

CHAT GPT technology use in scientific research between advantages and Risks

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Abstract:

Artificial intelligence tools are robots capable of doing tasks with efficiency ,and it helps in increasing productivity in the field of scientific research ,the best tools of artificial intelligence is **CHAT GPT**,many studies have been done about using this technique and these studies approved that **CHAT GPT** has the ability to enter new horizons in scientific research ,especially in fields of creating new ideas and promote scientific standards beside that ,these studies showed some fears and had considered this technique controversial due to the risks that could result from it especially in the field of higher education and scientific research .therefore in this study we will try to spot light on some advantages that this technique holds in scientific research and point out the risks that it may occurs after using it in this field .

Keywords: Artificial intelligence, Chat GPT, scientific research, robots, technology.

1. Introduction

Artificial intelligence was far from scientific research ,but lately it gains so wide use that artificial intelligence became able of creating a revolution in ways and methods of scientific research ,and can be used at different stages of scientific and academic research process by adopting modern research tools that enhance efficiency and accuracy in research operation .lately with the spread of lot of applications of artificial intelligence that it help in fields of scientific research mainly **CHAT GPT** that could do different research issues and draw and write the research path with less time and its importance is in scientific

research with taking into consideration new techniques and its apps related to scientific research such as CHAT GPT

Based from what preceded we ask this issue: what are the advantages and risks that can result from using artificial intelligence mainly CHAT GPT technology , within the domain of scientific inquiry.

2. The notion of artificial intelligence technology and its applications in scientific study.

from this axe we will try to understand the concept of artificial intelligence globally and their fields of applications in the scientific research and the main used applications in this field

2.1. the concept artificial intelligence

This concept originated in the 1940s, with French philosopher Paul Valéry being the first to discuss the future of machines and their coexistence with humans. The term "artificial intelligence" first emerged in 1965 during a computer conference in the United States, where numerous researchers proposed the inaugural global research project in artificial intelligence. In the 1950s, specialized research was conducted, but these initial efforts were largely unsuccessful until the 1990s, when a significant advancement occurred in the field of artificial intelligence, spurred by the 50s revolution that catalyzed a substantial increase in AI research. We delineate the concept of artificial intelligence, elucidate its qualities, and differentiate it from electronic services. (Meguimi Rima, Nouri Samia, Guerroui Mohammed Essalih, August 2024, p. 2317)

2.1.1. Definition of artificial intelligence and its attributes:

A- definition of artificial intelligence:

Researchers have proposed numerous definitions for the term artificial intelligence (Mohamed saad allah bekhit, October2022, p. 3419), Consequently, we can assert that it is an imitative operation of

human intelligence via computers; it endeavors to replicate human behavior and cognitive processes, as well as decision-making, by analyzing human actions through experiments under specific conditions, observing their reactions, thoughts, and responses, and subsequently attempting to emulate human thought processes through sophisticated computer systems. (Eugene charniac, drew Mcdermott, 1985, p. 6)

B- characteristics of artificial intelligence:

Artificial intelligence has certain characteristics recognized by humans: (Hizia hajj Allah, 2024, p. 73)

B1- capability of articulating knowledge and devising answers:

Artificial intelligence systems utilize a specialized framework to represent knowledge, which encompasses facts and their interrelations with rules, so forming a database that maximizes the available information regarding the problem to be addressed. Artificial intelligence programs address problems lacking established solution methods, indicating that these programs do not adhere to a sequential methodology to achieve an accurate solution. They opt for an ostensibly effective solution approach while retaining the freedom to modify it if the initial selection does not produce a more expedient answer.

Artificial intelligence systems can offer solutions despite little information.

B2-ability to learn and reason:

Artificial intelligence technologies are categorized based on their capacity to learn from prior experiences and practices, as well as their ability to enhance performance by reflecting on past errors. They can identify potential answers to a particular problem utilizing established facts and prior experiences, particularly for issues that cannot be resolved through computers that retain probable solutions, logical laws, and rules of inference.

2.1.2 artificial intelligence instruments applicable in scientific inquiry:

Many AI tools can be used to access data and scientific references and investigate research ideas, they can also be used to access various links of scientific references that is related to the topic in various global databases by shortening time and effort and providing various comprehensive information and data related to the research topic, these tools can be used by respecting the scientific integrity controls specified at the local and international levels (Zeaabta sirine hadjer, sebahg omar, December 2023, p. 15) .we will try to mention some of these apps with clarifying the role of each in scientific research as follows: (amani djamel modjahed, 2023, p. 08)

[a/https://scite.ai/assistant](https://scite.ai/assistant) Scite assistant

This site is a navigation tool supported with artificial intelligence helps to find scientific compositions and extract essential information from it and identify relevant papers.

[b/https://consensus.app](https://consensus.app) Consensus

Searching engine that works with artificial intelligence and helps finding relevant research papers and extract main results from it .

[c/https://bookabout.io](https://bookabout.io) Bookabout

Looks for a folder through artificial intelligence to find books faster, search for books through a concept or an idea not only through keywords, and gets results better than traditional research engines.

[d/https://ide.elicit.org](https://ide.elicit.org) Elicit

Research helper uses artificial intelligence technique, helps in writing researches and finding relevant information's and doing traditional expositions

[e/https://www.semanticscholar.org](https://www.semanticscholar.org) semantic scholar

Research engine that depends on artificial intelligence, it analyses academic research papers and extract information's and issuing relevant recommendations

[f/https://searcholic.com](https://searcholic.com) searcholic

research engine dives deep into the web to extract hundreds of thousands of books and scientific articles supported with artificial intelligence, this tool is accurate in producing scientific results beside that it supports all languages including Arabic

[g/https://writesonic.com](https://writesonic.com) writesonic

It is the most important tool of artificial intelligence that contains various important functions for researchers, academics and specialists it includes:

Creating new documents, writing an article ,displaying written templates ,generating images, converting texts into voices though it doesn't support Arabic but it is expected in the coming updates .

[h/https://smodin.io/ar](https://smodin.io/ar) smodin

the most prominent tool of artificial intelligence for generating written texts ,studies and researches, this tool supports many languages including Arabic and provides many services such as rewriting where the tool rewrites a text again for you but different from the original text guarding the same idea, it is also possible to proofread every text and detect plagiarism or theft that it contains.

From the above it can be said that artificial intelligence tools are robots able to perform tasks with accuracy using AI techniques and helps to increase scientific research productivity from the best tools is the CHAT GPT technique that s why we choose to spot light on it and demonstrate its importance in scientific research in this second axe .

2.2 the content CHAT GPT technique :

This application was launched on November, 30th,2022 on a limited scale through the website of its company(**company of artificial intelligence researches open AI**) in specific countries including the united states of America. Then it developed with the trial version on telegram application, it became available to all users all over the world on January of that year, only few days and many copies were launched as application on Smartphone's. (Mohamed houssem mahmoud lotfi and others , 2023, p. 21)

We will try to define CHAT GPT technology then explain its most important uses in the field of scientific research.

2.2.1 definition of CHAT GPT technology;

GPT stands for (**Generative-Pretrained Transformer**) indicating that the application relies on generative ai technology

Many definitions were given (Natalie, 13 May 2024) that we can say that CHAT GPT is an artificial intelligence application designed to generate texts, responses to user requests it can complete variety of tasks very quickly such as translation and answering questions, completing texts and linking paragraphs and topics in a creative manner. (Sherine moussa ali brima, April July 2024, p. 249)

2.2.2 uses of CHAT GPT in scientific research:

the chat gpt can be used for many symptoms, as it has been used in writing articles, summarizing scientific researches, formulating and improving scientific research ...etc we explain: (Nouari kheira, amir safia, 2024)

A-writing

Preparing a study or writing an article or even a scientific book depending on given data and information. in this field we can also use chat gpt in creating a detailed plan for research through providing it with main ideas and concepts and it can divide the research paper into

many parts: introduction, previous studies research axes, results and references . (Nouari kheira, amir safia, 2024, p. 10)

After finishing the detailed plan we can use chat gpt to produce text to every part of writing for example specifying elements of introduction and set a title search for. This app also can summarize big texts without changing their meanings or losing some of the their parts by focusing on essential points. Beside that this application can order the text and categorize its content which is important for researchers to reach an executive summary to their studies and researches and help them do their researches fast and with no efforts at all English is considered the best language to this application. (Mohamed houssem mahmoud lotfi and others , 2023, p. 33)

B/review texts:

After CHAT GPT finishes writing it can review texts through: (Seif al suwaidi, majed Mohamed eljehni, 2023, p. 37)

-performing grammar and spelling check of the text

-generate grammatically and structurally correct text ;but with the possibility of some errors remaining uncorrected so it can be considered a help in proofreading.

-it is helpful in ensuring that the text respects instructions and structure in the field of study

-chat gpt can check plagiarism and if the original text is not copied from other references

C-research:

Researchers can use chat gpt to find important and information and instructions about subjects they work on as they can use it generating new ideas and suggestions to experiments and future studies this helps to collect data from different resources. (Nouari kheira, amir safia, 2024, p. 09)

D-translation:

The application can translate texts to different languages ,though Arabic and English are not as efficient as required they are much better than before .

Best translation results are between English and one of the languages derived from latin such as French, Italianbut in general other translation tools have developed greatly over the previous two years. (Mohamed houssem mahmoud lotfi and others , 2023, p. 33)

3.advantages and risks of using chat gpt in scientific research.

Many studies (Lahwal ben ali, briki khaled , Mars 2024, p. 72) were done about chat gpt use in scientific research and proved that it can enter new horizons in this field especially in reforming new ideas and promoting scientific standards through these studies many fears raise-up and consider this technique questionable because of its risks in higher and scientific education

We will spot light on the advantages especially in scientific research and point on the risks of its use

3.1. advantages of CHAT GPT use in scientific research

We will focus on the advantages of this app mainly in scientific and academic writing we name: (ZEROUATI MAOUAHIB, ZEROUATI WIEM , JANUARY 2024)

1-fast and easy use :

CHAT GPT is easy and fast in scientific writing for researchers and can download quickly various data in addition to preparing spontaneous drafts, summarizing and translating languages

It helps researchers find relevant information from web pages and books... all these services provide time and focus for researchers.

2-creativity and quality:

Chat gpt covers all aspects of academic writing and can generate original texts that enhance creativity to researchers and help them in ideas and new point of minds. it can also provide observations and suggestions in correcting grammar and spelling mistakes which makes writing more fun and attractive.

3-multi disciplinary and multi-languages:

CHAT GPT can be used in medicine, chemist, and architecture and Technology and law and journalism and else more.

It has the ability to translate efficiently and learn new languages and improving linguistic skills because this technique is considered to do huge revolution in translating languages in academic and scientific fields. so we can say that CHAT GPTfuture holds new horizons and can effect deeply researchers transactions in science and technology

3.2 risks of CHAT GPT use in scientific research

Despite the advantages and good results of researchers but there are risks two where robots work on artificial intelligence which is an issue for academic institutions all over the world then many risks show up we name:

1-ethical transgressions

The use of chat GPT raises fears especially since it operates based on textual citations without indicating the sources of this information.

This raises questions about copy right in light of the widespread use of chat gpt in academic field those who believe that this application can violate human rights by breaching privacy and data confidentiality,in addition gpt suffers from bias due to data or information or those resulting from the development of its component algorithms resulting in the possibility that the search or text generated by chat gpt based towards one or other opinion (Sherine moussa ali brima, April July 2024, p. 262)

2-Plagiarism and lack of commitment to transparency

Many studies confirmed (Lahwal ben ali, briki khaled , Mars 2024, p. 77) that this technique raise fears about academic integrity and plagiarism especially if it can make a complete search ,in this case the researcher has no real participation and can use the app even when the study requires an opinion so the app do this task instead and resume researches and studies and articles. So this skill doesn't depend on researcher ability and therefore his research capabilities cannot be known. (Mohamed houssem mahmoud lotfi and others , 2023, p. 44)

Chat gpt presents a text without original resources so users are at the risk of stealing many unknown papers unfortunately no effective method for discovering the operation is available compared to the citation discovery program ,so transparency and credibility are necessary , it must be clarified that using artificial intelligence In text writing is by chat gpt and this text is not by humans. (Sherine moussa ali brima, April July 2024, p. 262)

3-limiting innovation ability

Since chat gpt depends on entered data and information so it leads to typical repeated texts that lacks creativity and human experience in explaining different phenomena .thus chat gpt cannot replace the researcher critical thinking nor his ability in interpreting the research results and discussing its conclusions based on the best available evidence. (Lahwal ben ali, briki khaled , Mars 2024, p. 78)

Thus all these risks could result from chat gpt by researchers use and this would cause collapse in the scientific research

4. Conclusion

Through this study we reached various results summarizes as follow:

- chat gpt has big potentials as a valuable resource for enhancing and developing the skills required for academic writing which can be improved by judicious use under academic bodies supervision.

- chat gpt use raises a number of risks ,especially those related to integrity and plagiarism, as well as copyright infringed and violation of privacy and confidentiality which could harm the scientific research system.

With the risks mentioned above from the use of chat gpt but benefits are expected from its use especially if used ethically and under control as a tool for supporting the scientific research and developing research abilities of researchers.

Between the positive and the negative image we ill try to expose a number of instructions trying to minimize the risk of negative results:

- orienting researchers to use this technique strictly with caution so it will not eliminate the researcher personality, and becomes dependent character which is contrary to the reality of creativity and academic excellence. so researchers should use chat gpt as a tool not as a replacement for thinking.

-the necessity to point to artificial intelligence robot of chat gpt in writing researches and consider its use in writing without disclosing is a scientific theft.

-creating legal regulation for artificial intelligence and ethical bases to control their researches.

-the need to properly evaluate and address the ethical implications of using these technologies recognizing its ability to improve our lives in a meaningful way

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