РОЛЬ ИСКУССТВЕННОГО ИНТЕЛЛЕКТА И ЧАТ GPT В МЕДИЦИНСКОМ ОБРАЗОВАНИИ

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РОЛЬ ИСКУССТВЕННОГО ИНТЕЛЛЕКТА И CHAT GPT В МЕДИЦИНСКОМ ОБРАЗОВАНИИ. ЖКМП.-2024.-Т.1.-№1.-С

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Аннотация: Использование искусственного интеллекта (ИИ) быстро меняет сферу медицинского образования, при этом чат-боты становятся все более популярными. Chat GPT — это передовой чат-бот на базе искусственного интеллекта, созданный Open AI, который использует глубокое обучение для предоставления человеческих ответов на текстовые вводы. Этот чат-бот был обучен работе с большим объемом интернет-данных, что позволяет ему понимать и отвечать на широкий спектр запросов на естественном языке. Он может вести сложные дискуссии, понимать контекст и реагировать соответствующим образом. Chat GPT используется в различных сферах, включая медицинское образование. Это ресурс для студентов-медиков, медицинских работников и пациентов.

Ключевые слова: *медицина, чат GPT, искусственный интеллект, исследования, образовательные технологии.*

TIBBIY TA‘LIMDA SUN’IY INTELEKT VA CHAT GPTNING O‘RNI

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Annotatsiya: Sun’iy intellektdan (AI) foydalanish tibbiy ta’lim sohasini tez o‘zgartirib, chatbotlar tobora ommalashib bormoqda. Chat GPT - bu Sun’iy intelekt tomonidan yaratilgan zamonaviy sun’iy intellektga asoslangan chatbot hisoblanib, matnga asoslangan kirishlarga insoniy javoblar berish uchun chuqur o‘rganishda foydalanadi. Sun‘iy intelekt - chatbot katta miqdordagi internet ma’lumotlari bo‘yicha o‘qitilgan bo‘lib, unga tabbiy tilda keng ko‘lamli so‘rovlarni tushunish va ularga javob berish imkonini yaratdi. U murakkab munozaralarga ega bo‘lishi, kontekstni tushunishi va to‘g‘ri javob berishi mumkin. Chat GPT (chatbot) turli xil sharoitlarda, jumladan, tibbiy ta’limda qo‘llaniladi. Bu tibbiyot talabalari, tibbiyot xodimlari va bemorlar uchun muhim manba hisoblanadi.

Kalit so‘zlar: *tibbiyot; Chat GPT, sun’iy intellekt, tadqiqot, ta’lim texnologiyasi.*

THE ROLE OF ARTIFICIAL INTELLIGENCE AND CHAT GPT IN MEDICAL EDUCATION

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Annotation: The usage of artificial intelligence (AI) is fast changing the area of medical education, with chatbots becoming increasingly popular. Cha tGPT is a cutting-edge AI-powered chatbot created by Open AI that employs deep learning to provide human-like answers to text-based inputs. This chatbot has been trained on a large quantity of internet data, allowing it to understand and react to a wide range of requests in natural language. It can have sophisticated discussions, grasp the context, and respond appropriately. Chat GPT is used in a variety of settings, including medical education. It is a resource for medical students, healthcare providers, and patients.

Keywords: *medicine, Chat GPT, artificial intelligence, research, educational technology.*

Introduction: AI has gained significant traction in the healthcare industry due to its potential to streamline processes, enhance patient care, and improve medical decision-making. Chat GPT, powered by the GPT-3.5 architecture, is a state-of-the-art language model that utilizes deep learning techniques to generate human-like text responses. [1, 2]. Its ability to understand and process natural language makes it a valuable asset in the field of medicine.

Methods: Artificial intelligence in medical diagnosis - When a doctor uses AI to diagnose a patient with a certain illness/condition, the time necessary for a diagnosis is dramatically decreased, and diagnostic efficiency is significantly increased. By analyzing clinical data from radiology (such as X-ray, CT, and MRI), pathology, endoscopic, ultrasonographic, and biochemical examinations for related human body indicators, AI can produce results quickly and replace the ineffective traditional medical model, which is unable to provide timely and accurate conclusions, particularly for complex diagnoses. Furthermore, because AI can solve problems in such a short period, doctors may devise a more thoughtful and reasonable treatment plan based on the patient's situation [12-15].

This can help improve access to medical knowledge and reduce geographical barriers to medical education. Another advantage of using Chat GPT in medical education is its ability to generate human-like responses. The chatbot can hold complex conversations and understand the context of the conversation, enabling it to provide highly relevant answers. This can help to improve the quality of medical education and enhance the learning experience for students. Limitations of using Chat GPT in medical education While Chat GPT provides many advantages over traditional learning methods, its use in medical education has limitations. One of the main limitations is its inability to provide hands-on learning experiences. Medical education requires practical training, and Chat GPT cannot replace the importance of hands-on training in medical education. Another limitation is that Chat GPT's accuracy depends on the data quality it has been trained on. If the data is biased or incorrect, it can impact the chatbot's responses. Therefore, ensuring that the data used to train Chat GPT is accurate and unbiased is essential to ensure that the chatbot provides reliable information. In addition, it is crucial to recognize that Chat GPT cannot replace the expertise and guidance of experienced medical professionals. While the chatbot can provide information and advice, it cannot replace the experience and expertise of a qualified medical professional. Therefore, Chat GPT should be used as a complementary tool to traditional medical education methods rather than a replacement.

In conclusion, Chat GPT is a valuable tool for medical education that offers many advantages over traditional learning methods. It provides personalized learning experiences and can be accessed anytime and anywhere, making it a convenient option for medical students, healthcare professionals, and patients [14,15]. However, it is essential to recognize its limitations, including its inability to provide hands-on learning experiences, reliance on the quality of training data, and its failure to replace the expertise of qualified medical professionals. Chat GPT operates on a two-step process: training and inference. During the training phase, the model is exposed to vast amounts of text data, including medical literature, research papers, and clinical guidelines.

This exposure enables Chat GPT to learn the patterns and nuances of language, allowing it to generate coherent and contextually relevant responses [11,12,14]. In the inference phase, when a user poses a question or provides input, Chat GPT uses the knowledge it gained during training to generate a response. The model relies on a mix of pre-trained information and the user's input to generate accurate and informative answers.

Results: Artificial Intelligence in Education - The typical hospital management strategy focuses on the administrative department's overall planning, which can lead to omissions and inefficient distribution of medical resources. Regulations for AI technologies have undergone significant changes. Scholars have used short-term memory neural network AI technology to predict accurate waiting times in emergency departments, improving medical efficiency, patient experience, and resource redistribution [1]. Artificial Intelligence algorithms were used to reduce average hospitalization time by 7%, select the optimal number of beds, and optimize hospital resources and inputs based on patient data, route to the hospital, and climate [2].

A real-time prediction approach using artificial neural networks correctly predicted readmission rates, facilitating patient preparation and enhancing hospital management [3]. Artificial Intelligence technology has improved patient counseling, hospital administration, resource allocation, and personalized clinical care [4]. Medical students are the future of medical growth, but their training is challenging owing to the extensive and complex professional knowledge necessary. Medical students' progress will be limited if they solely study textbooks and specimens. AI technology has enhanced the learning experience for medical students, making it more diverse and engaging. AI-based problem-based learning improves student comprehension of clinical disorders [5]. Using an AI system to learn surgery has led to improved performance and confidence among medical students [6]. The AI simulation-based surgical training system, which combines AI and simulation to study surgical skills, provides objective feedback and improves student learning [7].

AI technology can track students' mental health and academic performance, allowing colleges to better understand their students' situations. Additionally, medical students may benefit from 3DP and MR technologies, which offer immersive learning experiences beyond traditional textbooks. The 3DP medical model, powered by intelligent algorithms, allows students to study three-dimensional anatomy and practice surgical skills [8,9,16]. MR technology can enhance students' understanding of human anatomy by allowing them to manipulate any size or layer, allowing for risk-free simulation of surgery training [10]. 3DP or MR-based support approaches are commonly used in medical education.

Impact of Chat GPT in the field of medicine as it answers burning questions about AI. Discover how this AI-powered tool enhances diagnosis, patient engagement, and administrative efficiency. Learn about its benefits, challenges, and real-world success stories. Find out how Chat GPT is revolutionizing healthcare while maintaining ethical considerations.

How can we ensure the ethical, inclusive and equitable use of AI in education?

- What are the ethical obligations of private organizations (product developers) and public authorities (schools and universities involved in research)?;
- How does the transient nature of students' interests and emotions as well as the complexity of the learning process impact on the interpretation of data and ethics of AI applied in educational contexts?;
- What pedagogical approaches are ethically warranted?.
- What are the ethical implications of not being able to easily interrogate how AI makes decisions (using multilevel neural networks)?;
- How might schools, students, and teachers opt out from, or challenge, their representation in large datasets?;
- What criteria should be considered in defining and continuously updating the ethical boundaries of the collection and use of learners'data?;

Table 1: Master plans for using AI in education management,teaching, learning, and assessment.

1	LEVERAGE AI TO BOOST AND UPGRADE EDUCATION MANAGEMENT AND DELIVERY	-Explore how AI technologies can improve educational management information systems (EMIS) -Enable the holistic transformation
		of EMIS and their integration with learning management systems (LMS) -Empower managers, teachers and
		students to apromote the application of AI-powered EMIS and LMS
2	CULTIVATE LEARNER-CENTRED USE OF AI TO ENHANCE LEARNING AND ASSESSMENT	-Reinforce and reiterate humans' authority and autonomy over their own learning in the context of increasingly knowledgeable machines and computer agents
		-Emphasize students' agency and social well-being in the process of integrating AI-based tools
		-Review and adjust curricula to reflect pedagogical and assessment changes brought by the increasingly wide
		-Test and deploy AI technologies to support the assessment of multiple dimensions of competencies and outcomes
3	ENSURE THAT AI IS USED TO EMPOWER TEACHERS	-Analyze and review teachers' roles in facilitating knowledge transfer, human interaction, higher-order thinking, and human values
		-Deliver training and ensure continuous support to help teachers gain skills to use AI effectively
4	PLAN THE USE OF AI TO SUPPORT LIFELONG LEARNING ACROSS AGES, LOCATIONS AND BACKGROUNDS	Actively seek and promote the use of AI to support a wide range of educational approaches and diverse pathways for lifelong learning
		Build AI tools and systems to track learning outcomes and credentials across levels and locations of study
		Address imbalances in access to AI across age groups
5	DEVELOP VALUES AND SKILLS FOR LIFE AND WORK IN THE AI ERA	Build prediction models to identify trends in employment and skills and develop retraining programmes for those in jobs at risk of AI
		Integrate AI-related skills into school curricula and technical and vocational education and training (TVET)qualifications:
		Take institutional actions to enhance AI literacy across all sectors of society
		Help higher education and research institutions to foster local AI talent
		Retain local AI talent

Discussion: Applications of Chat GPT in Medicine Chat GPT finds applications in various aspects of medicine, transforming the way healthcare is delivered. One significant area is diagnosis and treatment. By analyzing patient symptoms and medical history, Chat GPT can assist healthcare professionals in reaching accurate diagnoses and suggesting appropriate treatment plans.

This capability has the potential to reduce diagnostic errors and improve patient outcomes. Another crucial application of Chat GPT in medicine is patient engagement and education [12,13]. The model can provide patients with relevant information about their conditions, treatment options, and lifestyle modifications. By empowering patients with knowledge, Chat GPT promotes active participation in their healthcare journey, leading to better adherence to treatment plans and improved overall health.

Benefits and Challenges of Using Chat GPT in Medicine - The integration of Chat GPT in medicine brings several benefits. Firstly, it can significantly improve the accuracy and efficiency of medical decision-making. By accessing a vast amount of medical knowledge, Chat GPT can provide evidence-based recommendations and help healthcare professionals stay up-to-date with the latest research. Moreover, Chat GPT offers the potential for enhanced patient outcomes through personalized care. By understanding individual patient data and preferences, the model can tailor its responses and recommendations accordingly. This personalized approach promotes patient-centered care and increases patient satisfaction. However, the use of Chat GPT in medicine also poses challenges. Ethical considerations arise when relying solely on AI for medical decisions, as there is a need to ensure that human oversight and accountability are maintained. Additionally, concerns about privacy and data security arise, necessitating robust safeguards to protect sensitive patient information.

Future Prospects and Limitations - The future prospects for Chat GPT in medicine are promising. As AI technology continues to advance, the model's capabilities will improve, enabling more accurate and contextually appropriate responses. Integration with other medical tools and systems can further enhance its functionality and usability. However, it's important to acknowledge the limitations of Chat GPT. While the model excels in generating text-based responses, it may struggle with complex medical scenarios that require deep clinical expertise or physical examination.

Can Chat GPT replace human doctors?- No, Chat GPT cannot replace human doctors. It serves as a supportive tool, augmenting healthcare professionals' capabilities by providing information and recommendations. The human expertise and clinical judgment of doctors are essential for accurate diagnosis and treatment.

How can Chat GPT enhance patient privacy and data security? – Chat GPT's integration into medical systems must adhere to strict privacy and data security protocols. Patient information should be anonymized and encrypted to protect privacy. Compliance with relevant regulations such as the Health Insurance Portability and Accountability Act (HIPPA) ensures the secure handling of sensitive data.

Are there any regulatory concerns regarding the use of Chat GPT in medicine? - Yes, regulatory concerns exist regarding the use of Chat GPT in medicine. Regulatory bodies are actively assessing the impact and potential risks of AI in healthcare to establish guidelines and ensure patient safety, ethical standards, and transparency.

How does Chat GPT handle the complexity of medical information?- Chat GPT is trained on vast amounts of medical literature and research papers, allowing it to comprehend and generate responses related to complex medical information. However, it's important to note that Chat GPT's responses should always be validated and verified by healthcare professionals to ensure accuracy and appropriateness.

Will Chat GPT lead to job losses in the healthcare industry?- While Chat GPT automates certain administrative tasks, it is not intended to replace healthcare professionals. Instead, it aims to support them by freeing up time for more critical and personalized patient care. The role of healthcare professionals will continue to be vital in delivering comprehensive and compassionate healthcare.

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Can Chat GPT be used for remote patient monitoring? – Chat GPT can be utilized for remote patient monitoring by providing personalized information and reminders to patients in real-time.

How does Chat GPT handle patient confidentiality? – Chat GPT ensures patient confidentiality by anonymizing and encrypting data, adhering to strict privacy regulations, and implementing robust security measures.

Can Chat GPT assist in medication management? – Chat GPT can help patients manage their medications by providing reminders, information about drug interactions, and answering questions about dosages.

Can Chat GPT provide real-time assistance during medical emergencies? – Chat GPT is not designed for emergency situations. In urgent medical emergencies, immediate human medical intervention should always be sought.

Does Chat GPT have limitations in understanding complex medical jargon? – Chat GPT has been trained in a wide range of medical literature, but it may have limitations in comprehending highly specialized or rare medical terminology.

Is Chat GPT able to learn and adapt to new medical research and discoveries? – Chat GPT can be updated with new information and research findings to ensure it stays up-to-date with the latest medical advancements.

Can Chat GPT provide information about clinical trials? - Chat GPT can provide information about ongoing clinical trials, eligibility criteria, and guidance on how to participate.

How does Chat GPT handle patient-specific data, such as electronic health records? – Chat GPT can access patient-specific data from electronic health records, but it must comply with privacy regulations and obtain patient consent.

Can Chat GPT assist in predicting disease outcomes or prognosis? - While Chat GPT can provide information about disease outcomes based on available research, it should not be solely relied upon for predicting individual patient prognosis.

Can Chat GPT generate medical reports or documentation? – Chat GPT has the potential to generate medical reports or documentation based on input provided by healthcare professionals, but final validation and review by medical experts are necessary.

How is patient feedback incorporated into Chat GPT's learning process? - Patient feedback can be valuable in refining and improving Chat GPT's responses. Feedback mechanisms can be implemented to gather user input and enhance the model's performance.

How can healthcare professionals trust the accuracy of Chat GPT's responses? - Healthcare professionals should exercise critical judgment and validate Chat GPT's responses against established medical knowledge and guidelines.

Can Chat GPT help in identifying potential symptoms and diseases based on patient descriptions? - Chat GPT can analyze patient descriptions and suggest potential symptoms or diseases, but it is important to note that this information should be verified and confirmed by healthcare professionals through proper medical evaluation and diagnostic processes.

Can Chat GPT assist in medical research and data analysis? – Chat GPT can be a useful tool in medical research by providing insights, generating hypotheses, and analyzing large datasets. However, human researchers should oversee and validate the results.

Can Chat GPT assist in medical education and training? – Chat GPT can serve as a valuable educational tool for medical students and professionals, providing access to medical literature and answering queries related to medical concepts and practices.

Is Chat GPT capable of understanding and responding to non-textual inputs, such as images or scans? – Chat GPT primarily operates with text-based inputs and responses.

To interpret non-textual inputs like images or scans, additional tools and integration would be required.

How does Chat GPT ensure unbiased and inclusive responses in terms of gender, race, and other demographic factors? - Efforts are made during Chat GPT's training process to mitigate biases. However, ongoing research and evaluation are needed to ensure inclusive and unbiased responses across all demographic factors.

How can patients provide feedback or report issues with Chat GPT's responses? - Platforms integrating Chat GPT can incorporate feedback mechanisms or reporting systems for users to provide feedback, report issues, or seek clarifications regarding responses.

Conclusion: Chat GPT has emerged as a valuable tool in the field of medicine, harnessing the power of AI to support healthcare professionals and improve patient outcomes. By assisting in diagnosis, enhancing patient engagement, and streamlining administrative tasks, Chat GPT contributes to the advancement of the healthcare industry. However, ethical considerations, privacy concerns, and limitations must be carefully addressed as this technology continues to evolve. Inued research and development are necessary to address these limitations and refine the model's performance in complex medical situations. Artificial intelligence (AI) is a new technical discipline that uses computer technology to research and develop the theory, method, technique, and application system for the simulation, extension, and expansion of human intelligence. With the assistance of new AI technology, the traditional medical environment has changed a lot. For example, a patient's diagnosis based on radiological, pathological, endoscopic, ultrasonographic, and biochemical examinations has been effectively promoted with a higher accuracy and a lower human workload. The medical treatments during the perioperative period, including the preoperative preparation, surgical period, and postoperative recovery period, have been significantly enhanced with better surgical effects. In addition, AI technology has also played a crucial role in medical drug production, medical management, and medical education, taking them in a new direction. The purpose of this review is to introduce the application of AI in medicine and to provide an outlook on future trends.

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