

PROVA DE PROFICIÊNCIA EM LÍNGUA INGLESA PARA ALUNOS DA ÁREA DA
SAÚDE – 2023/2

Nome: _____

Curso: _____

Instruções

Gerais:

1. Apresentar documento de identidade com foto.
2. Responder às questões em língua portuguesa, com caneta azul ou preta na folha abaixo. O rascunho não será corrigido. E respostas à lápis não serão aceitas.
3. É permitido consultar dicionários e gramáticas em papel, individualmente.
4. Não é permitido utilizar celulares, laptops, notebooks, tablets e canetas tradutoras.
5. Entregar a prova no prazo máximo de duas (2) horas.
6. Serão considerados aprovados os candidatos que demonstrarem proficiência, com aproveitamento igual ou superior a 50% de acertos.

<https://www.sciencedirect.com/science/article/pii/S2949907023000050>

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ChatGPT for mechanobiology and medicine: A perspective

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Abstract

ChatGPT has garnered significant attention for its impressive capabilities across various domains, including medicine and mechanobiology. In order to facilitate the integration of ChatGPT into research, this paper explores the applications of ChatGPT in these domains, focusing on its usage in (1) reading and writing, (2) retrieval and knowledge management, and (3) computation, simulation, and visualization. Meanwhile, this study acknowledges the limitations and challenges associated with ChatGPT's usage. We investigate the interaction between ChatGPT and external tools in these applications and advocate for the integration of more powerful tools in these research areas into ChatGPT to further expand its potential applications in medicine and mechanobiology.

Keywords: Mechanobiology Medicine Artificial intelligence ChatGPT

ChatGPT (Chat Generative Pre-trained Transformer) is an artificial intelligence conversational agent built on the state-of-the-art transformer-based LLM (Large Language Model) GPT released by OpenAI in November 2022. With proper prompts, this versatile chatbot exhibits fluent and sophisticated natural language processing abilities. Recently, OpenAI upgraded the underlying architecture of ChatGPT from GPT-3.5 to GPT-4, enabling it to handle more complex multimodal prompts, including text and images.

Due to its exceptional performance and promising potential across various dialogue scenarios, ChatGPT has rapidly gained prominence within a short period. Researchers from diverse domains have made vigorous efforts to exploit the capabilities of ChatGPT. In the field of medicine, ChatGPT has demonstrated a passing score in the United States Medical Licensing Examination [1]. Moreover, within specialized domains like clinical toxicology, ChatGPT has exhibited competence in providing comprehensive answers to questions related to typical acute organophosphate poisoning cases [2]. These studies showcase the extensive expertise of ChatGPT and highlight its remarkable potential to drive transformative changes in the medical industry.

Despite the extraordinary capabilities of ChatGPT, it is crucial to acknowledge its limitations. Generative LLMs, including GPT, often exhibit a phenomenon called "hallucination," which refers to the generation of nonsensical or unfaithful content that deviates from the provided source [3]. Consequently, the outputs of ChatGPT are not always reliable due to the possibility of hallucinations. Additionally, ChatGPT occasionally makes simple arithmetic errors that a calculator would typically avoid, restricting its usability in computational tasks. Furthermore, data privacy and fairness pose significant concerns when ChatGPT is employed for personal use.

Considering the aforementioned benefits and drawbacks, we investigate the current and potential impacts of ChatGPT in the fields of medicine and mechanobiology. In addition, to explore its research and clinical capabilities, we evaluate the reliability and limitations of ChatGPT in specific application scenarios. We further particularize its interactions with other practical tools to expand its application foreground.

1. Qual é o objeto de investigação do estudo? (1 ponto)

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2. Como a toxicologia clínica está se beneficiando do Chat GPT? (1 ponto)

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3. Quais as limitações do Chat GPT apontadas pelo texto? (1 ponto)

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[https://www.thelancet.com/journals/lanhae/article/PIIS2352-3026\(23\)00211-9/fulltext](https://www.thelancet.com/journals/lanhae/article/PIIS2352-3026(23)00211-9/fulltext)

Tackling the enormous global burden of anaemia

The Lancet Haematology

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01. Anaemia is the most common blood disorder worldwide, estimated to affect nearly a quarter
02. of people globally. Although this proportion is huge, new estimates from the Global Burden
03. of Diseases, Injuries, and Risk Factors Study 2021 suggest that the global prevalence has
04. decreased, from around 28% in 1990 to around 24% in 2021. However, this estimate hides
05. the 5lack of progress for specific populations, since the decrease in prevalence over time was
06. much 6larger for men and boys (reduction of around 24% from 1990 to 2021) than for women
07. and girls (reduction of around 7%). Similarly, specific regions continue to have very high
08. anaemia prevalence, as do children younger than 5 years globally. The data reinforce what is
09. already known—that children and women of reproductive age, particularly in low-income
10. and middle-income countries, have the highest burden of anaemia.

11. In GBD 2021, anaemia was shown to be the third leading cause of disability worldwide after
12. low back pain and depressive disorders. The condition leads to a wide range of health
13. problems, including fatigue and weakness, and impaired cognitive and motor development
14. in young children. In pregnant women, anaemia has been linked to maternal and neonatal
15. morbidity and mortality. In the INTERBIO-21st fetal study, both low and high haemoglobin
16. concentrations were associated with adverse outcomes, including risk of preterm birth and
17. neonatal acute respiratory distress syndrome. Iron-deficiency anaemia in pregnancy can be
18. treated with multiple micronutrient supplementation, with evidence suggesting that this
19. reduces the risk of low birthweight and babies born small-for-gestational age, both of which
20. can have a negative impact on outcomes throughout the lifespan of affected infants.

21. As well as dietary iron deficiency, GBD found that haemoglobinopathies and haemolytic
22. anaemias, and neglected tropical infections were the most important causes of anaemia.
23. Tackling these causes is crucial to improve the lives of those most affected and is reflected in
24. important global targets, including the 65th World Health Assembly target set in 2012 to
25. halve anaemia prevalence in women of reproductive age by 2025. However, progress has
26. been slow, with a 2019 WHO-UNICEF report suggesting that no country was on track to meet
27. this target and only 30% of the countries presented some progress. Coordinated and
28. sustained implementation of interventions, such as national nutrition and poverty alleviation
29. programmes, can make a huge difference; for example, Thailand saw decreases in the
30. proportion of underweight children younger than 5 years from around 50% in the 1980s to
31. 9% by 2012, and reduced iron-deficiency anaemia prevalence among pregnant women from
32. nearly 60% in the 1960s to 10% in 2005 using such programmes. The outcomes go beyond
33. simply tackling nutrient deficiencies, as **they** allow for children and adults to reach their full
34. potential and alleviate the impact of poverty and malnutrition. For anaemia, a multipronged
35. approach is needed to deal with the root causes, including preventing and treating diseases
36. such as malaria in the regions most affected, and improving access to hormonal
37. contraception for women of reproductive age. Finding the resources to implement such
38. interventions must be prioritised to reach global targets for anaemia reduction.

