

Analysis of the Development of Artificial Intelligence in the Field of Biomedical Applications

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Abstract: With the concept of artificial intelligence, its long evolution and development, and gradually and super computing technology, big data analysis technology, network technology, sensing technology, brain science and other new technologies, new theories combined application, which effectively promote the development of social development of economic and industrial development. Currently, artificial intelligence has been widely used in a number of industries, especially in the current biomedical field, in a series of exploration, research, practice has been achieved under the cross-border integration, human-machine collaboration, autonomous manipulation, deep learning and other modes, biomedical industry and people's physical and mental health have a direct relationship. In the current situation of improving living standards, people are more and more concerned about their physical and mental health, living environment, life expectancy, etc., which requires the application of artificial intelligence science in the field of biomedicine and the analysis of the specific application development.

Keywords: Artificial Intelligence; Biomedical Field; Application Development

1. Introduction

In the early meeting of the Political Bureau of the Central Committee of the Communist Party of China (CPC) on the current collective learning in various industries to analyze the current situation and trends in the development of artificial intelligence, artificial intelligence is proposed to lead a new round of scientific and technological revolution and industrial transformation of strategic technologies, driving effect. Under this call, China has introduced the "Made in China 2025", "the State Council on actively promoting the "Internet +" action guidance", "a new generation of artificial intelligence development plan" and other national strategic plans in the later stages. Local governments have also introduced policies to support the development of artificial intelligence, which has further broadened the scope and field of application of artificial intelligence. With the wide application of this technology also prompted the academic community to increase the research on medical artificial intelligence.

2. Research Objectives and Contents, Results of Artificial Intelligence Applications in Biomedicine

In order to better grasp the current situation and trend of AI development in the domestic biomedical

field and explore the trend of AI influencing the development of biomedical industry, we need to conduct professional research from multiple levels such as biomedical AI policy and system, clinical application, research investment and talent training, social cognition and ethics. In addition, researchers should grasp the trend of foreign AI policies in biomedical field, grasp China's scientific research investment in the field of biomedical AI and the development of intelligent medical products, and finally scientifically assess the current overall development level, the effect of talent cultivation, and scientific and technological achievements in the field of biomedical AI.

It was found through to academic reports that our academia analyzed and studied the development of AI technology application in biomedical field through literature survey method, expert consultation method, field analysis, questionnaire survey method, and measurement method. Focused studies on pediatric, dermatological and diabetic retinal cases with specialty-specific studies on these cases were found. The current status of the development of AI clinical applications within the biomedical field is mainly focused on medical imaging and lung nodules work ^[1].

3. Development of Artificial Intelligence in Biomedical Applications

3.1 The Application of Artificial Intelligence Technology in Alzheimer's Disease Risk Prediction

Alzheimer's disease is one of a group of chronic diseases of the central nervous system. Alzheimer's disease can have an impact on the development of the social retirement industry and put a certain amount of pressure on young people, which also puts a certain amount of economic pressure on the world's health care systems. There is no clear method in the current medical field to treat advanced cases of disease progression. However, data has shown that if the disease can be detected early, it needs to be treated as soon as possible in order to stop the progression of the disease and promote its gradual slowing down or cessation. In this regard, the medical community also needs to follow a reliable method to identify potential patients at risk of disease as early as possible as an important object of current biomedical research and clinical care. The Center for Public Health of the Korea Academy of High Technology has currently developed a new technology with deep learning algorithms that can accurately identify potential patients who will become Alzheimer's disease in the coming years. Currently, the biomedical field can identify these potential patients who may evolve into Alzheimer's disease as early as possible, mainly because of early intervention therapy, and doctors have discovered a reliable method to scan positron emission tomography (PET) images of patients' brains and medical data found that the brains of Alzheimer's disease patients produce characteristic protein clumps of amyloid plaques, which affect the brain's ability to consume glucose and have an effect on the rate of metabolism. This affects the brain's ability to consume glucose and reduces the rate of brain metabolism. With this principle in mind, PET scans can provide a clear picture of the brain signs of patients, allowing for early detection of mild cognitive impairment that may develop into Alzheimer's disease. However, the theory could not be applied to practical exploration mainly because people could not clearly interpret the PET images, which required better training of researchers to clarify

the distinct biological markers, but the method was time-consuming and had a high error rate. Later, Korean scientists have jointly developed a deep-learning neural network to replace human observation activities, providing a reliable tool for doctors to predict and assess the health of patients with this new research. However, these tools cannot meet the complexity of the current human structure, especially the difficulty of predicting heart attack status, but with the efforts of scientists it can be found that self-learning computers are superior to standard medical guidelines and can improve the prediction rate. If the method is extended and applied it could be effective in saving thousands or even millions of lives^[2].

3.2 Self-learning Artificial Intelligence in Predicting Heart Attacks

The new study found that a comparative analysis of traditional medical prediction guidelines and different technical machine learning algorithms, designed to derive reliable predictive tools without human intervention, and the use of different techniques to analyze the data reportedly ning. This data specifically includes the electronic medical records of patients and aims to discover specific patterns of cardiovascular disease onset. Based on the above tasks and objectives need to do the following: first, self-learning through artificial intelligence calculations, by creating models, searching patterns through the data and constructing the application of patterns expansive, after self-testing through other records, after the specific application of these reliable record data, can artificial intelligence computing system can predict the occurrence of cardiovascular disease in some patients in the future. Alternatively, prediction results can be obtained from the record data. It was found that these self-learning AI algorithms can accurately identify different patient characteristics, such as, ethnicity, arthritis and kidney disease. These AI algorithms have significant advantages, for example, they can improve the accuracy of statistics in the AUC used by physicians, which are all more accurate than traditional guidelines, for which physicians can choose the best neural network approach as a way to improve the accuracy of disease prediction measurements and improve false alarms^[3].

3.3 Application of Artificial Intelligence Technology in the Diagnosis of Skin Cancer

A team of researchers at a British university has developed artificial intelligence for skin cancer diagnosis with an accuracy rate comparable to that of human doctors. Through a deep learning approach, the machine was trained to recognize and train images of moles, rashes and other skin lesions in order to accurately grasp patients' skin cancer symptoms and compare the results with those of dermatologists. The results found that the deep neural network diagnoses were as accurate as those of human doctors. These studies also optimized early blueprints by using Google's image recognition techniques and object algorithms, which were mainly used in animals in the early stages. In later experimental studies, it was possible to clearly identify benign seborrheic keratoses and keratocellular carcinomas as different from ordinary moles and malignant melanomas. In the later AI application tests, the focus is on keratocellular carcinoma, identifying melanoma, and classifying melanoma using dermoscopic images, and constructing sensitivity and specificity curves based on the research results as a way to accurately assess the reliability

and validity of the algorithm [4].

3.4 Artificial Intelligence in Predicting Patient Mortality

Doctors in the biomedical field currently have an unwritten expectation for the intensive care unit: the need to reduce the number of "patients dying in their beds", which is difficult but possible to achieve. In order to better monitor the vital signs of patients in the ICU and effectively obtain accurate data from different medical devices, the scientific use of artificial intelligence technology is needed to monitor the patient's condition in real time. In this regard, doctors conducted an experimental study in which a new move was made to use a machine learning method of recurrent neural networks. In a series of applications, it was found that "RNN networks can effectively process clinical data sequences, integrate newly generated information sequences, and ensure the accuracy of the output results. In this regard, the application of RNN network is effective in the procedure, which can accurately obtain the latest 12 hours of clinical data of the patient at a later stage of time advancement, and finally produce accurate prediction results [5].

4. Conclusion

In conclusion, artificial intelligence technology emerged under the development of science, technology, and socioeconomics, and was formed under the theory of biocybernetics and bionics. With the emergence of this theory several academics and research centers have intensified their research and analysis with the aim of conducting biomedical related research from physics, mathematics, statistics, engineering and other perspectives of analysis.

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