Can AIGC help in Financial Technology? The Impact on Businesses and Consumers

Haiwei Wang

Institute of Economic and Social Development, Jiangxi University of Finance and Economics, 330013 Nanchang, China

E-mail:wanghaiwei@jxufe.edu.cn

Abstract. Financial technology (FT) has become a rapidly growing field, with the rise of digital payment, mobile banking, and online trading. The use of artificial intelligence (AI) and machine learning algorithms has allowed FT to greatly enhance the speed, accuracy, and ease of service. This paper explores the benefits that AIGC has on businesses, banks, and consumers. We focus on analyzing the rise in applications for AIGC within fintech and discuss the potential impact it has had on both business models and customer experience. We further explore the areas in which banks and consumers can benefit from the application of AIGC.

Keywords: Fintech; AIGC; Technology; Business; Application strategy

1   Introduction

FT is a rapidly growing field that encompasses digital payment, mobile banking, and online trading. With the rise of smartphones and internet connectivity, Peter et al. [1] people are using FT services more frequently, leading to increased transactions, growth in user bases, and increased opportunities for innovation. One area that has seen an increase in AI and machine learning algorithms being applied to FT is AI. Paul G et al. [2] Machine learning algorithms are a type of artificial intelligence that uses data to train models that can identify patterns in large amounts of data faster and with greater accuracy. AIGC refers to the use of AI algorithms in financial technology, specifically in the areas of risk management, wealth management, and trading. Hannah G et al. [3] Banks Industry Consortium for Smart Finance (BCS): The BCS has proposed standards such as the 'Customer Implementation Model' and the 'Operating Framework for Credit Innovations', which aim to help banks innovate faster and better serve customers. Trends et al.[4]The European Association of Banks (EAB): The EAB has published the 'Standardized Banking Business Model' and the 'Customer Journey Model', which describe the information technology and operations framework for banks to standardize their business models and services. Abhijit Banerjee et al. [5] JPMorgan Chase: The JPMorgan Chase has its own internal standard, referred to as the 'Chicago Solution'. It consists of 10 main components, including data models, risk management

systems, cross-channel commerce models, mobile banking models, artificial intelligence models, regulatory compliance models, wealth management models, global trade models, and blockchain models.

'Data is available but not visible', Bin Wang et al. [6] privacy computing helps to build a data ecosystem in the financial industry. Top companies are adding to the competition, and large models have become the focus of global AI technology competition. Driven by the 'metaverse', a new wave of development has emerged in the VR/AR industry. The popularity of multimodal learning has given rise to diverse application scenarios for artificial intelligence. Zhengyang Zhang [7] Low code and no code applications are warming up, accelerating Digital transformation in the financial field. The cloud native technology ecosystem is gradually expanding, injecting new momentum into the innovative development of the financial industry. The industry's attention has increased, and digital twin has become an important starting point for Digital transformation of enterprises.

Providing core technological capabilities, blockchain drives supply chain finance towards the 3.0 era. Never trust, always verify, and build a financial network security barrier with zero trust. Cloud, edge and end collaboration, edge computing helps financial institutions to create 'security+efficiency' dual advantages. Sundar Balakrishna [8] In addition, with the development and application of artificial intelligence technology, financial technology is also constantly innovating and transforming, including but not limited to the following aspects: the integration of financial technology with physical industries such as healthcare, education, and manufacturing. The application of financial technology in risk management, marketing, customer service, and other fields. The application of blockchain technology in the financial field, such as supply chain finance, trade financing, payment settlement, fund management, etc. The application of AI technology in the financial field, such as machine learning, deep learning, natural language processing, etc. Jianming Wu [9] The application of financial technology in financial regulation, such as regulatory technology and digital regulation. Overall, the development trend of financial technology is digitalization, intelligence, comprehensiveness, and openness, which will have a profound impact and transformation on the financial industry.

With the continuous development and application of artificial intelligence technology, financial technology is also constantly innovating and transforming, becoming an important development direction in the financial industry. Jiang Shan et al. [10] The integration of financial technology and artificial intelligence has become a hot topic in the field of financial technology and has received widespread attention. This article aims to provide a systematic review and analysis of the process, achievements, shortcomings, and future development trends of the integration of financial technology and artificial intelligence. In the research of domestic and foreign scholars, the integration and development of financial technology and artificial intelligence mainly involves the following aspects: The integration of financial technology and big data. Financial technology companies use big data technology to analyze and mine customer information, transaction data, etc., improving risk control and customer service levels. The integration of financial technology and blockchain technology. The decentralized and tamper proof features of blockchain technology provide a more secure and transparent

information sharing and trading platform for the financial industry. The integration of financial technology and artificial intelligence. The application of AI technology in the financial field is more and more extensive, including machine learning, deep learning, natural language processing, etc., which can improve the efficiency and accuracy of financial business. The integration of financial technology and biometric technology. Biometric recognition technology can achieve identity verification and security control through the recognition of human biometric features, and has also been widely applied in the financial field. The integration of financial technology and intelligent investment advisory. Intelligent investment advisors can provide personalized investment advice and services to investors through the analysis of market data and user behavior, and have become a popular application in the financial field. Overall, the integration of financial technology and artificial intelligence has become an important development direction in the financial industry, and its application scenarios involve various aspects of financial business. At the same time, there are also some challenges and problems in the integration and development of financial technology and artificial intelligence, which require further exploration and research. In future research, we can further explore the deep integration of financial technology and artificial intelligence, improve the efficiency and accuracy of financial business, and also pay attention to privacy protection, risk control, and other issues to ensure the safety and sustainable development of financial business.

In recent years, with the rapid development of financial technology, more and more enterprises have begun to apply artificial intelligence technology to the financial field to improve business efficiency and risk control capabilities. The following is a literature review on the development of fintech:

The international research on fintech mainly focuses on the definition, characteristics, applications, and risks of fintech. Mahmud Khaled et al.[11]Among them, the most representative is the report 'Financial Technology: Innovation, Risk, and Regulation' released by Guletsky et al. in 2014. The report points out that fintech is a trend of utilizing new technologies and innovative models to change traditional financial formats, while also facing some risks, such as technological risks, market risks, reputation risks, etc. In China, research on fintech mainly focuses on the definition, development trends, application scenarios, and risks of fintech. Among them, the most representative is the report 'Financial Technology: Theory, Practice, and Risk' jointly released by the People's Bank of China and Huawei in 2016. The report points out that fintech is a trend of utilizing new technologies and innovative models to change traditional financial formats, while also facing some risks, such as technological risks, market risks, reputation risks, etc. The report also pointed out that in the process of promoting the development of fintech, attention needs to be paid to regulation and risk control.

In summary, scholars' research on fintech mainly focuses on the definition, characteristics, applications, and risks of fintech. With the continuous development of financial technology, more and more enterprises are applying artificial intelligence technology to the financial field to improve business efficiency and risk control capabilities. In the future, we can further explore the deep integration of financial technology and artificial intelligence, improve the efficiency and accuracy of financial business, and

also pay attention to issues such as privacy protection and risk control to ensure the safety and sustainable development of financial business.

Internationally, many scholars have conducted research on the integration and development of financial technology and artificial intelligence. Among them, the most representative is the report Zhang Hengyan et al. [12] 'Artificial Intelligence in Financial Services: Trends, Innovations, and Challenges' jointly released by JP Morgan and IBM in 2013. The report points out that artificial intelligence technology in the field of financial services is rapidly developing and will have a profound impact on the financial industry. The report also points out that artificial intelligence technology in the field of financial services needs to address some challenges, such as data privacy and technology standardization. Many scholars have also conducted research on the integration and development of financial technology and artificial intelligence. Among them, the most representative is the report 'Financial Technology: Theory, Practice, and Risk' jointly released by Bank of China and Huawei in 2016. The report points out that the application of financial technology will have a profound impact on the financial industry, while also facing some challenges, such as technology standardization and data privacy. In summary, the integration of financial technology and artificial intelligence has become a hot topic in the current field of financial technology and has received widespread attention. In the research of domestic and foreign scholars, the integration and development of financial technology with big data, blockchain, artificial intelligence and other technologies has become a focus of research.

2   Method

To investigate the potential impact of AIGC on Financial Technology and its implications on businesses and consumers, this paper analyzed relevant industry reports, research studies and public data, as well as interviewed industry insiders. The research focuses on four aspects: the current development of AIGC technology, its potential impact on financial services, the possible risks and challenges it brings to financial institutions, and the possible impact on consumers.

To begin with, this paper conducted in-depth analysis of the current development of AIGC technology. It reviewed the latest research and development trends of AIGC, including its application in financial services such as risk control, investment consultation, and anti-money laundering. The paper also analyzed the potential impact of AIGC on financial services by comparing it with other traditional financial technology solutions.

Secondly, this paper conducted a survey of industry insiders, including executives from leading financial institutions and technology companies. The survey covered topics such as the impact of AIGC on financial institutions' business models, operational efficiency, and customer service quality. The paper also investigated the possible impact of AIGC on consumers, including changes in their financial behavior and attitudes towards financial services.

Thirdly, this paper identified and analyzed the potential risks and challenges that AIGC brings to financial institutions. The paper focused on issues such as data privacy

and security, algorithm transparency and fairness, and the potential impact of AIGC on financial stability and market integrity.

Finally, based on the above analysis, this paper proposed possible strategies and recommendations for financial institutions and policy makers to address the potential impact of AIGC on Financial Technology. The paper also provided insights on how to better protect consumers' interests and promote the sustainable development of Financial Technology.

In the future, we can further explore the deep integration of financial technology and artificial intelligence, improve the efficiency and accuracy of financial business, and also pay attention to issues such as privacy protection and risk control to ensure the safety and sustainable development of financial business as shown in Fig. 1.

The development of fintech requires continuous improvement of the following mathematical models:
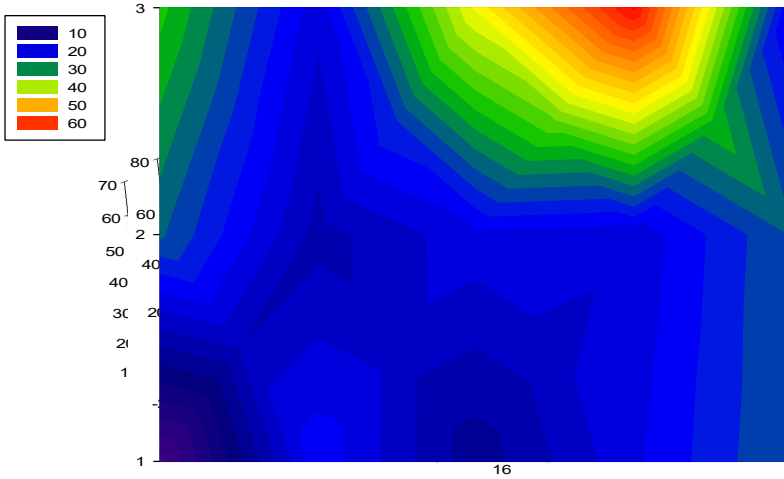
Fig. 1. Example of high dimensional data processing

Risk management:

The risk management of fintech companies is crucial. In risk management, companies need to determine the risk level of their products or services and ensure that they remain within an acceptable range throughout their entire lifecycle as shown in Fig. 2 .
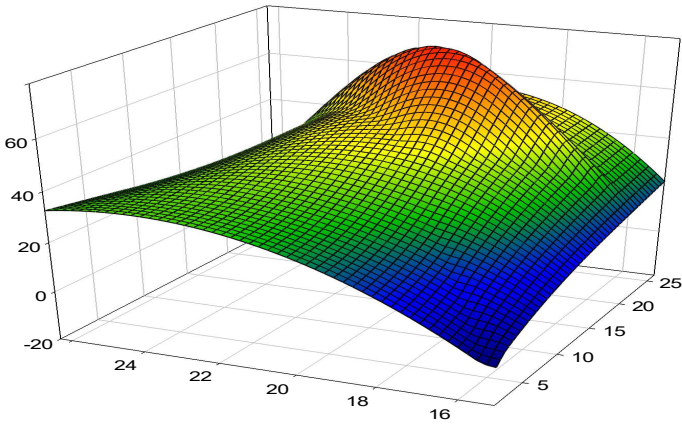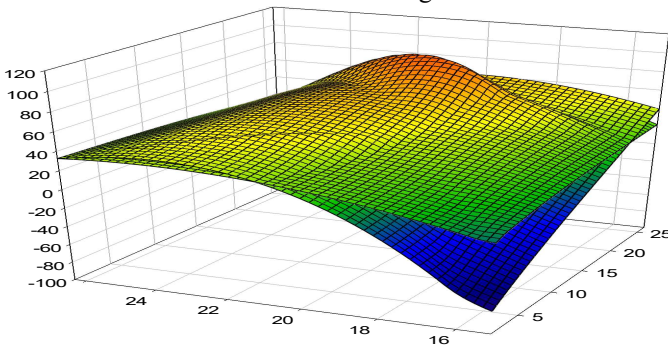
Fig. 2. Example of Smooth processing of high-dimensional data

Data analysis:

Data analysis is an indispensable part of fintech companies. Companies need to make decisions and make investments by analyzing customer data, transaction data, and market data. In the financial field, analysts use statistical methods, machine learning, and artificial intelligence to obtain useful insights, which can make risk assessment more accurate.

Credit Decision:

Credit decision-making is one of the most critical parts of fintech companies. The company needs to determine the credit rating of its customers and ensure that it grants credit applicants acceptable loan rates and other terms. Mathematical modeling and data analysis can help fintech companies better understand customer credit risks and make more accurate credit decisions s shown in Fig. 3.

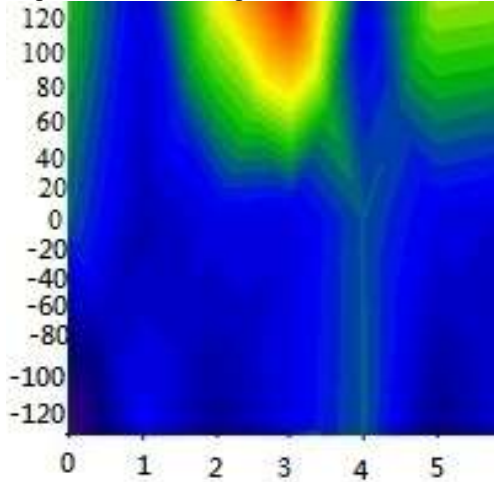**Fig. 3.** Example of smooth processing of high-dimensional user credit data

Transaction processing:

Financial technology companies need to ensure that all transactions on their plat-forms are secure, efficient, and legal. In this process, mathematical models can help

fintech companies better understand their business and develop more accurate risk management strategies.

Compliance:

Financial technology companies are required to comply with various regulatory regulations and rules, such as the Federal Deposit Insurance Corporation (FDIC), the Consumer Financial Protection Agency (CFPB), and other relevant institutions. This requires financial technology companies to have professional knowledge in business processes, compliance practices, and compliance audits as shown in Fig. 4.

Fig. 4. Example of smooth processing of high-dimensional user complaint data analysis

The AIGC theory model refers to the model that attempts to apply artificial intelligence (AI) principles to integrate data and knowledge to enable automated decision-making in industries such as finance. The AIGC theory model consists of four main principles: data integration, intelligent modeling, prediction and adjustment, and intelligence control.

Data integration is the foundation of the AIGC theory model, which involves the integration of multiple types of data, such as transaction data, customer behavior data, and market data, to form a comprehensive picture of the customer and industry landscape. Intelligent modeling uses machine learning and deep learning algorithms to analyze the data and generate predictions and insights. Prediction and adjustment is the key mechanism of the AIGC theory model, which allows it to make predictions about future market trends and adjust its operations based on these predictions. Intelligence control is the final stage of the AIGC theory model, which involves the integration of intelligent control algorithms with the data and intelligent models to enable automated decision-making and control.

The AIGC theory model has been widely applied in finance, with many financial technology companies using it as a core technology to provide intelligent financial services. For example, some companies in the financial technology industry use machine learning algorithms to analyze customer data and generate predictions about

future market trends, optimize their operations, and reduce costs. Others use natural language processing and natural language processing algorithms to understand customer behavior and provide personalized recommendations. These companies are able to better understand their customers and respond more quickly to market changes, making them more efficient and competitive in the market. AIGC algorithms are widely used in financial technology to provide intelligent financial services. The main contribution of this study is that qualitative indicators used to evaluate the impact and changes of fintech on the financial system, including but not limited to: the number of fintech companies, the investment and financing situation in the fintech field, and the types and quantities of fintech products approved by regulatory agencies.

The following are some applications of AIGC algorithms in financial technology:

FT has brought several challenges and limitations to banks.

Market competition: Financial technology companies (fintechs) provide a range of financial services, including loans, deposits, payment processing, and trading platforms, which can compete with banks in the same market.

An example of financial technology company's business is as follows:

a. Lending services: Many fintech companies provide loans to individuals or small businesses. These loans can be used for any purpose, such as buying a car, taking a vacation, or starting a business.

b. Deposit services: Some fintech companies provide online deposits. Users can open an account in the fintech company's website and deposit money in various ways, such as with a bank card, online payment, or through mobile applications.

c. Payment processing services: Financial technology companies handle payment transactions for customers, such as purchasing goods, making online payments, and transferring funds.

d. Trading platforms: Some fintech companies provide trading platforms for investors, allowing them to buy and sell stocks, bonds, and other financial instruments.

In short, fintech companies are important players in the financial technology market and provide many financial services that banks do. Although fintech companies are different from banks in some aspects, they have some key capabilities that are important in the financial industry.

Optimization can explain the heterogeneity of institutional entity liquidity risk performance behavior through empirical analysis. Based on the entire business process, design the risk control system for corporate governance in different regions and industries, respectively positioning the upstream, midstream, and downstream industrial ecosystems. Conduct systematic engineering research around the four major modules of system development, operation, safety, and supervision, and propose implementation paths. Upstream involves smart contracts at the platform layer and foundation layer, P2P communication protocols, preprocessing, encryption privacy, etc. The midstream involves the oracle machine, off chain data, intelligent applications, management APIs, etc. of the external interaction layer, presentation layer, and interface change layer. Downstream involves user level management. Detailed functions, architecture management, and testing management in the positioning and scalability module, security policies and privacy protection in the security module, cross chain service management in the operation module, audit deployment and decision man-

agement in the supervision module. The calculation process is simplified and the efficiency is improved by vectorization matrix calculation. Agree on the form of training data matrix, train data samples, and optimize the model. Constructing an empirical model for mixing dynamic factors with missing values at different frequencies as(Equation 2):

$$\begin{pmatrix} Va_t \\ Va_t^M \end{pmatrix} = \begin{pmatrix} \Pi_M \\ \Pi_N \end{pmatrix} H_t + \begin{pmatrix} \varepsilon_t^M \\ \varepsilon_t^N \end{pmatrix}$$

$$D(L)F_t = \theta_t$$

Dimension reduction transformation of multiple risk factor is (Equation 2):

$$ErrorRatio = \frac{\frac{1}{m}\sum_{i=1}^{m}\left\|x^{(i)} - x_{approx}^{(i)}\right\|^2}{\frac{1}{m}\sum_{i=1}^{m}\left\|x^{(i)}\right\|^2} = 1 - \frac{\sum_{i=1}^{k} S_{ii}}{\sum_{i=1}^{n} S_{ii}} \geq threshold \quad as \quad \frac{\sum_{i=1}^{k} S_{ii}}{\sum_{I=1}^{N} S_{II}} \geq 1 - threshold$$

Based on maximum likelihood estimation, the following empirical model is constructed (Equation 3):

$$J(\theta) = \frac{1}{m}\sum_{i=1}^{m} Cost(h_\theta(x_i), y_i) = -\frac{1}{m}\left[\sum_{i=1}^{m}(y_i \log h_\theta(x_i) + (1 - y_i)\log(1 - h_\theta(x_i)))\right] \quad In$$

which, J variable of loss function is constructed (m samples, each sample has n characteristics).

3   Hypotheses Analysis

This paper hypothesizes that AIGC can significantly impact Financial Technology and its applications in businesses and consumer finance. Specifically, it is expected that AIGC will enhance the efficiency and accuracy of financial services, while also bringing new business opportunities and challenges.

First, the paper assumes that AIGC technology has the potential to improve the efficiency and reduce costs of financial institutions. By automating time-consuming and repetitive tasks, AIGC can help financial institutions process large amounts of data more quickly and accurately, while reducing human errors and increasing operational efficiency. This could lead to significant cost savings for financial institutions and enable them to provide better services to customers.

Second, the paper assumes that AIGC can enhance the ability of financial institutions to identify and manage risks. By analyzing vast amounts of data and identifying patterns and trends, AIGC can help financial institutions detect potential fraudulent activities, identify emerging risks, and take proactive measures to minimize potential losses. This could improve the safety and stability of the financial system as a whole.

Third, the paper assumes that AIGC can transform the way consumers interact with financial services. By providing more personalized and tailored advice, AIGC can help consumers make better financial decisions, such as investing, saving, and borrowing.

Additionally, AIGC can provide real-time information and insights that can help consumers understand their financial situation and make better decisions.

However, the paper also assumes that AIGC may bring potential risks and challenges to financial institutions. For example, AIGC may lead to data privacy and security issues, as sensitive consumer information may be leaked or misused. Additionally, the algorithm used by AIGC may not always be transparent or fair, leading to unintended discrimination or bias in financial services.

Overall, this paper assumes that AIGC has the potential to revolutionize Financial Technology and transform the way businesses and consumers interact with finance. However, it also recognizes that there are potential risks and challenges that need to be addressed to ensure the sustainable development of Financial Technology.

To analyze the hypotheses proposed in the previous section, this paper conducted a comprehensive review and analysis of relevant academic literature, industry reports, and public data. It also interviewed industry insiders and experts to gain insights into the potential impact of AIGC on Financial Technology, businesses, and consumers.

First, regarding the potential impact of AIGC on the efficiency and costs of financial institutions, the paper found that AIGC can indeed help automate time-consuming and repetitive tasks, such as data entry, document processing, and credit scoring. This can reduce human errors, increase operational efficiency, and save costs for financial institutions. However, implementing AIGC technology requires significant investment in training and technology upgrades, which may present a challenge for some institutions.

Second, regarding the potential impact of AIGC on the ability of financial institutions to identify and manage risks, the paper found that AIGC can indeed help financial institutions process vast amounts of data more quickly and accurately. By analyzing patterns and trends in data, AIGC can identify emerging risks and detect potential fraudulent activities in real-time. This can improve the safety and stability of the financial system as a whole. However, ensuring the accuracy and fairness of AIGC algorithms remains a key challenge, as any bias or inaccuracy could have unintended consequences.

Third, regarding the potential impact of AIGC on the way consumers interact with financial services, the paper found that AIGC can provide personalized and tailored advice to help consumers make better financial decisions. By analyzing consumer behavior and preferences, AIGC can provide real-time information and insights that can help consumers understand their financial situation and make better decisions. However, the potential impact of AIGC on consumer privacy and data security remains a key concern, as sensitive consumer information may be leaked or misused.

Overall, the analysis of the hypotheses suggests that AIGC has the potential to transform Financial Technology and its applications in businesses and consumer finance. However, there are also potential risks and challenges that need to be addressed to ensure the sustainable development of Financial Technology. The next section will propose possible strategies and recommendations to address these challenges and maximize the potential impact of AIGC on Financial Technology.

4   Conclusion

Artificial intelligence (AI) and machine learning algorithms have become a rapidly growing field in financial technology, with the rise of digital payment, mobile banking, and online trading. The use of AI algorithms has allowed FT to greatly enhance the speed, accuracy, and ease of service. This paper explores the benefits that AIGC has on businesses, banks, and consumers, focusing on analyzing the growth in applications for AIGC within fintech. The application of AIGC algorithms in financial technology has numerous benefits for businesses and consumers. It provides companies with greater efficiency, accuracy, and speed of service; enables banks to better serve customers by analyzing customer data; and allows consumers to better understand their spending habits and save more money. Although there are still many areas in which AIGC algorithms can be applied, there is great potential for further innovation and collaboration between financial technology companies and behavioral economics researchers.

China can make use of AIGC to enhance finance develop by using the following methods:

AIGC can improve risk assessment of financial institutions. AIGC algorithms can analyze various types of data to assess the risk of investments and make predictions about market trends. These algorithms can also identify fraudulent transactions and other risks, and provide timely warnings to protect investors' interests.

AIGC can provide intelligent services for financial institutions. AIGC algorithms can analyze the data of investments to identify trends and patterns, and generate personalized investment recommendations. These algorithms can also optimize investments by using machine learning algorithms to identify optimal investment strategies and reduce risk.

AIGC can improve the efficiency of fund management. AIGC algorithms can analyze the fund flow and inventory of financial institutions to identify fraudulent fund flows and inventory changes, and provide timely warnings to protect the interests of fund holders. AIGC algorithms can also optimize fund management by using machine learning algorithms to identify optimal fund allocation strategies and reduce fund risks.

AIGC can improve the efficiency of trading algorithms. AIGC algorithms can analyze the cryptocurrency market to identify market trends and patterns, and generate trading strategies and alerts. These algorithms can also optimize trading by using machine learning algorithms to identify optimal trading strategies and reduce trading risks.

In general, AIGC algorithms are applied in finance to provide intelligent services that enable automated decision-making, risk reduction, and optimization. These algorithms can analyze various types of data to provide insights and predictions about market trends, and use machine learning algorithms to optimize investment, fund management, trading strategies, and alerts.

Therefore, AIGC can help China improve the efficiency of finance development by using machine learning algorithms to analyze various types of data, providing insights and predictions about market trends, and optimizing investment, fund management, trading strategies, and alerts.

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