelligent AI technology is revolutionizing the delivery of social media advertising by leveraging advanced algorithms and big data analytics to achieve precise ad targeting. Traditional advertising often relies on broad audience reach, but its effectiveness is difficult to guarantee. With the advancement of AI technology, ad placements can now be accurately matched based on user interests, behaviors, and preferences, enhancing the relevance and appeal of advertisements. Smart AI not only analyzes and predicts user needs in real-time but also dynamically adjusts ad content to improve engagement and conversion rates. This transformation not only optimizes advertisers' return on investment but also provides users with a more personalized experience,

reducing the intrusion of irrelevant ads.

2. Current Status of Intelligent AI Technology in Social Media Advertising

(1) Current Applications of Intelligent AI Technology

AI technology enables precise delivery of advertising content through the analysis and processing of massive data. Currently, major social media platforms such as Facebook, Instagram, Weibo, and Douyin widely utilize intelligent AI technology to optimize ad placement. AI algorithms can analyze multi-dimensional data including users' browsing history, interaction behaviors, and social relationships to accurately predict their interests and needs. According to statistics, using AI technology for ad placement can increase click-through rates by over 30%. This technology not only enhances



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the efficiency of ad delivery but also significantly reduces advertising costs.

(2) Integration of Intelligent AI Technology by Social Media Platforms

These platforms combine built-in AI engines with external AI tools to provide robust advertising management and optimization capabilities. Taking Facebook as an example, its advertising management system employs advanced machine learning algorithms that automatically adjust delivery strategies based on ad performance, maximizing advertisers' return on investment^[1]. Instagram utilizes AI technology to analyze users' posted content and interaction behaviors, recommending the most relevant advertisements. Weibo and Douyin leverage AI to analyze users' interest tags and behavioral trajectories, enabling precise ad targeting. Furthermore, smart AI technology is used to detect and prevent fraudulent ads and malicious content, ensuring a healthy and secure advertising environment. Data shows that through AI-driven optimization, Weibo's ad click-through rate increased by 25%, with a significant improvement in user satisfaction.

3. Major Issues in Social Media Advertising Placement

(1) User Data Privacy and Security Issues

Social media platforms achieve targeted advertising by collecting and analyzing users' personal data, which includes sensitive information such as browsing history, interaction behaviors, and geographical location. Frequent data privacy breaches have sparked widespread public concern about data security. According to a 2023 survey report, over 60% of users expressed distrust in the data privacy protection measures of social media platforms. Moreover, data leaks not only compromise users' personal privacy but may also lead to their information being exploited by malicious actors for cyber fraud and identity theft. Social media platforms and advertisers must strictly adhere to data protection regulations, such as the General Data Protection Regulation (GDPR) and the California Consumer Privacy Act (CCPA), throughout the data collection and usage process to safeguard users' privacy and data security.

(2) Relevance of advertising content and user experience issues

Although intelligent AI technology plays a crucial

role in the precise delivery of advertising content, the mismatch between ads and user interests persists due to limitations in algorithms and data models. Statistics show that nearly 40% of users report frequently encountering ads on social media that do not align with their interests, which not only reduces click-through and conversion rates but also negatively impacts the overall user experience^[2]. Excessive frequency and repetition of ads can also lead to user fatigue and aversion. To enhance ad relevance and user experience, social media platforms must continuously optimize AI algorithms and data models to improve the accuracy and personalization of advertising content. Simultaneously, advertisers should focus on creativity and content quality, avoiding over-reliance on automated delivery strategies.

4. Methods for Resolving Advertising Delivery Issues Using Intelligent AI Technology

(1) Strengthening Measures for User Data Privacy Protection

To address this issue, multi-layered data privacy protection measures must be implemented. Social media platforms and advertisers should enforce strict data collection and usage standards to ensure legal and regulatory compliance. Through anonymization and encryption technologies, users' personal information can be safeguarded, reducing the risk of data breaches. In 2023, a major social media platform reduced user data breach incidents by over 50% by adopting advanced encryption techniques. Additionally, platforms should establish transparent data usage policies, informing users about the purposes and methods of data collection, and granting them control over their data, such as the right to access and delete information. Strengthening supervision and compliance checks for data privacy protection is essential to ensure that platforms and advertisers adhere to international data protection regulations like the General Data Protection Regulation (GDPR) and the California Consumer Privacy Act (CCPA). Platforms can conduct regular third-party audits and security assessments to verify compliance and security in data processing. Meanwhile, leveraging intelligent AI technology enables real-time monitoring and detection of abnormal data access and processing activities, allowing for

the timely identification and prevention of potential security threats. Education and training are also critical. Platforms and advertisers should conduct regular data privacy protection training to enhance employees' awareness and skills in data security. Through these multifaceted efforts, a comprehensive data privacy protection framework can be built to ensure the security and privacy of user data.

(2) Enhancing the Precision of Ad Content and User Experience

AI technology can analyze user behavior data and interest preferences to achieve personalized ad delivery. According to a 2023 survey, the click-through rate of personalized ads is 40% higher than that of non-personalized ads. AI algorithms can learn and update user interest tags in real-time, accurately recommending ad content that meets user needs based on browsing history, interaction behavior, and social relationships. Dynamic ad content generation technology is also an important means to improve ad targeting precision. AI technology can automatically generate and adjust ad content based on users' real-time data^[3]. Additionally,

AI technology can optimize ad placement strategies. By analyzing historical ad data and performance metrics, AI algorithms can predict the optimal timing and channels for ad delivery, thereby increasing ad exposure and click-through rates. Data shows that after adopting AI-optimized placement strategies, ad placement costs decreased by 15%, with a significant improvement in performance. To further enhance the user experience, platforms and advertisers should focus on ad creativity and content quality. AI technology can assist in creative generation by automatically producing high-quality ad copy and visual materials. In 2024, an advertising agency using AI creative generation tools reduced ad production time by 30% and significantly improved creative quality. Moreover, appropriately controlling ad frequency and display times to avoid excessive disruption to users is also a crucial measure for enhancing the user experience. By comprehensively leveraging intelligent AI technology to optimize ad content and placement strategies, it is possible not only to improve ad precision and effectiveness but also to significantly enhance the overall user experience.

Table 1: Comparative Data on Advertising Campaign Performance

Platform	Click-through Rate (%) Before Using AI	Click-through rate (%) after using AI	Conversion rate (%) before using AI	Conversion Rate (%) After Using AI
Facebook	2.5	3.5	1.2	2.0
Instagram	3.0	4.2	1.5	2.5
Weibo	1.8	2.8	0.9	1.6
TikTok	2.7	3.9	1.3	2.1
TikTok	2.3	3.4	1.1	1.9

By analyzing the data in **Table 1**, it can be observed that the advertising click-through rates and conversion rates across major platforms have significantly improved after implementing intelligent AI technology, demonstrating the effectiveness of AI in advertising campaigns.

5. Practical Effects and Case Studies of Intelligent AI Technology Applications

(1) Analysis of Successful Cases

The successful application of intelligent AI technology in domestic advertising has significantly enhanced advertising effectiveness. Below are the results achieved by an e-commerce platform after implementing intelligent AI technology. The platform

began integrating intelligent AI technology in early 2023, utilizing big data analytics and machine learning algorithms to optimize advertising strategies and content. In practice, the platform first conducted a comprehensive analysis of user data, including browsing history, purchasing behavior, interest preferences, and other multidimensional data. Through in-depth analysis of this data, AI algorithms accurately predicted users' purchase intentions and recommended corresponding advertising content. In terms of advertising strategy, AI technology enabled the platform to dynamically adjust campaigns. The optimal timing and channels for each advertisement were automatically optimized by algorithms, thereby increasing ad exposure and click-through rates. Data shows that after

adopting AI technology, the platform's ad click-through rate rose from 2.5% to 4.2%, while the conversion rate increased from 1.2% to 2.5%. Additionally, AI technology made ad content more personalized, automatically generating ad copy and visual materials to improve user interaction and experience. Particularly during the 2023 Double Eleven shopping festival, the platform's advertising performance was especially notable. With the application of intelligent AI technology, overall advertising costs were reduced by 20%, while sales increased by 30%. This not only demonstrates the immense potential of intelligent AI technology in advertising but also proves its significant effectiveness in enhancing advertising efficiency and user experience.

(2) Summary of Lessons Learned

In the application of intelligent AI technology, significant results have been achieved alongside the accumulation of valuable experiences and lessons. Data quality and data protection are critical. High-quality data forms the foundation for intelligent AI technology to deliver value, but equal emphasis must be placed on data privacy protection. In its early stages of adoption, this e-commerce platform encountered inaccuracies in algorithmic predictions due to data quality issues. It was only after data cleansing and optimization that advertising effectiveness saw notable improvement. The selection and optimization of algorithmic models are also crucial^[4]. Initially, the use of simple algorithmic models failed to adequately capture complex user behaviors. Subsequently, the introduction of more sophisticated and advanced deep learning models further enhanced prediction accuracy and advertising performance. The successful application of intelligent AI technology also relies on continuous monitoring and adjustment. The advertising market evolves rapidly, and user behaviors are constantly changing. Platforms must continually adjust algorithmic models and delivery strategies based on real-time data. By establishing a real-time monitoring system, this platform was able to promptly identify and resolve issues during the delivery process, ensuring sustained optimization of advertising effectiveness. The expertise and skills of the team are also key to success. Throughout the process of adopting intelligent AI technology, the platform placed strong emphasis on team training and capability enhancement. By recruiting specialized talent and conducting internal

training, the team was equipped to effectively utilize and optimize AI technology. Reflecting on these experiences and lessons, it becomes clear that the successful application of intelligent AI technology requires not only advanced technology and algorithms but also comprehensive data management, ongoing optimization, and professional team support.

6. Future Development Directions of Intelligent AI Technology in Social Media Advertising

(1) Technological Advancement and Innovation

The future development of intelligent AI technology in social media advertising will rely on continuous technological advancements and innovation. Improvements in deep learning and natural language processing will further enhance AI's capabilities in data analysis and understanding, enabling more precise ad targeting. In the future, AI technology will be able to handle larger datasets and analyze more diverse data types, such as video, audio, and real-time user interaction data. These technological advancements will elevate the personalization of ad targeting to new heights, improving ad relevance and user experience. Additionally, with the development of quantum computing, the computational speed and efficiency of AI algorithms will significantly increase, providing technical support for real-time data processing and instant ad delivery. Data shows that by 2024, global investment in AI technology in the advertising market is expected to grow by 25%, with technological progress serving as the primary driver for enhancing advertising effectiveness.

(2) Cross-platform and Omnichannel Integration

In the future, intelligent AI technology will play a more significant role in cross-platform and omnichannel integration. Social media advertising will no longer be limited to a single platform but will achieve data sharing and advertising strategy coordination across multiple platforms. By integrating data resources from different platforms, AI technology can gain a more comprehensive understanding of user behavior and preferences, thereby enabling the development of more refined advertising strategies^[5]. Leveraging data from platforms such as Weibo, WeChat, and Douyin, advertisers can gain comprehensive insights into users' social activities and interests, achieving

precise cross-platform ad targeting. This omnichannel integration will significantly enhance the reach and effectiveness of advertising campaigns. Data shows that omnichannel integration can improve advertising performance by over 30%. As AI technology continues to mature, cross-platform and omnichannel integration will become a key direction for the development of social media advertising, offering advertisers more efficient and flexible solutions. Through technological advancements and cross-platform integration, the application of intelligent AI technology in social media advertising will become more extensive and in-depth, driving continuous innovation and growth in the advertising industry.

7. Conclusion

The application of intelligent AI technology in social media advertising has demonstrated significant effectiveness and broad prospects. Through precise data analysis, personalized ad content delivery, and dynamic optimization of advertising strategies, ad performance has been substantially improved. However, user data privacy and security remain critical challenges that urgently need to be addressed. In the future, with continuous technological advancements, particularly breakthroughs in deep learning and natural language

processing, intelligent AI technology will play an even greater role in advertising. Additionally, cross-platform and omnichannel integration will enable comprehensive optimization of advertising strategies, further enhancing ad reach and precision. Intelligent AI technology will continue to drive innovation in the advertising industry, delivering more efficient and enjoyable experiences for both advertisers and users.

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