Research on the Challenge of Computer Artificial Intelligence Technology to Financial Risk Management

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Abstract. Artificial intelligence is widely used in people's lives. With the popularity of artificial intelligence, the financial industry has also ushered in reforms. With other technical support, the integration of artificial intelligence technology has formed a new model of financial industry development, that is, "Internet + big data + artificial intelligence + financial risk control". It has gradually become popular in this rapidly developing society. And this new model will be the main form of financial risk control in the future. This paper mainly sorts out the application status of artificial intelligence in the financial field, and it analyzes its advantages and problems.

Keywords: Artificial Intelligence, Financial Risk, Big Data, Risk Control

1. Introduction
AlphaGO defeated Li Shishi and Ke Jie consecutively, it pushed artificial intelligence technology to the forefront, the research of artificial intelligence technology has ushered in a new climax. In recent years, with the development of high-performance chips, big data and cloud computing, the cost of computing and storage continues to decrease, but the performance continues to improve. This laid the foundation for the further development of artificial intelligence technology. In July 2017, the State Council issued the "New Generation Artificial Intelligence Development Plan", which is our first national strategic plan for artificial intelligence. It divides the development plan of our artificial intelligence technology into 3 stages. It is estimated that around 2030, the research and application of artificial intelligence in my country will reach the world's leading level [1].

2. The development of the combination of artificial intelligence and finance
After von Neumann built the first electronic computer in 1946, people began to consider whether the machine would one day acquire intelligence. Dr. Alan Turing defined this kind of intelligence in 1950. "The referee cannot judge whether his communication partner is a human or a machine, which means that the machine has intelligence." At the Dartmouth Conference in the summer of 1956, several scientists proposed the definition of "artificial intelligence", that is, all the methods that can make machines pass the Turing test (referring to machine intelligence). Artificial intelligence has gone through a long period of exploration. After the maturity of storage technology, big data, cloud computing and other technologies, data-driven artificial intelligence finally showed its talents in the financial field.
The financial industry is a relatively old industry that has gone through three stages. In the early days, finance was dominated by the banking industry. In the early days of its establishment, it was operated by the family with limited operating outlets. The banking industry developed very slowly for hundreds of years [2]. However, with the development of computers and the use of ATMs, bank outlets were quickly deployed all over the world. By the 1970s, industrialized countries successively realized cross-bank access and even cross-border access between different regions. The second period of the financial industry is a period of development triggered by new technologies. However, as the financial industry continues to grow, it also faces many challenges. In the past few decades alone, there have been many large-scale financial crises around the world: the major "Black Monday" stock market crash in the United States in 1987; the Asian financial crisis in 1997; the international financial crisis in 2008.

These vicious events have brought huge damage to the financial market, and people have begun to study the problems. Experts have discovered that a large amount of data is generated during financial operations, but with human calculation of these data, although it can be concluded that a financial crisis may occur, the time required is too long and the cost is huge. An important feature of data information is timeliness. Once these data are out of date, they have no value. In order to improve the ability and speed of data analysis and reduce costs, people began to consider the application of artificial intelligence to the field of financial risk management and control. Financial services are always accompanied by financial risks, and good financial services cannot be implemented without good risk control capabilities; new risk control methods bring new business models [3]. As a result, the financial business ushered in an era of disruptive change and entered a new period of development.

3. Analysis of the application of artificial intelligence in financial risk control

3.1. The inevitable trend of artificial intelligence intervention in the financial risk control system

The development of the financial industry metabolizes countless useful or useless data, including financial transactions, customer information, and market analysis. In recent years, the rapid development of storage technology and communication technology has allowed some data that would have been periodically erased to be stored. In this era, the information gap caused by information asymmetry is an important condition for determining the amount of funds. How to use the information gap from big data for its own use has become an important research direction. And through the deep learning system of artificial intelligence, it can integrate the complex information of financial activities in the analysis of a large amount of data, so as to achieve the role of risk management and control. The application of artificial intelligence will greatly reduce labor costs and improve the business processing capabilities of financial risk control [4]. With the promulgation of policy documents such as the "Regulations of the Supreme People's Court on Several Issues Concerning the Application of Laws to the Trial of Private Lending Cases", improper operations among some small and micro enterprises in the financial industry have been banned, and the industry has achieved rapid development with blurred boundaries The pattern has come to an end. The "China Internet Finance Development Report (2016)" was released in Beijing. The executive editor of the "Report", Dr. Zhu Yedong, Chairman of China Science and Finance said that in the future, the development of the domestic financial industry will gradually become formal, mobile payment is irreversible, big data, The core position of cloud computing in the financial industry is further strengthened, and financial technology will become the main trend in the development of the financial industry.

3.2. Data-driven will be the main form of artificial intelligence intervention in financial risk control

Although early scientists believed that "machines can think like humans to gain intelligence", after several failures in bionics experiments, people realized that as long as a machine can solve the problems that the human brain can solve, it is intelligence. Scientists have found a shortcut: use data to drive artificial intelligence, like the well-known "Dark Blue" or "Alpha GO", which is to analyze multiple games of chess players through a computer, and then get the probability of winning at any
position. In fact, this "artificial intelligence" does not think, but just basic probability analysis; although the same learning mode can be achieved by people, the game recorded by "Deep Blue" or "Alpha GO" in a few minutes has long surpassed chess. I have a game that I can remember for a lifetime. After Li Shishi lost to "Alpha GO", people became more aware of the irreplaceable core position of data-driven in the field of artificial intelligence [5].

In the traditional financial industry, the main source of income in the banking industry is the interest difference between loans to enterprises and individuals and customer deposits. The main risk it faces is that the borrower cannot repay the money in time, which leads to the collapse of the capital chain, which may further lead to the bank collapse. From ancient times to the present, the main risk control method adopted by banks has been risk avoidance-small and micro enterprises and individuals have less loans or even not issued. In most cases, large companies do not need to borrow to obtain project start-up funds, but banks are willing to lend to them because they have the ability to repay the loans. On the other hand, small and micro enterprises often have difficulty raising sufficient funds. Banks do not issue loans, which makes them compelled to find some "underground banks" to raise funds, and interest rates are often high. This phenomenon seriously affects business development and shakes the social foundation. The root of this phenomenon lies in the "trust" issue.

The bank first came up with a way: perfect the credit information system. Take the credit investigation system of the central bank as an example. As of the end of April 2015, the information of more than 860 million natural persons was stored in the system, and 20.68 million enterprises and other organizations were also included. This achievement is naturally due to the analysis of user data by artificial intelligence. But can the bank really know the actual economic situation of each user? The answer is no. The amount of data collected by the bank is not large enough, the dimensions are single, and the efficiency of data accumulation is low.

4. Problems faced by artificial intelligence applications
The advantages of artificial intelligence are increasingly used in the financial field, but problems follow one after another. First, the completeness of the data is not available at all times. For example, in the match between "Deep Blue" and Khakiparov, in the first set, Khakiparov used the "King Wing India Offensive Start" and actively changed his moves in the mid game, making "Deep Blue" enter a game that he did not have before. According to the statistics, a "bug" appeared, and "Deep Blue" was forced to admit defeat in 45 steps. Similarly, if artificial intelligence is used in the financial sector, bugs are generated due to uncertain or incomplete information, which affects major decisions, the consequences will be disastrous [6].

Secondly, in addition to the many problems of artificial intelligence itself, the privacy and legality of data collection is more concerned. In 2012, the "New York Times" reported an interesting incident in Target, the second department store chain in the United States. Target’s marketing department found that if a family has children, they are very likely to go shopping spree. To this end, they hire a large number of big data experts. Statistics have found that if women are pregnant, they are most likely to buy large bottles of moisturizing oil, vitamins and some nutrients. Conversely, through the purchase data of these products, it can be determined that the probability of pregnancy reaches 87%. One day, a middle-aged man broke into a Target store and said angrily that his daughter, who was only in high school, received coupons for baby clothes and strollers from Target. Isn't this encouraging early pregnancy? The shop manager repeatedly apologized. As a result, a few weeks later, the man came to the store to apologize, saying that his daughter was indeed pregnant, but Target knew the news before any of them [7]. Compared with e-commerce companies, Target's IT technology is not strong, but after using big data and artificial intelligence, it even knows its own situation better than its customers! Furthermore, now that smart phones have positioning functions, our every move will be completely exposed to artificial intelligence analysis, and we have almost no privacy at all. Therefore, many people have begun to oppose the application of artificial intelligence and big data, which has brought great resistance to the development of artificial intelligence. The legality of this artificial intelligence method has also been questioned.
5. AI + financial industry trend outlook

5.1. Technology giants and industry benchmarks build ecosystems, increasing industry concentration

In the future, with the further development of artificial intelligence technology and the market becoming more rational and mature, the artificial intelligence + financial industry will face a reshuffle. Some companies that do not have actual core technology research and development capabilities under the banner of artificial intelligence will be eliminated by the market, and companies that truly have the advantages of talent, technology, data, and scene traffic will continue to develop in the long term. In the future, the industry will present a tripartite situation with Internet technology giants, financial technology groups and artificial intelligence technology providers as the main participants. Internet technology giants will use their own advantages to increase technology research and development to expand more application scenarios; financial technology groups will use their in-depth understanding of financial business to continuously improve the speed of industry transformation and upgrading; artificial intelligence technology providers will focus on sub-sectors[8]. The leading companies in the midstream may be acquired by technology giants. Figure 1 shows the future market development of artificial intelligence and the financial industry:

![Figure 1. Artificial intelligence and financial industry in the future market development chart](image-url)

5.2. The continuous penetration of new technologies will drive the evolution of the financial industry towards inclusion

The application of new technologies can make the services of financial institutions reach more uncovered groups, and at the same time can reduce the financial institutions’ Service and operating costs, so that customers can obtain more high-quality and low-cost products and services, further enhance user satisfaction, and ultimately achieve the improvement of social welfare. Figure 2 shows the future evolution of the financial industry towards inclusiveness [9,10].
6. Conclusion
In short, artificial intelligence and big data will be an important boost for future financial services and risk management. "Internet + big data + artificial intelligence + financial risk control" is the main form of financial risk control in the future. This paper believes that the innovative application of artificial intelligence in the financial risk control system will promote leapfrog development. However, artificial intelligence cannot judge what has not happened. Due to incomplete information, it may cause analysis errors. This will have a huge impact. Therefore, we have to look at artificial intelligence in a correct light. When we use it to control financial risks, we must guard against new risks.

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