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Research on Oracle Information Processing Technology Based on Patent Data

Zhi Liping[1,2,3] Zhao Sijia[1] Liu Yongge[1,2,3]
[1.]*Ph. D of School of Computer Science & Information Engineering, Anyang Normal University*
[2.]*Key Laboratory of Oracle Bone Inscriptions Information Processing，Ministry of Education*
[3.]*Henan Key Laboratory of Oracle Bone Inscriptions Information Processing*
Correspondence: Zhi Liping, School of Computer Science & Information Engineering, Anyang Normal University, Anyang, China.

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Abstract: In order to help decipher Oracle characters, this paper studies oracle information processing technology from the perspective of patent data. First of all, by using the database of new and created patents, this paper makes a comprehensive analysis of the related patents of oracle information processing technology from the perspectives of patent application amount, technology hotspot, main inventor and applicant type, law and operation, etc., so as to provide valuable patent information reference and promotion countermeasures for oracle information processing research.
Keyword: oracle; incopat; patent data

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I. INTRODUCTION

Oracle bone inscriptions are ancient characters unearthed in China. It is an important way to understand ancient civilization to record a lot of information on tortoise bones. However, there are about 4500 Jiagu words that have been found, but only about 2000 words have been released, so it is a very important work to decipher Jiagu words. Considering the high speed of the computer, the ability to automatically process a large amount of information, and the high accuracy, some scholars began to use computer information processing technology to carry out in-depth research on oracle, in order to solve the problem of oracle interpretation.

We found that oracle information processing technology involves a large number of patent data, and no targeted research has been found. Based on the above background, this paper studies the oracle information processing technology from the perspective of patent literature, so as to grasp the relevant patent information of oracle information processing technology, provide valuable patent information for oracle information processing research, continuously promote the development of oracle, and promote the prosperity of culture.

II. DATA SOURCE

Because the incopat innovation platform contains patent data of 118 countries and regions, with comprehensive information and fast update speed, this paper chooses incopatas the patent database. Firstly, the patents related to oracle information processing technology are searched, and then the statistical analysis is carried out. Finally, the improvement countermeasures and suggestions are given. Considering the lag of patent authorization and disclosure, especially the delay of invention patent from application to authorization for about two years, in order to ensure the validity of data, only the patent data from 1985 to 2017 are extracted for analysis.

III. Patent analysis of oracle information processing technology

3.1 annual trend of patent application

This paper makes a statistical analysis of the patent application trend of oracle information processing technology, as shown in Figure 1. The patent application of oracle information processing technology has appeared since the end of the 20th century. Looking at the development of 32 years, according to the analysis of

"technology life cycle theory", the technology has just experienced the first two stages of development.

The first stage is the embryonic stage from 1985 to 2011. At the end of the 20th century, patents related to oracle information processing technology began to appear, officially opening the development process of this technology patent. After entering the 21st century, in addition to the sharp increase in patent applications in 2008, the number of patent applications in other years is relatively stable, in the state of 20-30 applications per year. Due to the relatively small number of patent applications in this stage, it is in the initial stage.

The second stage is the growth stage from 2012 to 2017. Compared with the previous ten years, the number of patents in these five years has achieved rapid development and sustained and stable growth, especially in 2015, the number of patents increased by 49% year on year. In particular, the number of patent applications reached the highest in 2016, which is related to a notice issued by relevant government departments in China in 2016. The content is "to make a new interpretation of the oracle bone inscriptions in dispute, a single word reward of 50000 yuan". At that time, the announcement got the attention of all sectors of the society, further promoting the increase of oracle related patents. Therefore, the encouragement of national policies plays an important role in promoting patent application. However, in general, the number of patent applications in this stage is relatively low, and it is still in a low-speed development period.

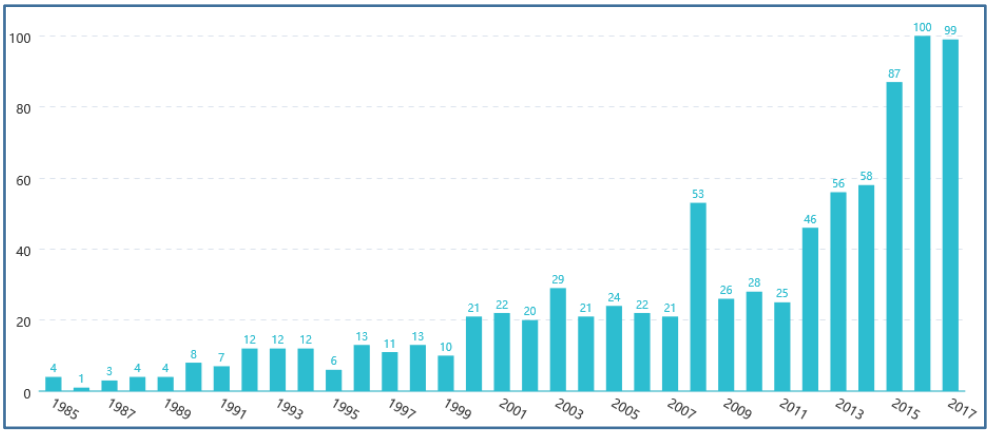

Figure 1 patent application trend (1985-2017)

According to the "technology life cycle theory", the growth of technology can be divided into four stages, namely, germination stage, growth stage, maturity stage and saturation stage. At present, oracle information processing technology has just gone through the first two stages, which also indicates that there is still a lot of room for researchers to play in the future in oracle information processing technology. In November 2017, "oracle" project was successfully selected into the world memory list, marking that the cultural value and historical significance of oracle have begun to be recognized. This will promote the development of oracle and the research and development of oracle processing technology. Therefore, in the next few years, the research and development of oracle information processing technology will enter a high-speed development period, and the number of patent applications will increase rapidly.

3.2 technology hotspot

3.2.1 technical composition

Oracle information processing technology is divided according to IPC classification number, which mainly consists of 10 IPC technologies.

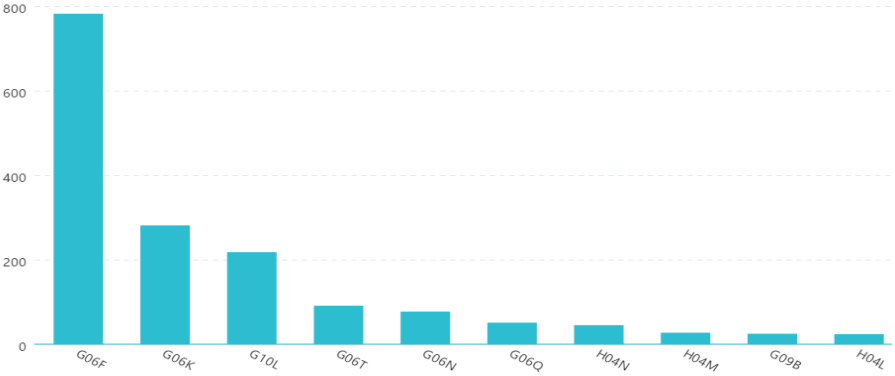

Figure 2 composition of oracle information processing technology

As shown in Figure 2, the number distribution of oracle information processing in each technical direction. It can be seen from the figure that g06f technology is far ahead of other technologies. Because the main field of g06f technology is related to computer processing, and the essence of oracle information processing is the processing of oracle data by computer, the application amount of g06f technology is higher than other technologies.

G06k Technology (data recognition and representation) ranks second. Oracle is an ancient character written on tortoise shells and animal bones. In order to better study the oracle bones, people choose to make them into oracle rubbings, that is, the characters and patterns on tortoise shells and animal bones are extended, and then they are made into paper pieces. On the one hand, it is convenient for later scholars to read and study oracle materials, on the other hand, it is convenient for later scholars to plan In order to process and study oracle bone inscriptions, computers need to store information about oracle Bone first, which requires data recognition technology to scan and recognize the characters on oracle bone rubbings. In the same way, the recognized oracle information needs to be stored in a certain coding form to complete the representation of oracle data, and in order to process oracle by computer, it also needs data recognition. But at present, though the number of g06k technology ranks second, it is less than one third of that of g06f technology. So in the future, oracle researchers can study the related technologies involved in the IPC classification number, and create a new situation of oracle research while promoting technological innovation.

3.3 main R & D subjects

3.3.1 inventor ranking

Based on the statistics of inventors, we found that 7 of the top 10 inventors are Chinese, and the other three are Japanese. In recent years, China has shown great vitality in patent, and more and more people have joined in the ranks of innovation, which makes the number of Chinese invention and creation increasing. Oracle processing technology is one of many research fields, and it is also the most likely one in the future. More and more Chinese people will invest in the research of oracle.

3.3.2 ranking of applicants

According to the statistics of applicants, the first is Japan's Telegraph and telephone company (NTT), which is the largest telecommunication service provider in Japan. This is related to the rapid development of Japan's economy, because the economic development needs the protection of technological innovation and development. In order to survive in the competitive environment, we must innovate and master our own core technology.

Next to that, Microsoft technology licensing LLC, Microsoft Corporation (Headquarters) and Microsoft Corp are all under Microsoft Corporation. As the originator of the development of computer technology, Microsoft has been focusing on R & D, manufacturing, licensing and providing a wide range of computer software services. It has a number of core patents such as cloud computing technology, big data technology, database technology, and so on. The research of oracle information needs to be built on these patent technologies, so it plays an important role in promoting the research of oracle.

3.3.3 applicant type composition

There are five types of groups applying for oracle information processing technology patents: enterprise application, individual application, college application, scientific research unit application and organization application. Among them, the proportion of enterprise applications reached 42.3%, nearly half of the total. Personal application and college application are closely followed, accounting for 29.1% and 24.65% respectively. Compared with the first three, the proportion of applications from scientific research institutions and organizations is very small.

On the one hand, in order to survive, enterprises need to apply for patents to protect their core technology, and to provide guarantee for the development of the company, so that enterprises can grow stronger and develop to a higher platform. On the other hand, the State supports more and more enterprises to apply for patents, not only with government subsidies, but also with patents to finance and apply for loans, which makes more and more companies begin to pay attention to patent applications. And in recent years, the society has been popular with the classical style, the ancient style font conversion has become the direction of research and development of companies, and oracle information processing technology includes the font conversion technology.

Oracle information processing needs to use a lot of knowledge comprehensively, such as computer, archaeology, history, statistics, literature, art and other disciplines, and the place where the above disciplines gather is the universities, colleges and universities cooperate with each other, play their own professional strengths, and achieve the ultimate goal. In addition, the national philosophy and social science planning office will generally approve the project of "oracle character interpretation" proposed by universities, providing full

support for the research of universities. These are all the reasons why colleges and universities rank top in terms of application volume.

3.4 regional distribution

In order to fully understand the distribution of oracle information processing technology patent applications, and analyze the ranking of the patent applications in the global region, the statistical results show that the number of China and Japan is far more than that of other countries.

China is the birthplace of oracle bone inscriptions. For China, ancient characters are the crystallization of the wisdom of the Chinese nation. To study oracle bone inscriptions is to talk with the past. As the saying goes: to know history is a good example. Only better understanding of history can we develop better in the future. In recent years, China has also been increasing the research on oracle bone inscriptions. With the development of computer science, oracle bone science has been combined with computer science, which makes oracle bone science develop from a unique past to an international outstanding one.

According to historical records, at present, there are 12 countries that collect the oracle bones of Yin Ruins in China, and one of the largest exiled countries of Yin Ruins is Japan, with more than 12000 pieces. As one of the most famous institutes of Sinology in Japan, the Institute of human sciences of Kyoto University studies oracle characters as well as Chinese scholars. In 2014, in order to commemorate the 115th anniversary of the discovery of oracle Bone Inscriptions in Yinxu, Japan also specially organized "Tokyo International oracle bone calligraphy exhibition", which not only demonstrated the creation level of international oracle bone calligraphy from the perspective of art, but also helped the promotion of oracle Bone Inscriptions in the world. Moreover, Japan's scientific and technological innovation ability has always been in the forefront of the world, and its patent application number has also been far ahead of other countries. So Japan not only has good oracle resources, good research technology, but also good political environment and good development atmosphere, which play an important role in the development of oracle science.

3.5 legal and operational analysis

3.5.1 current legal status of patent

The purpose of the research and analysis of oracle information processing technology related patents is to provide reference for future researchers, in order to avoid infringing others' patents in the future research, which requires a comprehensive understanding of the legal status of patents, so as to achieve final victory in patent infringement and legal proceedings.

According to our statistics, the proportion of termination, substantive examination and authorization of related patents of oracle information processing technology is approximately the same, about 28%, which indicates that one third of the patents that can obtain patent rights will be authorized, one third of the patents will be terminated due to improper protection, and another third of the patents will be terminated due to improper protection 1. The patent is under examination.

In addition to the approved oracle information processing technology patent, the number of patent applications withdrawn and rejected is about 13%, which shows that there are still some problems in the quality of patent applications of the technology. We should not only ask for the quantity of patent technology application, but also the quality. Scholars studying oracle should pursue the quality of technology, not the quantity.

3.5.2 patent validity

According to our statistics, 42.12% of the patents have expired, 29.51% of the patents under review, and only 28.37% of the patents are in effective status. Through the secondary search, we found that most of the patentees did not pay the annual fee to the patent office within the patent validity period. There are many reasons for not paying the annual fee: some are that under the rapid replacement of the society, the patent technology applied for has no use value, and the applicant will give up holding the patent right; for the individual applicant, some are missing the time limit of patent payment, and the holding of the patent has lost hand. Therefore, after the patentee applies for a patent, he should spend some energy to maintain the effectiveness of the patent. In addition, 29.51% of the patents are under review, which indicates that oracle information processing technology is at a stage of development. Many people are still committed to the research and application of the technology, and more people will invest in the research and development of the technology in the future.

IV. RESEARCH CONCLUSION AND PROMOTION STRATEGY

4.1 promote cultural development and pay homage to history

At present, the application of oracle information processing technology patent is in a preliminary growth period. According to the analysis of application trend chart, it has a great development space for

researchers to play in the future, and national policies will play a certain role in promoting patent application, which requires the country to make corresponding efforts.

First of all, the government should strengthen the support of the research on oracle information processing technology, and make more policies on oracle research, so as to drive more people willing to study. Secondly, the government should strengthen the propaganda of traditional culture. Only by making more people understand the charm of oracle, can more people invest in the research of oracle.

4.2 give full play to geographical advantages and seize opportunities

Anyang is able to surpass many first tier cities in the number of patent applications for oracle information processing technology in the top three, mainly because of its advantageous geographical advantages. The oracle bone inscriptions were unearthed in Yin Ruins of Anyang City. There are first-hand materials of oracle Bone Inscriptions in hand, which provides great convenience for the research of oracle bone inscriptions. Moreover, the state has invested considerable funds for the research of oracle Bone Inscriptions in Anyang City. Therefore, the current Anyang government should seize this geographical advantage, encourage more oracle bone scholars to make use of modern science and technology to study oracle bone, and strive to decipher more oracle bone words To promote the research process of oracle bone inscriptions. In particular, Anyang Normal University, which has the Key Laboratory of oracle information processing of the Ministry of education, should make every effort to apply for more patents of oracle information processing technology and take the lead in this field.

4.3 improve patent quality and lay out the future

In the process of patent application, not every patent can be successfully applied, especially the invention patent. In recent years, the number of patents in China has grown rapidly, which is a good thing, because the number of patent applications can be used to measure a country's innovation ability, but similarly, some companies and individuals ignore the quality of patent applications for the immediate benefit, resulting in a considerable number of patents being rejected and invalid. 42.12% of the patents related to oracle's information processing technology are invalid, which needs our attention. The state, enterprises and individuals should work together to improve the quality of patents, create a good intellectual property environment, and make China become a powerful intellectual property country as soon as possible. First of all, the State Intellectual Property Office should control the quality of patent application and strengthen the construction of patent management institutions, Improve the level of patent management; secondly, enterprises should manage their own patents scientifically and effectively to prevent patent invalidation due to negligence; finally, individuals should know more about patent related knowledge and improve the awareness of intellectual property.

4.4 increase scientific and technological innovation and rapid development

Scientific and technological innovation is essential to enhance a country's comprehensive national strength. Only with the continuous development of science and technology can we grasp the advantages in our own hands. This is especially true for an enterprise. Only when the enterprise continuously develops new technologies and has its own core products, can it not be led by others. Japan's academic research achievements in oracle information processing technology are second only to China's, which has a lot to do with Japan's emphasis on innovation and technology development. A country with a good innovation environment can make more people willing to innovate. Therefore, in the research and development of oracle information processing technology, it needs not only personal efforts, but also the impact of China's environment. China should increase policy support for scientific and technological innovation, so that more people can go on the path of innovation.

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