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Application of Multi-Modal Biometrics in Financial Risks Prevention and Controls

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Abstract. The large data credit technology, which is currently being fired, is only a large data collision-fraud technology, and there is not much technical difficulty and innovation, the emphasis is only on the relationship between multiple data sets and the processing of interactive protocols. There are some problems such as unclear system boundaries and insufficient accumulation of credit information at the bottom of large data collection. Biometrics has provided a powerful help to solve such problems, and multimode biometric recognition technology has many advantages, such as its stability, uniqueness and convenience, and has become a sharp weapon to solve the user authentication in large data credit technology, although it faces some challenges in the aspects of privacy protection and security.

1. Introduction

With the rapid development of software and hardware in computing technology in recent years, the development of artificial intelligence has entered the "highway", artificial intelligence research results and technical products continue to emerge, and quickly applied in various fields and industries, and it has created countless an application scenario that people can associate with. In this development process, multi-modal biometrics, which are important technical achievements in image and voiceprint recognition, and identity authentication technologies based on face, voiceprint, fingerprint, iris, etc., have become important development directions, and are effective as identity authentication. The tool's multimodal biometrics technology also provides a powerful weapon for the development of financial credit risk management.

2. The Current Situation of Big Data Credit Reporting Technology and the Role of Identity Recognition

Big data financial risk identification technology, as a kind of credit information technology, does not have all kinds of magic of the network hot speculation, but on the basis of a large number of credit information collection and processing, can more accurately define the credit risk of the borrowers in the creditor-debtor relationship. Moreover, all kinds of so-called big data credit reporting are just "big data collision database anti-fraud" technology, which is not very difficult and innovative. The focus is



only on the construction of association relationships among multiple data sets and the processing of interaction protocols. Therefore, there are many difficulties and difficulties, such as:

2.1. Institutional space is not clear

The development of big data financial risk identification technology in China originated from the need to build a credit system with Chinese characteristics, especially after the publication of the Outline of Social Credit System Construction (2014-2020), which set a clear timetable for the construction of China's credit system. And the goal of the node is to promote the rapid development of big data financial risk technology. In the process, the problems brought about by the lagging construction of China's credit system have been exposed. Phenomenon such as "information island" and "information gray production chain" have caused constraints on building a credit system with Chinese characteristics. The release of the "Outline" will undoubtedly have positive significance for the construction of China's credit society, but there are also some problems, such as the definition of credit, more of the content of social morality, which should be strictly defined in the creditor's rights. The credit space within the debt relationship has spread to the field of integrity, which has led to some confusion in the development direction of the entire credit risk management industry, which has led many credit reporting companies to even collect and collect such things as owing water and electricity charges during the credit information collection process. The information, of course, may be a weak indicator of the debtor's cash flow level, but there is even more to collect information on the status of the credit owner's family neighborhood, and thus deduct the so-called big data model, the individual I believe that the accuracy is open to question. After all, it is impossible to deal with the good relationship with the neighbors. It does not mean whether a person is willing or not, and whether there is enough money to pay off the debt. This is exactly whether social data can effectively explain the problem of credit quality. After all, it is recognized. The most authoritative is the credit report of the Central Bank's Credit Bureau, not based on social software. Students of social credit score data generated, as of now, this credit risk identification model based on social big data, we still roughly in the conceptual phase, but also from the practical level there are still gaps. Until May 2017, the leadership of the Central Bank Credit Bureau clearly defined the scope of credit relations and the concept of credit in a public speech, providing a more accurate and professional concept for the correct development of the credit reporting industry.

2.2. Insufficient accumulation of underlying credit information

At present, the development and application of domestic big data credit technology is completely different in developed countries such as lendingclub and fico. In the field of personal credit risk management, the eight pilot companies tentatively set by the Central Bank Credit Bureau not only failed to grasp the strategic opportunity period of the credit reporting industry, but also disrupted the market through various "points". What's more, through the similarity of pyramid schemes to develop cooperative institutions, through the so-called chain operation as a business model, and constantly promote corporate credit reports in major cities, to slap the public and confuse the credit information market. The root cause of this problem lies in the serious lack of underlying credit information data supporting the development of big data credit technology in China, and the accumulation is seriously insufficient. As far as the most critical data sources in the market are concerned, the identity information of the public security department, the registration information of the industrial and commercial departments, personal tax information, social security payment records, and travel information are all fans of the credit reporting companies. The companies that claim to have big data also seem to have mastered the lifeline of the credit reporting industry. However, from the author's experience, the proportion of structured data is low, and the data noise is high. Even if it is processed by existing computing technology, it is obtained. Whether the information is credible is still unknown. The more important of these two aspects, the first is the acquisition and identification of identity information, and the second is the generation and accumulation of financial information. Whether it is

identity information or the collection of financial information, it involves an important link - "identification."

2.3. Identity technology has become a powerful help for big data reporting

Strictly speaking, identification only proves that "you are you" and cannot prove "how much money you have, how much money you can borrow". Under the premise of full civil capacity, a person's wealth status is not directly related to him. Bio-information is linked. After all, a person with a poor appearance may be wealthy, and a handsome person may be penniless. However, by providing proof that "you are you", the identification provides the basis for answering questions such as "How much money do you have" and "How much can you borrow?" and in the case that the credit industry still generalizes the concept of "credit". The correct identity information provided after identification can also be said to be an important part of credit information, and thus become a powerful means of big data credit.

3. Application of Multimodal Biometrics in Big Data Credit Reporting

On the basis of significant progress in artificial intelligence algorithms and chips, processors, sensor technologies, etc., image recognition and voiceprint recognition technology have also achieved advances in geometric progression, not only in terms of recognition accuracy and throughput, but also in terms of intelligence level and user experience, it caters to the trend of intelligent society, and its man-machine efficiency is unprecedented. For this reason, biometrics such as face recognition, voiceprint recognition, fingerprint recognition, and iris recognition are not only mature, but also can continuously expand application scenarios, and have been unprecedented in many fields and industries. The success is widely used in hardware decryption, user registration, platform login, payment clearing and other scenarios.

3.1. User name and password and the way digital certificates begin to be weak

User name, password and digital certificate are the most widely used in e-commerce. They have also greatly promoted the development of e-commerce in China for a long time, providing a strong reliance for user security. However, in the development of encryption and decryption technology, the dictionary collision technology for this security method has also been developed, the dictionary can be automatically generated, and the rules can basically cover various cryptographic rules that people usually use, along with calculation and storage. The hardware is constantly updated, the cost of dictionary attacks is getting lower and lower, and the success rate is getting higher and higher. This poses a huge challenge to the security method of identity authentication. Therefore, the security problems can not be ignored, especially in the development of e-commerce. In China, the rise of the gray industrial chain has made this problem worse. Many people do not know themselves in the "naked swimming" in the electronic information age. At the same time, due to the needs of various scenarios, people use this traditional authentication method more frequently. E-mail, online shopping accounts, social software, etc., all need usernames and account passwords. The passwords of the forests make people feel overwhelmed, the passwords are simple, the security is low, and the complexity is not easy to remember. This puts a need for biometric technology, which is a highly secure but accurate identification technology.

3.2. Cost reduction is the practical material basis of multimodal biometrics

In recent years, the increase of chip computing power and the further improvement of miniaturization and the large-scale production of electronic products have further reduced the production cost of scanning equipment, storage equipment and computing equipment that multi-modal biometric technology relies on, and the multi-mode is involved. The price of terminal devices for biometric identification has been declining, which provides a material basis for the large-scale application and development of multimodal biometrics technology, which can support its application in multiple

scenarios and is a multimodal biometrics technology. Development has given birth to a broad market space.

3.3. Multi-modal biometrics become an important means of big data credit risk management

Based on the results of China's current credit system construction, the staged results are obvious, but there is still a big gap in the construction of a holistic credit management society. The direct data isolation problem in various departments and fields is still far from being solved. The credit report with the credit data as the main content is still the backbone of the credit information market, and the favor of social capital for the credit information industry is gradually becoming rational. The root of it is the limitation of the big data credit technology route. Big data credit relies heavily on the collection and multi-identification of multiple dimensional information. It is mainly based on the reductive technology route of stripping, layering, and de-storing. This determines that the big data credit must have a broad data base and abundant. The source of the data, and this is precisely the weakness of China's current credit industry development.

As the most basic problem of big data credit, "you are you", multimodal biometrics undoubtedly has multiple advantages, because it is safe, authentic, effective, etc., so it becomes the first pass for big data credit.

4. Multi-modal biometrics applied to the advantages of big data credit

Multi-modal biometrics technology can collect human biometric information (mainly physical information), and use biometric features unique to each other such as face, voiceprint, fingerprint, and iris as identification and authentication content, which can ensure the correspondence between identity information and authentication information. The uniqueness of these biological information guarantees the security of authentication, and has been widely used.

In the field of big data credit, through the extensive collection of biometric information of authenticated users, the establishment of a multi-person database, the establishment of a one-to-one correspondence between biological information and user information, making it an integral part of credit information, and applying it to identification, It can play an important role in the field of anti-fraud. At the same time, it can supplement the construction of credit risk pricing model. After all, if you do not know the true attribution of credit information, the credit risk pricing model constructed by this is purely nonsense. From a practical point of view, multimodal biometrics technology has obvious advantages after being applied to the field of big data credit, such as:

4.1. Biometrics applied to identity stability

Biometrics contain information that is generally more stable, such as fingerprints, voiceprints, and iris information, especially fingerprints and iris information, which are most stable and, once formed, are not susceptible to change. Relatively speaking, the characteristics of the face change more with age, which is why the face recognition device pays attention to keep the information updated. Simply put, the recognition device reads your current face and compares it with the previous face. After passing, the current face is stored in the database for backup; relative to the face and fingerprint, the iris, the voiceprint will also change with age, such as the boy grows with the age, the vocal cords thicken, the tone becomes low, etc. But also has a certain stability.

With the development of modern medical technology and electronic technology, face information and sound information can be changed, such as changing some features through facial cosmetic surgery, changing the characteristic parameters of sound through electronic equipment or application software, etc., which is in some scenes. Identification brings some troubles, especially in the electronic payment process, it is necessary to make multiple judgments on the identity of the user. Therefore, the combination of multiple modes has become an important means of strengthening the security link.

4.2. Uniqueness of biometrics

As a unique attribute of each individual, biometrics have a very low probability of complete coincidence, so they can be used to judge different individuals, especially when multiple biological features are combined for multimodal recognition, with higher accuracy and reliability. This is also the basis of biometrics, and this uniqueness has also become a major reliance on the safety of biometrics.

4.3. Convenient and simple, making the user experience better

The process of registration, authentication and identification through multi-modal biometrics technology is relatively simple, does not require deep network technology, and does not need to have a network mailbox or other electronic identity to complete, and identify people and machines in the process. There is interaction, the whole process is simple and convenient, and it can be designed to be more interesting, the user experience is obviously better than the password, and it overcomes the difficulty that complicated passwords are not easy to keep in mind, and it provides users with great convenience. It also provides effective, reliable and secure user identification technology and low-cost means for the development of e-commerce and other industries.

5. Problems in multimodal biometrics applied to financial risk management

In view of the advantages mentioned above, multi-modal biometrics technology has broad application prospects in the field of big data credit reporting, and can even be said to be one of the key dependent technologies for big data financial risk management. It must be noted that in this process, multi-modal biometrics technology has also exposed some problems, and some more effective methods have been developed to address these problems, but it is not able to solve these problems fundamentally, and it is still necessary to test the facts. Include:

5.1. Privacy protection issues during collection and storage

As a unique identifier owned by individuals, biometrics is the personal information of citizens protected by national regulations. It also involves public safety and other factors. How to effectively collect and store them without exceeding the boundaries of policies and regulations is the application of biometrics to big data. Important issues in the field of letters. Although all biological information obtained by biometric technology does not enter the construction and improvement of the credit model, as an important source of information in the initial stage, especially the anti-fraud stage, it is necessary for the big data credit system to collect, organize and store scale. It is extremely difficult to build a basic database based on huge biological information data, and whether it can obtain the individual consent of each owner.

Even if the owner's consent is obtained and the biometric information is collected and stored in the case of authorization, there will be a question of whether the future is legal. If regulatory attention is received and constraints are tightened, the legality of such behavior is immediately become a restrictive condition.

5.2. Security issues in storage and use

Biometrics is simple and safe compared to cryptosystems, but it must be clearly recognized that once biological information is lost, the consequences may be dangerous and unpredictable. For example, if a customer who has an electronic cash account is stolen from the stored fingerprint data (the electronic information that is electronically only a string), if the application is obtained without the owner, the user is unlocked. The mobile phone has generated transfer and consumption behaviors that are not intended by the user. The resulting disputes will greatly increase the management cost, and such a thing is entirely possible. Compared with the current mobile phone system, there is no built-in device that can detect the fingerprint. Software and hardware such as body temperature. This is also one of the important logics of multimodal identification. It can't be identified by only one kind of biometrics. In some aspects, such as payment, it also needs to accept multiple verifications to complete, even

superimposing the cryptosystem and biometric technology. However, this increases the time cost of the customer and the user experience decreases.

5.3. *Non-subjective use*

Biometric technology can effectively answer the question "you are you", which is its advantage, but if it is over-reliant in use, it is easy to produce some subsidiary problems. Suppose a scenario where the owner of an electronic account, in the case of non-subjective will (such as being coerced), or unknowingly (such as in a drunken or hypnotic state), is completely controlled by the face. How to prevent login, authentication, transfer, payment, etc. by fingerprinting, scanning iris, etc. How to prevent this problem, it seems that there is no better solution at present. After all, the whole industry is still in the jubilation brought by multi-modal recognition technology. In. This problem also exists in the field of big data credit reporting. Even after obtaining the authorization, each person's biological information is used to construct and research how to use massive data to develop bioinformatics recognition modules, improve technical precision, and even provide commercial services. Is this a legitimate subjective will or an illegal willingness to lead? It seems that there is no good answer. This question is similar to "processing data can be provided to third parties." Even if regulatory measures are taken against the above problems, how to prevent them effectively is not easy.

6. Conclusion

Multi-modal biometrics technology has a good prospect in the field of big data credit, and its advantages are obvious, but there are also some difficulties and problems that require customer service, although the mainstream technology now adopts "collecting and using but not sending" and "distribution". Technology such as collection, distributed storage, but there is still a lot of room for improvement. It can be expected that as these problems are gradually solved, multimodal biometrics will be more widely used in the field of big data. Applications.

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