The Development of Big Data & Artificial Intelligence in the Field of Healthcare——The Case of Ping An Health (Ping An Good Doctor)

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Abstract: This report explores the utilization of big data and artificial intelligence (AI) in the healthcare sector, focusing on the case of Ping An Health (formerly Ping An Good Doctor) in China. The rapid advancement of Internet technology has propelled the widespread adoption of these technologies across various industries. Ping An Health leverages its platform's advantages to continuously innovate and enhance user experience, positioning itself at the forefront of the industry. The report delves into Ping An Health's AI and big data technologies, offering critical analyses of the ethical, political, and social implications surrounding the company.

Keywords: Big Data; Artificial Intelligence; Ping An Health; Healthcare

Introduction

The rapid development of Internet technology has promoted the rapid popularization of big data and artificial intelligence. These two emerging technologies have been well applied in many fields (Mittelstadt & Floridi, 2016). In the field of healthcare, many medical technology companies have made breakthrough achievements by applying big data and artificial intelligence to online medical service systems. Ping An Healthcare and Technology Co., Ltd. makes full use of the advantages of the platform to continuously develop emerging technologies to create excellent medical experience for users, so that it has been at the forefront of the industry ("Ping An Good Doctor," 2021). This report will use the Chinese Ping An Health (Ping An Good Doctor) as an example to describe the company's artificial intelligence and big data technologies and critically analyse the ethical, political and social issues of the company.

1. Ping An Health (Ping An Good Doctor)

Ping An Good Doctor was renamed Ping An Health on January 27, 2021. However, as Ping An Good Doctor is more well-known to the audience, most people in China are still accustomed to calling it Ping An Good Doctor. Founded in November 2014, Ping An Good Doctor is a healthcare software company based in Shanghai, China ("Ping An Good Doctor," 2021). The company provides a platform for online consultations, hospital referrals and appointments services ("Ping An Healthcare and Technology Co Ltd," 2021). Social distance was important during the past three years, and the Internet medical platform alleviated the problem of difficult medical treatment at that time, even changed the medical habits of many potential users in a short time (Oak, 2020).

Currently, in China, most users with Internet medical needs will choose Ping An Health. Ping An Health is China's leading medical platform. Relying on the leading AI medical technology, Ping An Health integrates its own medical team, external contracted doctors and offline medical network resources to provide online consultations and drug purchases services ("Ping An Good Doctor Global Medical Consultation Platform," 2021). In addition, Ping An Health's real-time consultation and health content services are constantly changing people's health awareness. Ping An Health gradually establishes a personal health file for each user, so that they can have a clearer understanding of their health status ("Ping An Good Doctor," 2021).

2. Artificial Intelligence and Big Data

Big data is a method of processing and analysing data that is too large or complex to be processed by traditional data processing applications (Kitchin, 2014a). Big data is to collect, store, process, analyse, apply and display the generated data, and finally realize the value of the data (Kitchin, 2014a). Artificial intelligence is a new technological science that researches and develops theories, methods, and applica-

tion systems for simulating, extending and expanding human intelligence (Bartoletti, 2020).

Big data and artificial intelligence are inseparable and mutually promote each other. The rapid development of the new generation of information technology has enabled the value of big data to be demonstrated (Kitchin, 2014b). At the same time, with the rapid accumulation of massive data, artificial intelligence based on big data has gained the source for sustainable development (Bartoletti, 2020). Many big data applications are attributed to artificial intelligence. Big data and artificial intelligence technologies are closely integrated and can understand, analyse and make decisions on data, so that more accurate information can be obtained from data and the value behind data can be mined (Kitchin, 2014b).

Big data and artificial intelligence are new concepts emerging with the growth of network computing technology (Géczy, 2014). Big data is characterized by massive data, high speed, wide variety, detailed scope and flexibility. It can help enterprises in all walks of life dig out users' needs from massive data, so that data can truly generate value (Kitchin, 2014b). The application of big data and artificial intelligence has penetrated into agriculture, industry, commerce and medical field, etc., and become an important factor affecting industrial development (Mittelstadt & Floridi, 2016). Ping An Health's application of big data and artificial intelligence is a good example in the medical field.

3. The Emerging Technology Application of Ping An Health

On Ping An Health platform, users can first make a preliminary diagnosis of their physical condition through artificial intelligence, such as describing symptoms and past medical history to the artificial intelligence ("Ping An Good Doctor," 2021). In addition, the artificial intelligence of the platform can also make use of the online consultation function to prescribe different prescriptions for individuals according to their physical conditions, age, and geographical location, etc. In China, most people do not have enough health awareness and judgment about their health status. As the largest healthcare platform in China, Ping An Health is committed to providing each family with a family doctor, each person with an electronic health record and a health management plan through artificial intelligence ("Ping An Good Doctor," 2021). Artificial intelligence can regularly monitor the health of family members, and save the results as data to provide evidence support for users' future medical treatment ("Ping An Good Doctor," 2021).

Many patients need to go to offline hospitals for further diagnosis and treatment after going through the real-time consultation process through the Ping An Health platform (Kexuepindao, 2018). As a data open platform, Ping An Health has accumulated a large number of patients' medical and health information through big data. When users go offline for medical treatment, Ping An Health connects with cooperative hospitals through the intelligent auxiliary diagnosis and treatment system. With the consent of the patient, users' data is opened, allowing doctors to gain a deeper understanding of their health information through digitized medical records, thus reducing repeated consultations. This has improved the efficiency of the entire medical service ("Ping An Good Doctor," 2021). In addition, by combing and mining user medication data, Ping An Health can obtain rational drug use information of different patients, which helps pharmaceutical enterprises to develop new drugs and provide users with more reasonable health care and medication advice.

4. The Ethical, Political and Social Issues

Ping An Health is a platform with both praise and controversy. On the platform, users can use their mobile phones to ask doctors online and enjoy professional and convenient online consultation services. On the other hand, Ping An Health has also encountered many doubts. Firstly, some people think that a good doctor may not have enough time to treat online users every day, and they doubt the professionalism of doctors on the platform (Ji, 2018). Secondly, measurement bias will also cause some problems in the application of big data (Bishop, 2020). Therefore, some people are also skeptical about whether the platform's AI technology is accurate enough to diagnose human diseases (Ji, 2018). Thirdly, many people, especially the elderly, are not skilled enough in the use of new media technologies such as mobile phones, so they are unfamiliar with medical consultations and medicine purchases via the Internet. These are the risks faced by Ping An Health. If the above risks cannot be well solved and lead to the loss of users, the owners of the platform, as well as the doctors, hospitals, pharmacies, medical device companies, insurance companies, banks, and other stakeholders who make profits from the platform, will all be affected by these risks. Thus, the above issues need to be improved and resolved by Ping An Health as soon as possible.

Data is not neutral, and it is political in nature (Keyes, 2019). In China, the online medical industry is in line with the direction of policy encouragement. The government takes a positive attitude towards the inclusion of Internet medical services and online medical consultations into medical insurance reimbursements, and actively introduces relevant supporting policies (Jasanoff, 2017). National policies continue to benefit the development of the Ping An Health platform. When technologies are adopted and used, it is because they are considered to achieve a specific human purpose and improve a specific social environment or to promote the interests of individuals and social groups (Winner, 1993). There are many links in the medical industry, and these issues are both challenges and opportunities for Ping An Health. Ping An Health company can improve user experience and promote the overall development of the medical industry through big data and artificial intelligence technologies (Mittelstadt, Allo, Taddeo, Wachter, & Floridi, 2016).

5. Conclusion

The rapid development of Ping An Health is a successful example of artificial intelligence and big data application in the medical industry. The platform is controlled by Ping An Healthcare and Technology Co., Ltd. On this platform, doctors, hospitals, pharmacies, medical device companies, insurance companies, and banks will all profit from it. Besides, this report also conducts a detailed analysis of Ping An Health's artificial intelligence and big data applications, and believes that the company faces the risk of losing users due to the user's distrust of the platform's medical resources. So Ping An Health needs to further improve artificial intelligence, big data and other emerging technologies, and improve the accuracy of the platform in professional aspects so as to increase the trust of users and lay a good technical foundation for promoting the development of the entire medical industry.

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