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The significance of the popularization and promotion of artificial intelligence technology (AI) in the teaching of medical universities

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Abstract: With the increasing maturity of big data capture, the application of artificial intelligence (Artificial Intelligence, AI) technology in various fields is expanding, from simple, information, digital to a more accurate and comprehensive intelligent development, which is especially reflected in the field of medical research. Medical education not only has the laws applicable to it in ordinary higher education, but also contains the special laws of medical education, which are mainly reflected in the characteristics of lifelong uninterrupted learning and the complexity of the courses learned. With the gradual promotion of AI-assisted intelligent education means, medical education has also ushered in new opportunities and challenges. The introduction of AI technology can not only greatly improve the level of medical education, but also maintain the long-term effect of students' learning. At present, AI is mainly applied in medical education to comprehensive curriculum analysis, assisted learning and learning interest and direction assessment. In the long-term development, AI technology still has great difficulties in being widely used in medical education, such as relative difficulties in practical evaluation, difficult barriers to its own technology, and many challenges in data security and medical ethics. However, we have reason to believe that in the near future, with the continuous development and improvement of science and technology, the role of AI in medical education will continue to increase, and it will play a more important role in promoting the development of medical education.

Keywords: Artificial intelligence; medical education; diagnosis; data analysis; ethic

In 1955, John McCarthy was the first scholar to propose the concept of modern artificial intelligence technology (Artificial Intelligence, AI). With the increase of learning depth and the rapid development of network artificial technology, the application in today's society has made great progress (Turing, 1955). Artificial intelligence mainly uses natural language processing, computer vision, knowledge representation, automatic reasoning, machine learning and training technologies. It is one of the important branches of computer science, which can give computer processing complex jobs that require human intelligence to be competent for. At present, with the development and progress of computer technology, artificial intelligence technology (AI) has become more and more popular, in medicine, education, communication, aviation, aerospace and many other fields, and has been constantly improved and promoted (Russell & Norvig, 2018). In the current stage of development in China, The State Council issued the "New Generation of AI Development Plan" (Guo, 2017) document pointed out that: vigorously carry out AI technology, and constantly promote the improvement of ordinary higher education from the information,

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digital field to the field of intelligent development. The document has clearly pointed out to universities across the country that the development of intelligent education and the far-reaching impact (Guo, 2017). Medical education not only has the laws applicable to it in ordinary higher education, but also contains the special laws of medical education, which are mainly reflected in the characteristics of lifelong uninterrupted learning and the complexity of the courses learned[4]. Medical artificial intelligence is an important branch of artificial intelligence technology, which can be used to provide diagnosis and treatment plans for patients, and improve the accuracy and efficiency of diagnosis. In the past 20 years, with the gradual promotion of AI-assisted intelligent education means, medical education has also ushered in new opportunities and challenges, and has also achieved great development. The introduction of AI technology can not only greatly improve the level of medical education, but also maintain the long-term effect of students' learning (Li et al., 2018) (Wan et al., 2018) (Wei et al., 2017). Therefore, in order to cultivate the information processing and coping ability of medical universities, especially students majoring in medical science, I think the popularization and promotion of artificial intelligence technology should be carried out in the teaching process and cultivate students' interest in it.

This paper analyzes the application status of AI in medical education, and discusses its application prospect, ethics, safety protection and solutions.

1. Current status of AI knowledge popularization in medical universities

1.1 School teaching is not paid enough attention to

In medical schools, the academic affairs office and students pay more attention to the teaching and learning of specialized courses, rather than computer and information technology. In terms of teaching arrangement, I are more inclined to give more medical courses or hospital internships and internships, while ignoring computer courses and computer operation. Even a computer course will not teach too much knowledge. And for students, in the process of learning is just to deal with the exam, and will not think. The teacher may just introduce a big or test-taking technique.

1.2 Teachers themselves do not know enough about this

Clinical teachers in medical schools may not understand computer knowledge, and computer teachers do not understand clinical knowledge, so they cannot guide students to combine the ability of computer processing information with clinical application. Although the technology of artificial intelligence has been greatly developed, it is not widely used in clinical in China. Even if teachers have relevant awareness, it is not convenient to give examples to students, so as to lead students to think independently.

2. Necessity of popularizing artificial intelligence technology in medical universities

As an emerging major in recent years, artificial intelligence major has become a strong discipline in some universities. The popularization of artificial intelligence (AI) technology in medical university teaching is of great significance, and the popularization of this technology in medical education is very necessary. Therefore, in medical education, it is necessary to arrange an appropriate amount of relevant courses for medical higher education to prepare for a future-oriented medical students with comprehensive qualities.

2.1 The application of artificial intelligence in medical care

2.1.1 Intelligent imaging diagnosis

This is an area of more research, and great progress has been made. Through deep learning, the computer completes the classification, identification and identification of the clinical impact, so as to help doctors in the diagnosis and treatment. Including: (1) analysis of various radiological impact films: such as the identification of benign and malignant lung cancer by CT images; (2) analysis of pathological sections: once pathological slides can only be identified by naked eye, can be identified by trained computers, and artificial intelligence can also carry out initial screening of cytology, morphological

quantitative analysis, histopathological diagnosis including auxiliary prognosis; (3) endoscopic image analysis: there are more gastroscopy, colonoscopy image analysis, currently more mature esophageal cancer with the help of artificial intelligence medical imaging (Ma et al., 2019).

2.1.2 A I-liquid biopsy of tumor

Liquid biopsy can be used in early tumor screening and diagnosis. Compared with traditional biopsy, it has the advantages of rapid, minimally invasive, reproducible and dynamic detection of condition changes. Today, many researchers are hoping to develop machine learning algorithms that can recognize low-concentration signals in the blood, so as to promote the identification, treatment options and prognosis of early cancer. Thanks to the wide use and popularity of liquid biopsy technology, the amount of data on liquid biopsy is also growing rapidly, and big data and artificial intelligence can play its advantages in this field. AI liquid biopsy can make their information resources better integrated and complementary. With the increase of data volume and the optimization of the algorithm, the accuracy and sensitivity of detection will increase day by day. At present, there are Freenome, G RAIL, Foundation O ne, Guardant 360 and other platforms and technologies (Tencent, 2018).

2.1.3 Clinical aid in decision-making

In 2018, under the guidance of Guangdong Provincial Science and Technology Department of Science and Technology and hosted by Tencent, "Facing the Future, Launch AI" Tencent Medical AI and Medical Science and Technology Development Forum (and) national Key RESEARCH and development Program was held in Shenzhen.at the meeting, Tencent, as the leading undertaking unit, Together with the Institute of Automation of the Chinese Academy of Sciences, the General Hospital of the Chinese People's Liberation Army, Xiangya Hospital of Central South University, Peking University People's Hospital, Shenzhen People's Hospital and many other units, Officially launched the project of "Digital Diagnosis and Treatment Equipment Research and Development Special" —— "Research on Clinical Assistance Decision Support Technology and Service Mode Solution" in the 2018 National Key RESEARCH ICIAL Research and Development Program, Exploring AI-based clinical-assisted decision support technology (AI + CDSS), Create a new medical service mode solution covering the whole process of medical treatment, To help improve the accessibility, homogeneity, precision and standardization of medical services (electronic fanatic, 2019).

2.1.4 Surgical robot

Surgical robotic surgery can be applied in all parts of the organs. The vast majority of large hospitals in China have been equipped with Da Vinci robotic surgical system, and has realized the successful application of most disciplines including general surgery, urology, thoracic surgery, otolaryngology and divine surgery. In March 2019, Huawei and China Mobile helped the General Hospital of the People's Liberation Army successfully achieve China's first 5G-based remote human surgery- -a "brain pacemaker" for Parkinson's disease. Located in Hainan neurosurgery experts ling to culture, across nearly 3000 kilometers, through China mobile and Huawei joint deployment of 5G network, and CloudLink 4K high-definition video conference terminal, real-time transmission of high-definition surgery, remote control of surgical instruments, success in the Chinese people's liberation army general hospital of a patient completed the "brain pacemaker" implantation surgery (Hodges, 2018).

2.1.5 Artificial intelligence and clinical scientific research

In the face of more and more open clinical databases, artificial statistical methods have been difficult to meet the needs of processing big data. Therefore, we need the strong learning ability and analysis speed of AI to process these data, and machine learning is more closely related to databases. Artificial intelligence can not only provide new ideas for the processing efficiency and service quality of the database, but also provide training data and detection scenarios for the artificial intelligence. Therefore, the development of the two is complementary and reinforcing (Zhang et al., 2015)

(Li et al., 2019) (Zhang & Wang, 2013) .

2.2 Meet the needs of students and improve their comprehensive quality

Many students may not have a good computer foundation, but they are useful to the needs of artificial intelligence in scientific research or clinical practice. Therefore, the school can effectively help them with systematic and scientific learning and training after carrying out relevant teaching work, and teachers can also answer questions in time and provide help for them. In the interaction between students and teachers, the effect of teaching and learning can be achieved. With relevant knowledge, students can play their talents in other fields even if they are not engaged in clinical or medical related work in the future.

2.3 Improve the teaching efficiency and quality

AI can help students to learn more efficiently through simulated case learning, automated exam scoring, and personalized learning plans. It can not only stimulate students' interest in learning, but also, with the help of AI, reduce the teaching pressure of teachers, and get twice the result with half the effort. Not only strengthen the memory, but also impressive!

2.4 Precision medicine education

Today, when medicine has entered precision therapy, AI has played a very important role in the analysis of patients' treatment decisions. In clinical practice teaching, we can according to the patient condition, using AI technology, to analyze a large number of medical data, help students to how to learn according to the patient's specific situation reasonable treatment plan, and further analyze the advantages of various treatments between, to achieve personalized treatment and reasonable treatment.

2.5 Distance teaching and collaboration

AI technology can promote distance learning and international cooperation, enabling students to conduct real-time surgical simulation through virtual reality (VR) or augmented reality (AR) technology. This kind of simulation training is very necessary and needs to be popularized in today's poor doctor-patient relationship. It is not only conducive to cultivating students' hands-on practical ability, but also can feel the possible accidents in the operation, and teach students how to face, solve and then avoid the occurrence of various surgical accidents!

2.6 Improvement of research ability

AI can help students and teachers to efficiently conduct scientific research activities, such as data collection, analysis, and experimental design. With the help of AI technology, it can select and plan research directions more quickly and reasonably, and formulate more reasonable and detailed research plans. At the same time, it is also more good at and leading in the AI auxiliary field of data mining.

In short, learning more technology can help students more adapt to the changes of The Times, better based on the society, conducive to the development of students in all aspects, to adapt to the fierce competition in the future.

3. Suggestions for medical colleges and universities to develop artificial intelligence and their popularization and promotion in medical teaching

3.1 Challenges of medical artificial intelligence technology integration

Medical college education needs to integrate AI technology into the existing teaching system, which includes updating teaching plans, training teachers, and improving hardware facilities. In the syllabus, the application and status of AI in future teaching in the need should be fully reflected. At the same time, in this kind of teaching activities, hardware facilities are the key, and the requirements are relatively high, it is necessary to constantly improve, run in and update the facilities, in order to solve the practical problems of clinical teaching. Major challenges to integrating AI in medical education include rapid changes in technology, differences in technological adaptability between students and faculty, and limitations in existing curriculum structures. To address these challenges, medical schools can offer interdisciplinary courses that focus on how to integrate AI technology with clinical practice, while enhancing students' hands-on experience through simulation and virtual reality tools (Zhang & Wang, 2013).

Solutions should also include regular teacher

skills upgrading seminars to ensure that teachers are up to the latest AI technologies and can apply them effectively in teaching (Chen, 2010).

3.2 Strengthen teacher training

Teachers not only need to receive specialized AI techniques to be able to use them effectively for teaching. Moreover, we should have certain medical knowledge, which can effectively combine the two, in order to complete the teaching purpose, to achieve the teaching goal. We can introduce talents who combine artificial intelligence specialty and medicine, or encourage hospitals to develop or use artificial intelligence technology, so that teachers can teach students the knowledge and application of artificial intelligence technology more professionally and specifically, so that students can feel the prospect of artificial intelligence technology in the future and the necessity of learning to use it.

In this way, medical universities can maximize the use of artificial intelligence technology, not only to improve the quality and efficiency of teaching, but also to remain competitive in the global medical education field.

3.3 Improve the assessment system of learning professional courses, and strengthen the teaching evaluation and timely feedback

Students should not only be determined by the paper score, students should be encouraged to carry out practical operations, encourage students to find problems and ask problems, and guide students to try to solve this problem. Students need to be encouraged to innovate and develop their ability to think independently. Teachers should not blindly read courseware when teaching, but should show students more about the application of artificial intelligence technology in practice to cultivate students' interest. At the same time, medical education should establish a complete and perfect evaluation system, regularly evaluate the application effect of AI technology in teaching, and make timely adjustments according to the feedback results.

3.4 The impact of artificial intelligence on medical ethics and privacy

As the role of AI in medical decision-making increases, medical education needs to pay attention to cultivating students' ethical judgment ability. The course should include a discussion about data privacy, algorithmic bias, and its possible unfair consequences for patients. When applying AI technology in teaching, medical ethics and student privacy must be strictly observed.

Through vivid and realistic case studies, students can analyze real ethical dilemmas, such as rare conditions that AI diagnostic systems may ignore, and how to balance machine efficiency against human compassion (Willett, 2010).

3.5 Case study and data analysis

Case studies can show how AI can optimize patient management in the real world, such as how AI systems can help doctors identify disease patterns faster and improve the personalization and the success rate of treatment. Medical schools can collaborate on research projects to explore the use of AI in predicting disease development and optimizing treatment options. These research results can be further fed back to teaching and improve the practical significance and application value of education (Willett, 2010).

3.6 Internationals perspective and future development direction

Compare the differences in medical AI education between China and other countries such as the United States and Europe, and explore the advantages and drawbacks of different educational systems. Such a comparison could help identify best practices for promoting AI education globally. Looking forward, it can be discussed how AI continues to change the way the healthcare profession works as technology advances, and how medical schools prepare students to face this change, particularly in terms of technology ethics and patient interaction (Hewson, 2010).

Similarly, medical education in colleges and universities should maintain continuous investment and attention to the research and update of AI technology, so as to ensure that the content and technology of the education are continuously advanced.

Therefore, in medical universities, in addition to cultivating students' medical literacy, with the advent

of the era of big data, we should keep pace with The Times and carry out the popularization of artificial intelligence education, so as to cultivate medical talents with independent thinking ability in all aspects.

Conflict of Interest

The authors declare that they have no conflicts of interest to this work.

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