Healthcare Transformation with Informatics and Artificial Intelligence
J. Mantas et al. (Eds.)

doi:10.3233/SHTI230533

Revolutionizing Healthcare with Foundation AI Models

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Abstract. ChatGPT is a foundation Artificial Intelligence (AI) model that has opened up new opportunities in digital healthcare. Particularly, it can serve as a co-pilot tool for doctors in the interpretation, summarization, and completion of reports. Furthermore, it can build upon the ability to access the large literature and knowledge on the internet. So, chatGPT could generate acceptable responses for the medical examination. Hence. It offers the possibility of enhancing healthcare accessibility, expandability, and effectiveness. Nonetheless, chatGPT is vulnerable to inaccuracies, false information, and bias. This paper briefly describes the potential of Foundation AI models to transform future healthcare by presenting ChatGPT as an example tool.

Keywords. Artificial Intelligence, ChatGPT, Foundation AI models, Healthcare, Medical AI.

1. Introduction

Foundation AI models based tools such as ChatGPT work on large-scale pre-trained models that generalize well on a variety of tasks [1], [2]. ChatGPT, in particular, has demonstrated the ability to generate coherent and human-like text. Furthermore, it can analyze large-scale data and medical reports and generate personalized advice for doctors and patients. The key strengths of ChatGPT include scalability, swift data processing, adaptive learning from human feedback, and accessibility for an affordable cost. However, addressing significant concerns related to vulnerabilities such as hallucinations and the dissemination of inaccurate information is crucial. Before integrating ChatGPT into healthcare settings, a comprehensive clinical validation is imperative to ensure its reliability and safety, in alignment with the guiding principle of the Hippocratic oath to prevent harm. This paper identifies the prospects for chatGPT that can be instrumental in transforming digital healthcare and medical AI. Much of the discussion is equally applicable to other foundation AI model-based text processing and chat tools such as Google Bard, Falcon, and Meta LLaMA.

2. Prospects in healthcare

ChatGPT excels at generating text, completing sentences, and text summarization. Hence, it can be very handy as a co-piloting tool in completing clinical notes and

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generating summaries of past reports from lengthy notes or detailed electronic health records, as demonstrated in [3], [4]. Similarly, most of the notes during the clinical check-up of a patient are recorded as unstructured data. ChatGPT can be resourceful in extracting knowledge from unstructured clinical notes and re-organize it as structured notes for ease of interpretation or even as structured text in different formats compatible with web applications and visual display, such as JSON format or HTML tables. Thus, digitization of valuable clinical studies and reports will become possible and fast. ChatGPT provides efficient chat-based interaction with humans. Therefore, it can serve as a tool for personal health consultation and virtual health assistance, thus, reducing the workload on health care centers. For example, it can provide advice and recommendations on personalized healthcare, as demonstrated in a recent study on recommendations for cardiovascular disease prevention [5].

Furthermore, ChatGPT can imitate different writing styles. So, it can aid patients in describing their symptoms to doctors, i.e., it can restructure the patient's narrative into a more structured form imitating the description style of a trained physician or nurse. This can help build a better patient-doctor interaction experience. Finally, ChatGPT can easily create medical education and training material [6]. Thus, it can help develop virtual training to deliver medical education to students with limited resources. Therefore, it will democratize medical knowledge. Similarly, it can also help in medical research by efficiently analyzing complex patterns in medical data and exploring possibilities in drug discovery.

3. Conclusion

In this paper, we briefly described the potential of foundation AI models-based tools to revolutionize digital healthcare. Using ChatGPT as a case study, we described that doctors and researchers are increasingly becoming interested in using foundation AI models to help diagnose, write medical notes, and transform medical education. Even though ChatGPT can be helpful in healthcare, as an AI tool, it is not entirely free from error, and thus, caution is advised in its use in critical healthcare.

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