On Application of Artificial Intelligence in Electric Power Service Field

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Abstract: with the development of science and technology, artificial intelligence has gradually come into people's vision, which has brought great convenience to people's work and life. Especially in the field of electric power service, the application of artificial intelligence technology has greatly promoted the development of the industry. In order to better integrate this technology into the power service industry, this paper analyzes the specific application of artificial intelligence technology in the field of power service. And based on the current situation and application scenarios of artificial intelligence development, and this paper also puts forward constructive suggestions on how to develop artificial intelligence technology in the industry.

1. Introduction
As an important driving force of industrial reform and development, the emergence of artificial intelligence technology has brought a huge impact on the electric power service industry, and greatly improved the quality of customer service. Now the electric power service field has a deeper understanding of this aspect. In order to build a new generation of intelligent customer service system, we try our best to introduce artificial intelligence technology into the service field. But in the practical application, due to some objective conditions, the application of this technology did not play its due value, encountered many problems. Therefore, in order to better integrate artificial intelligence technology into the field of power services, it is very necessary to strengthen the research in this area. Electric power service industry related personnel need to improve their attention in this area, according to the specific application of artificial intelligence, take effective measures to achieve their own good development.

2. The development and application of artificial intelligence

2.1 Analysis on the development of artificial intelligence
Artificial intelligence technology first appeared in the 1950s, which is an interdisciplinary subject, including many other aspects of knowledge, such as physiology, control science and so on. Compared with traditional automation technology, artificial intelligence technology will be more intelligent, with the characteristics of human-computer cooperation and deep learning. In recent years, with the development of science and technology, the Internet of things, as an important representative of artificial intelligence, has been widely used in various fields. For example, in the Internet high-tech enterprises, the Internet of things technology has been greatly developed. However, it has not been effectively developed in other areas, such as energy and power field. The application of artificial intelligence technology in this field is still in its infancy, which can be seen from some international
events, such as the 2017 AI summit in the energy field. The summit analyzed the application and research of artificial intelligence in power industry, and set up some special departments to collect data, such as power grid system analysis department.

2.2 Application requirements of artificial intelligence development

2.2.1 Low staff service efficiency
Artificial intelligence technology has a broad application space in the field of power service. In the field of power service, with the growth of business demand, the traditional artificial customer service has been unable to meet the needs of these businesses. In the past, the scope of staff services was relatively narrow. Generally, a region was only responsible for its business. In addition, it is also scattered in the business, which will bring adverse effects to the business service management. According to the relevant data, in 2014, when the service of 9558 was centralized, the incoming traffic of State Grid customers increased many times compared with the same period, and it is growing every year. The traditional manual customer service has been unable to meet this situation. Therefore, the development of artificial intelligence technology is imminent.

2.2.2 Increased operational risk
Due to the expansion of the scope of services, service objects are constantly changing. And customer groups are no longer limited to the original groups, which will bring certain challenges to the power service operation. At the same time, with the development of network, wechat and other service channels, the requirements for customer service personnel have become higher, and customer service personnel need to be very familiar with these service channels. In addition, long-term in a state of high pressure, customer service staff is difficult to maintain an accurate state for a long time, it is inevitable that there will be errors, which will also lead to the decline of service quality. Therefore, in order to reduce the risk of operation, it is necessary to introduce artificial intelligence technology. Borrowing the accuracy of artificial intelligence ensure the quality of operation service.

2.2.3 Serious phenomenon of traffic surge
In the context of business model change, the scope of traffic is constantly changing, from the original regional scope to the national scope, and the traffic is also gradually increasing. In this case, the probability of traffic surge will also increase. Taking 9558 hotline as an example, before artificial intelligence technology was applied to the field of electric power service, its traffic scope was basically concentrated in one region. However, with the change of mode, the traffic of 27 provinces in China is now concentrated in Nanjing and Tianjin. At this time, if you encounter extreme weather or special circumstances, there will be a rush of traffic. In order to solve this problem, we need to establish a traffic prediction mechanism. To avoid the traffic surge in the future, we can accurately predict the traffic situation for a period of time.

2.2.4 Urgent need to improve the ability of emergency command and dispatch
In addition to the above three aspects, the weak ability of emergency command and dispatch is also an important factor in the development of artificial intelligence in the service field. As a valuable resource of the call center, it is very important to ensure the effective use of emergency materials and personnel. In the past, when there was traffic surge, in order to solve this situation, experienced commanders were generally used to command and transfer emergency supplies and personnel. But this kind of blind adjustment method has very high requirements for commanders, and it is generally unable to achieve accurate scheduling. This will result in a waste of resources, which is not conducive to the improvement of traffic service quality. Therefore, the introduction of artificial intelligence technology becomes imminent.
3. Application of artificial intelligence in customer service center

3.1 Human computer interaction services
Artificial intelligence technology is widely used in the field of power services, one of which is the application of human-computer interaction services. In practice, in order to solve the situation of busy traffic, the customer service center will introduce intelligent robots into customer service, and then use face recognition and voice recognition technology to achieve accurate interaction. At the same time, the customer service center can also use robots for business guidance and customer reception. This way can not only bring good service experience to customers, but also save the corresponding cost. In addition, the customer service center can also use the intelligent customer service robot to create an efficient human-computer simulation interaction platform. With power grid big data, intelligent search and other technologies, it can bring diversified service experience to customers.

3.2 Public opinion monitoring and protection
Public opinion monitoring and protection should also be applied to artificial intelligence technology, including the following two aspects. First, the establishment of customer service multimedia tag library. The establishment of this multimedia library can be carried out from the following two aspects. The first is to establish a voice tag library. Customer service staff can extract customer information from a large number of traffic interactions, and identify some special customers, and then develop an accurate voice tag library for special customers according to these information. The second is to establish a biometric database, analyze some special behaviors of customers through video monitoring data, and then use big data, multimedia and other technologies to describe the characteristics of these special customers. In this case, we can provide high quality service for special customers. Second, the improvement of thermal vocabulary analysis library. In this process, we need to use the voice engine intelligent technology to automatically transcribe and check the traffic voice data. At the same time, through the self-learning system, the voice analysis model is established, some high-risk events are quickly screened, and security guidance is carried out, so as to avoid any important social public opinion events.

3.3 Traffic surge warning
In the analysis of the above application scenarios, we can know that the traffic surge warning is very important, which can improve the efficiency of emergency resource utilization. Artificial intelligence technology is also needed in the establishment of traffic surge warning, which can be divided into two parts. The first part is to establish the traffic early warning recognition model. The amount of traffic will be affected by many factors, such as area, weather and so on. In the process of model construction, we can combine the past data to analyze the influencing factors, and then complete the establishment of the prediction and identification model on this basis. Second, the establishment of traffic early warning model. In the process of building the model, the staff need to build the model based on the real-time monitoring data such as traffic request, combined with the experience of the operation staff in the service field.

3.4 Emergency command and control
Emergency command and control is also an important performance of the application of artificial intelligence technology in the field of power service. When the early warning signal is transmitted to the early warning instruction library, it needs to be scheduled by many scheduling strategies such as traffic balance, and then select the appropriate control instruction from the instruction library. In this process, the control instruction is also calculated. Through the calculation of instructions, we can make the early warning information system to make the correct regulation and realize the rational use of resources. In addition, in order to achieve more accurate scheduling, power service departments also need to create a scheduling mechanism. In this process, we should take the intelligent dispatching as the basic principle, establish the emergency echelon, and supplement the corresponding emergency
response mechanism. Through these to form a complete scheduling mechanism. In practice, because the emergency instruction library itself has the characteristics of self-adaptive and self-learning, so the instruction library can carry out intelligent analysis according to the actual situation, and then carry out reasonable scheduling.

4. Suggestions on the development of artificial intelligence in power customer service center

4.1 Establishing industry research cooperation mechanism
In order to make the power customer service center better develop artificial intelligence, the staff of the customer service center need to establish the industry research cooperation mechanism. In recent years, with the development of science and technology, artificial intelligence has made great breakthroughs in all aspects, for example, human-computer interaction is more intelligent in function. Now many Internet companies in the society have also launched corresponding AI platform products, and many departments have been set up by the state to study this aspect. For example, a special AI research department has been set up in the Chinese Academy of Electric Power. Therefore, if the power customer service center wants to get better development in this area, it needs to carry out good cooperation with these departments and enterprises. Through the use of these intelligent products to build their own "smart" service platform, to achieve the improvement of service quality. In addition, the relevant departments also need to increase capital investment to study the application of artificial intelligence technology in the field of customer service.

4.2 Pay attention to basic data collection and accumulation
If electric power customer service center wants to develop artificial intelligence better, it needs to strengthen the collection and accumulation of basic data. As the basis of the development of artificial intelligence technology, data will have a significant impact on the application of artificial intelligence. In this process, the power customer service center needs to create a data service channel, which can collect some information in real time, such as hot events and national facts. At the same time, the internal business systems of the customer service center also need to be integrated to ensure the smooth flow between these business systems. In this way, when some relevant information is needed, it can be quickly obtained, so as to improve the corresponding service quality.

4.3 Strengthen the deduction and iteration of expert database and intelligent database
In the above-mentioned traffic research and judgment system, we can know that in the construction of expert database, the more reference data, the more information involved, the more accurate the model construction and the deduced information will be. Therefore, in order to ensure the practicability of the expert database, it is necessary to continuously accumulate the data involved. At the same time, it is necessary to ensure that the recommended Library of regulatory instructions should match the situation of early warning, and do not appear the situation that the two do not match. In practice, the expert database and intelligent database should be continuously deduced and iterated to ensure the scientficity of the strategy.

5. Conclusion
To sum up, artificial intelligence technology will play a great role in promoting the development of power service field. In order to better integrate this technology into the service field and realize the good development of the industry, relevant departments need to analyze the application space of artificial intelligence technology in the industry, and they also need to understand what changes the application of artificial intelligence technology will bring. Then on this basis, the construction of industry research cooperation mechanism needs strengthening, and the development of artificial intelligence needs realizing through cooperation with relevant scientific research departments. At the same time, pay attention to basic data collection and accumulation, and actively develop data service channels, so as to ensure the practicability of the database. Finally, a large number of deduction and
iteration are carried out for the expert database and intelligent database to ensure the scientificity of the control strategy and improve the quality of customer service.

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