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An Analytical Review of CHATGPT Influence on Healthcare, Media, and Education Advancements

Ameen A.Noor 1/ Hussain A. Younis 2/ Farah N. Abbas³

Sani Salisu⁴ / Osamah Mohammed Alyasiri ^{5,6} / Israa M. Hayder ⁷

Thaeer Mueen Sahib ⁸

¹ Computer Science Department, College of Education, Mustansiriya University, Baghdad 10045, Iraq.

² College of Education for Women, University of Basrah, 61004, Basrah, Iraq.

³ Computer Science Department, College of Education, Mustansiriya University, Baghdad 10045, Iraq.

⁴Department of Information Technology, Federal University Dutse, Dutse 720101, Nigeria.

⁵ Karbala Technical Institute, Al-Furat Al-Awsat Technical University, Karbala 56001, Iraq

⁶ School of Basic Education for Girls, University of Al-Ameed, Karbala 56001, Iraq

⁷ Department of Computer Systems Techniques, Qurna Technique Insti-tute, Southern Technical University, Basrah 61016, Iraq.

⁸ School of Electrical and Electronic Engineering Universiti Sains Malaysia.Penang 14300,Malaysia

*Corresponding Ameen A. Noor

ABSTRACT: In the past two years, remarkable technological advancements have led to the unveiling of CHATGPT-3 in November 2022. This cutting-edge creation has garnered immense global demand across diverse demographics. CHATGPT-3 stands as a cornerstone in contemporary artificial intelligence, a synthesis of multiple technologies such as Natural Language Processing (NLP), Machine Learning (ML), and Artificial Intelligence (AI), all harnessed by its parent company, OpenAI functioning as an open-source innovation, CHATGPT-3 draws upon an extensive reservoir of knowledge spanning various fields of science. Through meticulous training on this expansive dataset, the program adeptly furnishes precise responses in manifold domains, encompassing but not confined to education, media, healthcare, sports, and numerous other scientific and humanities disciplines. This progressive evolution culminated in the release of CHATGPT-4, an even more advanced iteration of the technology. The implications of CHATGPT-3 are resounding. It has revolutionized diverse sectors, including media, where it facilitates interactive and informative exchanges with users. In the realm of programming, CHATGPT-3 exhibits its prowess by aiding developers with coding tasks, offering solutions to complex problems. Furthermore, its contribution to scientific research is invaluable, aiding researchers in gathering insights and generating hypotheses. The CHATGPT-3 extends its capabilities to the generation of research papers, a feat that underscores its potential to streamline scholarly pursuits. In the domain of education, this technology emerges as an indispensable tool, providing personalized and comprehensive learning experiences. Its impact thus resonates across academia, professional domains, and beyond.

Keywords: GhatGPT, Artificial intelligence, OpenAI, healthcare, media, education.

المقدمة:

في العامين الماضيين، أدت التطورات التكنولوجية الملحوظة إلى الكشف عن CHATGPT-3 في نوفمبر 2022. وقد اكتسب هذا الابتكار المتطور طلباً عالمياً هائلاً عبر مجموعات سكانية متنوعة. يقف CHATGPT-3 كحجر الزاوية في الذكاء



الاصطناعي المعاصر، وهو عبارة عن توليفة من تقنيات متعددة مثل معالجة اللغات الطبيعية (NLP)، والتعلم الآلي (ML)، والذكاء الاصطناعي (AI)، والتي تم تسخيرها جميعاً من قبل الشركة الأم، OpenAI التي تعمل كمنصة. ابتكار مفتوح المصدر، يعتمد CHTGPT-3 على مخزون واسع من المعرفة التي تغطي مختلف مجالات العلوم. من خلال التدريب الدقيق على مجموعة البيانات الموسعة هذه، يقدم البرنامج ببراعة استجابات دقيقة في مجالات متعددة، تشمل على سبيل المثال لا الحصر التعليم والإعلام والرعاية الصحية والرياضة والعديد من التخصصات العلمية والإنسانية الأخرى. بلغ هذا التطور التدريجي ذروته في إصدار CHTGPT-4، وهو تكرر أكثر تقدماً للتكنولوجيا. إن الآثار المترتبة على CHTGPT-3 مدوية. لقد أحدث ثورة في قطاعات متنوعة، بما في ذلك وسائل الإعلام، حيث يسهل التبادل التفاعلي والمفيد مع المستخدمين. في مجال البرمجة، يعرض CHTGPT-3 براعته من خلال مساعدة المطورين في مهام البرمجة وتقديم حلول للمشكلات المعقدة. علاوة على ذلك، فإن مساهمتها في البحث العلمي لا تقدر بثمن، حيث تساعد الباحثين في جمع الأفكار وتوليد الفرضيات. يعمل برنامج CHTGPT-3 على توسيع قدراته لتشمل إنتاج الأوراق البحثية، وهو إنجاز يؤكد قدرته على تبسيط المساعي العلمية. وفي مجال التعليم، تظهر هذه التكنولوجيا كأداة لا غنى عنها، حيث توفر تجارب تعليمية مخصصة وشاملة. وبالتالي فإن تأثيرها يتردد صده عبر الأوساط الأكاديمية والمجالات المهنية وخارجها.

1. INTRODUCTION

In recent times, the emergence of CHATGPT has sparked considerable interest among scholars and researchers. This program's remarkable capability to discern nuances in language has led to its integration into a plethora of applications, including search engines, legal writing, and error handling (Feng et al. 2023). Moreover, it has revolutionized interactions between customers and companies, facilitating seamless communication through channels like customer service, chatbots, and data collection (Lund and Wang 2023). CHATGPT resides within the realm of artificial intelligence, contributing significantly to endowing computers with the ability to comprehend human language, generate text, conduct translations, and analyze data. Its proficiency extends to generating diverse word combinations, a result of its training on extensive textual datasets. Notably, CHATGPT excels in generating natural language conversations, recognizing language patterns, and providing answers to inquiries. Beyond its linguistic prowess, it serves as a potent neural programming language model, with applications spanning various domains (Gill and Kaur 2023).

2. methodology:

We delved into the search for this type of article in the Scopus database and the rest of the research published internationally with competence and good reputation, with an emphasis on ideas that benefit researchers and avoiding duplicate articles. The choice fell on CHATGPT and its applications in the media, medical care and assistance, education, and the Program Specifications. Note that I have presented several research papers in this field in magazines (MDPI and others).

3. RELATED WORKS

The architecture referred to as GPT, which was initially introduced by OpenAI in 2018, forms the foundation for ChatGPT. The inaugural iteration, GPT-1, boasted 117 million parameters and underwent training on an extensive corpus of textual data sourced from the internet, employing a deep learning methodology called transformers. GPT-2, unveiled in February 2019, represented a notable advancement with its parameter count expanded to 1.5 billion. OpenAI, due to concerns regarding potential misuse of the model, made a decision to withhold the complete version of GPT-2 from public access, releasing only a scaled-down version (equivalent to 8% of the original model's size) (Hao, K. 2020)

GPT-3 was introduced in June 2020, boasting an impressive 175 billion parameters. The waitlist associated with its access was eliminated in November 2021. By the time ChatGPT

was publicly launched in November 2022, GPT-3 had progressed to version 3.5. Subsequently, in March 2023, OpenAI granted access to GPT-4 for individuals on the waitlist and ChatGPT Plus subscribers, initially in a limited capacity focused on text input, although it possesses the capability to process both text and images. Despite its constrained availability, GPT-4 has garnered attention due to its notable enhancements in performance compared to its predecessor. This enhanced performance is attributed to GPT-4's larger model size, incorporating more parameters that have been refined during training within a neural network. As of April 2023, OpenAI has not disclosed specific details concerning the data sources, computational resources, or training methodologies employed in the development of this advanced language model (Heaven,2023) Numerous academic works delve into various facets of ChatGPT, and we will examine a selection of these publications in the following segment, outlining the primary applications, possibilities, and risks associated with ChatGPT. This analysis provides insights into the diverse fields where ChatGPT can be applied to contribute positively, all the while mitigating potential negative consequences. Additionally, it explores how society can proactively ready itself for the prospects and complexities introduced by this emerging technological advancement.

4.CHATGPT: APPLICATIONS, PROSPECTS AND CHALLENGES

Recent scientific investigations have explored diverse applications of ChatGPT in the scientific literature. In this segment, we've curated the most important applications that can be harnessed through ChatGPT, and categorized them into four distinct areas. These areas include a wide range of potential topics that ChatGPT can provide assistance with, although they are by no means exhaustive. For each domain, we identify potential applications, opportunities, and challenges. In addition, we conduct a comparison of the research reviewed.

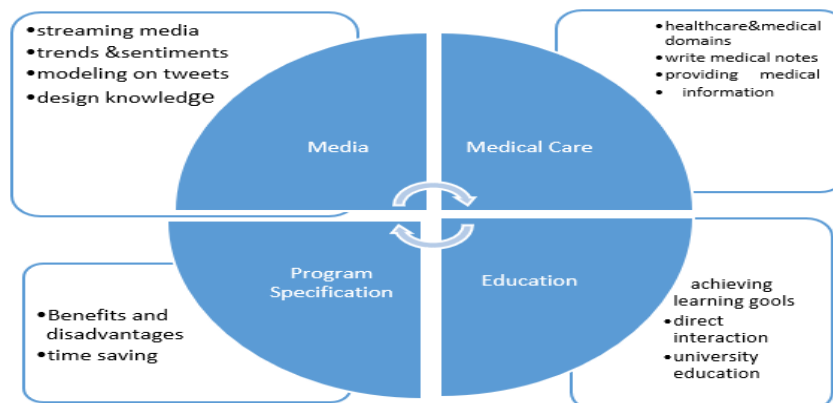


FIGURE 1. Types of CHATGPT used

4.1 .Media

1. Feng et al.(2023):This study uses social media data from Twitter and Reddit to investigate the impact of ChatGPT on streaming media. They find that ChatGPT's influence on streaming media is multifaceted, evoking both anticipation and apprehension.The study addresses concerns about copyright,misinformation, and harmful content, advocating for referencing training data, addressing misinformation challenges,and managing harmful content.The

research sheds light on ChatGPT's role in reshaping streaming media and offers insights into downstream generative models.

2. Leiter et al. (2023): This article analyzes trends and sentiments in news headlines about ChatGPT and AI. Positive views dominate sentiment, but the coverage often emphasizes Big Tech while neglecting topics like diversity and ethics. The study criticizes the influence of Big Tech and media collusions, pointing to power imbalances. It connects the findings to Donna Haraway's "god trick" concept and agenda-setting theory, highlighting skewed media dynamics and questioning representation.

3. Heumann et al.(2023): This study examines perspectives on ChatGPT's potential plagiarism risks using sentiment analysis and topic modeling on tweets and scholarly articles. Positive and concerning aspects of AI are highlighted. The study stresses the need for interdisciplinary collaboration to ensure responsible AI development aligned with societal values. It contributes insights for researchers, developers, and AI users, offering a comprehensive view of the technology's impact.

4. Hu et al. (2023): This article discusses incorporating ChatGPT into the design process and the complexities it introduces. It provides an overview of design knowledge categorization and prior efforts to facilitate knowledge acquisition for designers. The study analyzes potential opportunities and obstacles of using ChatGPT for knowledge management in design, suggesting future research directions. A case study reveals that designers can obtain specific information from various fields using ChatGPT, but the quality of knowledge depends on the provided prompt.

Benefits and Drawbacks

1. Feng et al. (2023):

Benefits: Provides insights into ChatGPT's impact on streaming media and downstream generative models.

Drawbacks: Potential concerns about copyright, misinformation, and harmful content within streaming media.

2. Leiter et al. (2023):

Benefits: Highlights positive sentiments towards ChatGPT and AI.

Drawbacks: Critiques skewed media coverage, Big Tech influence, and lack of coverage on diversity and ethics.

3. Heumann et al. (2023):

Benefits: Offers comprehensive perspectives on AI's potential plagiarism risks and societal impacts.

Drawbacks: Presents both positive and concerning aspects of AI.

4. Hu et al. (2023):

Benefits: Presents opportunities for designers to acquire diverse knowledge using ChatGPT.

Drawbacks: Raises concerns about the quality of knowledge obtained through ChatGPT prompts.

Overall, these studies collectively illuminate ChatGPT's multifaceted impact, from reshaping streaming media to its role in design knowledge acquisition. They address both positive contributions and potential challenges, underlining the need for responsible AI development and interdisciplinary collaboration.

When conducting a comparison between these studies, the results appear in Table 1.

Table 1. Shows a comparison between media research

Aspect	(Feng et al. 2023)	(Leiter et al. 2023)	(Heumann, et al. 2023)	(Hu et al. 2023)
Research Focus	Investigating ChatGPT's impact on streaming media	Analyzing trends and sentiments around ChatGPT in news	Examining perspectives on ChatGPT and plagiarism	Exploring ChatGPT's incorporation in design process
Data Sources	Twitter, Reddit social media data	News headlines and media discourse	Tweets, scholarly articles	Analysis within the field of design
Findings	ChatGPT's effects on streaming media, anticipation & apprehension	Positive sentiment, focus on Big Tech	Positive and concerning aspects of AI	Opportunities and obstacles in design knowledge
Contributions	First large-scale exploration of ChatGPT's streaming media impact	Critique of media coverage dynamics	Insights for responsible AI development	Analysis of ChatGPT's role in design knowledge
Highlighted Concerns	Copyright, misinformation, harmful content in social media	Influence of Big Tech, neglect of diversity and ethics	Plagiarism risks, positive and negative aspects	Quality of acquired knowledge in design
Recommendations	Reference training data, address misinformation, manage harmful content	Address power imbalances, question representation	Encourage interdisciplinary collaboration	Suggest areas for future research in design
Overall Impact /Implication	Reshaping streaming media, enhancing visual generative models	Skewed media coverage dynamics, power imbalances	Need for responsible AI aligned with values	Novel complexities in design knowledge acquisition

4.2 . Medical care and assistance

1. Dave et al. (2023): This research presents an analysis of ChatGPT's applications in medical and healthcare contexts. ChatGPT, a sophisticated language model developed by OpenAI, has potential uses in scientific writing, research, clinical diagnosis, and patient management. However, ethical concerns such as plagiarism, biases, and accountability arise. The paper suggests establishing guidelines, protocols, and transparency to mitigate these challenges, and emphasizes the need for future research to improve accuracy, address limitations, and incorporate human oversight.

2. Cascella et al. (2023): This paper explores the applications and limitations of ChatGPT in healthcare. The study showcases how ChatGPT can assist in clinical practice by composing medical notes and summarizing research papers. Ethical concerns include potential misuse,

like generating fake evidence or plagiarizing content. The study highlights the importance of regulatory policies to manage these risks and emphasizes understanding ChatGPT's capabilities and limitations, while acknowledging challenges like biases and hallucination.

3. Arif et al. (2023): This paper discusses the introduction and impact of ChatGPT in healthcare and medical research. ChatGPT is considered a valuable tool for medical education and clinical support, but concerns arise regarding its use in research and writing. While it can aid in content generation, it lacks critical thinking and may lead to ethical issues and copyright violations. The authors emphasize the importance of human oversight, caution in relying on AI-generated content, and the need for policies to prevent misuse.

Benefits and Drawbacks

1. Dave et al. (2023):

Benefits: ChatGPT's potential for scientific writing, research assistance, and patient management.

Drawbacks: Ethical concerns like plagiarism, biases, and accountability issues.

2. Cascella et al. (2023):

Benefits: ChatGPT's usefulness in clinical practice, medical note composition, and research summarization.

Drawbacks: Ethical concerns over potential misuse, biases, and limitations.

3. Arif et al. (2023):

Benefits: ChatGPT's role in medical education and clinical support.

Drawbacks: Limitations in critical thinking, risk of misuse in research and writing, and ethical concerns.

Overall, these studies highlight ChatGPT's potential to enhance medical care and assistance, but they underscore the importance of responsible use, addressing ethical challenges, and ensuring human oversight to maximize benefits while minimizing drawbacks. When conducting a comparison between these studies, the results appear in Table 2.

Table 2. Shows a comparison between medical care and assistance research.

Aspect	(Dave et al. 2023)	(Cascella et al. 2023)	(Arif et al.2023)
Research Focus	Analysis of ChatGPT's benefits, limitations, ethical considerations, future prospects, and medical applications	Exploring potential applications and limitations of ChatGPT in healthcare	Discussing the introduction and impact of ChatGPT in healthcare and research
Model Description	ChatGPT is a sophisticated language model by OpenAI	ChatGPT and other large language models trained on text	ChatGPT as an AI chatbot in healthcare and research
Applications	Scientific literature, research, clinical diagnosis, virtual patient management	Support for clinical practice, scientific production, reasoning about public health	Medical information, answering questions, clinical decision-making

Ethical Concerns	Plagiarism, copyright infringement, biases, accountability	Misuse, fake evidence, plagiarism, ethical considerations	Misuse, redundancy, irrational content, ethical and legal problems
Recommendations	Establish guidelines, protocols, caution, transparency	Regulatory policies, understanding capabilities and limitations	Use for constructive writing, human intellect oversight, policy implementation
Challenges	Ethical concerns, accuracy improvement, accountability	Limitations in statistical analyses, potential misuse, biases	Lack of critical thinking, reasoning, literature search capabilities
Future Prospects	Improve accuracy, address limitations, integrate human oversight	Manage risks, harness potential, mitigate ethical concerns	Consider limitations, address potential misuse and ethical use
Overall Implication	Potential benefits with careful use and regulation	Promise in healthcare with management of risks	Revolutionize industries with responsible and ethical use

4.3. Education

1. Ratnam et al.(2023): The study discusses the potential influence of GPT (ChatGPT) on teaching, education, and evaluation activities. The program offers customized learning experiences, automates administrative tasks, and assists in teaching and counseling. However, challenges include bias, concerns about replacing human jobs, and lack of transparency. The program's future in education involves increased use in personalized education, educational games, training, and intelligent systems.

2. Singh and Singh (2023): The article focuses on e-learning facilitated by the CHATGPT platform, emphasizing its direct interaction between experts and students. CHATGPT serves as a tool for information retrieval, scientific research, and virtual assistance. It provides solutions, language support, and data analysis, simplifying distance learning and research. The program's applications include homework help, writing improvement, language learning, and quick responses.

3. Mussarrat (2023): This research explores the impact of ChatGPT and AI on university education. ChatGPT, an AI chatbot, offers interactive responses and has transformative potential in research, learning, and accessibility. However, it raises concerns about plagiarism and misuse. AI can enhance education by assisting educators, facilitating interactive lectures, and collaborative projects. The future of AI in education lies in responsible implementation, with AI enhancing educational experiences while retaining the irreplaceable human aspect.

Benefits and Drawbacks

1. Ratnam et al.(2023):

Benefits: Customized learning, automated administrative tasks, improved teaching and counseling.

Drawbacks: Bias, potential job replacement, lack of transparency.

2. Singh and Singh (2023):

Benefits: Enhanced e-learning through direct interaction, quick and accurate responses, language support.

Drawbacks: Potential overreliance on AI-generated content.

3. Mussarrat (2023):

Benefits: Transformative potential in research, enhanced learning experiences, improved accessibility.

Drawbacks: Concerns about plagiarism, misuse, and potential hindrance to critical thinking.

Overall, these studies highlight the transformative potential of AI, particularly ChatGPT, in education. While offering numerous benefits, challenges such as ethical concerns, bias, and overreliance on AI-generated content need to be addressed to ensure responsible and effective integration into educational settings.

When conducting a comparison between these studies, the results appear in Table 3.

Table 3. Shows a comparison between regarding education research.

Aspect	(Ratnam et al. 2023)	(Singh et al.2023)	(Mussarrat 2023)
AI in Education	GPT-3's impact on teaching, education, and evaluation activities.	E-learning with ChatGPT for direct interaction between experts and students.	ChatGPT's influence on university and academia.
Customization	Offers customized learning, adaptive techniques, personalized recommendations.	Suggested for normal conversations, enhancing data, creating virtual assistants.	Provides personalized responses, understanding user intent
Administrative Automation	Automates administrative tasks, registration, scheduling, and financial assistance.	Facilitates fast and accurate solutions, reducing need for educators.	AI assists in research, homework, writing, and learning.
Teaching And Counseling	Supports teaching, counseling, group lessons, and educational laboratory design.	Supports language acquisition, virtual assistants, and data analysis.	AI as a transformative tool to support educators.
Challenges and Concerns	Challenges include bias, job displacement, lack of transparency.	Concerns about potential misuse, plagiarism, and reliance on AI-generated content.	Challenges regarding potential biases and misuse.
Future Prospects	Increased use in customized education, educational games, simulation.	Future involves enhanced language acquisition, research, and educator support.	AI's role in enhancing educational experiences.

Integration into Learning	AI facilitates learning objectives, applying AI techniques to societal issues.	ChatGPT provides fast and accurate solutions, aids research, and paper writing.	AI's impact on learning, accessibility, and research
Ethical Considerations	Challenges include addressing bias, job displacement, and privacy.	Emphasis on proper guidance and anti-cheating measures.	Emphasizes ethical considerations for responsible AI integration.
Educator's Role	AI supports educators by automating tasks, providing resources, and enhancing learning.	AI assists educators in creating interactive lectures, virtual field trips, and collaboration.	AI complements educators, enhancing learning experiences.

4.4. Program specification

1. Zhu et al. (2023): This research focuses on various aspects of the CHATGPT program specification. The study identifies its capabilities and limitations in improving writing, returning sequential information, debugging, grammar and coding assistance, and handling modern information in various fields. It highlights the absence of accountability in decision-making, the potential for dependence inhibiting creative thought, and the need for rapid engineering to improve query responses. While offering convenience, CHATGPT may lack reliability in complex tasks.

2. Huang and Tan (2023): The study discusses the benefits and drawbacks of CHATGPT as a personal assistant. It saves time in writing, aids in data management and analysis, and assists in scientific writing tasks. However, the program lacks context and nuance, can foster excessive dependence, struggles with intricate scientific concepts, and presents plagiarism risks. The output text is generated based on a transformer model. It aids non-native English speakers but requires precautions to avoid plagiarism.

Benefits and Drawbacks

1. Zhu et al. (2023):

Benefits: Improves writing, provides sequential responses, aids in debugging and grammar, offers quick responses.

Drawbacks: Lack of accountability, potential for excessive dependence, limitations in handling complex tasks.

2. Huang and Tan (2023):

Benefits: Time-saving, aids data management, accelerates writing, assists with proofreading.

Drawbacks: Lack of context and nuance, potential for excessive dependence, struggles with complex concepts, plagiarism risks.

Overall, both studies highlight the potential benefits of program specification, particularly in writing improvement and data management. However, they also underscore the challenges of reliance, context comprehension, and potential plagiarism associated with using such programs. Proper use and understanding of limitations are crucial to harness the advantages while mitigating the drawbacks.

When conducting a comparison between these studies, the results appear in Table 4.

Table 4. Shows a comparison between program specification research.

Aspect	(Zhu et al. 2023)	(Huang and Tan 2023)
Program (CHATGPT) Functionality	Improves writing, rectifies language, identifies errors, translates, summarizes.	Functions as a personal assistant, saves time, accelerates writing, manages data.
Response Quality and Features	Provides sequential responses, suggests code fragments, remembers conversations.	Generates output based on deep neural network, beneficial for non-native English speakers.
Limitations and Challenges	Lacks modern information in certain domains, may provide incorrect answers.	Limited by context, overdependence, complex concepts, plagiarism risk, source allocation.
Usage and Benefits	Improves writing, supports debugging, accelerates writing process.	Facilitates data management, analysis, summary, proofreading, suggests titles.
Impact on Decision Making	Lacks accountability in decision-making, can produce biased output.	Overdependence hinders decision-making.
Handling Complexity	Fails with modern information, lacks reliability for complex tasks.	Struggles with intricate scientific concepts.

5. Results AND DISCUSSION

ChatGPT's ability to produce human-like text raises concerns about its potential misuse in fraudulent activities and plagiarism. Differentiating between AI-generated content and human-written material becomes difficult, posing a threat to academic and professional integrity, and The capability of ChatGPT to generate scientific articles has led to presents ethical dilemmas for scientific meetings and journal publications, demanding new guidelines and norms to address authorship, The bias according to the data of the training mechanisms leads to only cases of inappropriate behavior, as well as its use raises concerns about the privacy and security of the data that is not authorized to be leaked. In addition AI chatbots like ChatGPT offer valuable assistance to researchers in various capacities, including experiment design, summarizing literature, and aiding in peer review. This has the potential to accelerate scientific discoveries and streamline the publication process, and contribute by alleviating the administrative load on physicians. They automate tasks such as generating patient discharge summaries and facilitating patient communication, resulting in heightened efficiency and improved patient care, there's an opportunity to support medical directors in their administrative duties. These tools can automate document creation and offer decision-making support, enabling leaders to concentrate on strategic endeavors.

There are many limitations that the program adds in its inaccuracy in the medical matters presented by LGBT people and the inability to fully understand the medical contexts due to which major errors occur, which can be avoided by placing them at the disposal of doctors due to the importance of the human psyche and avoiding the occurrence of inaccurate diagnoses in this field. With human life



6. Conclusion:

From the above it became clear to us, as a result of the influx of users to this program, that it has proven easy to deal with its many applications for millions of users, while maintaining privacy in the medical aspect, and legal and educational consultations should be given priority to advisors in these fields.

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References:

- Arif, Taha Bin, Uzair Munaf, and Ibtehaaj Ul-Haque. 2023. "The Future of Medical Education and Research: Is ChatGPT a Blessing or Blight in Disguise?" *Medical Education Online* 28 (1). <https://doi.org/10.1080/10872981.2023.2181052>.
- Cascella, Marco, Jonathan Montomoli, Valentina Bellini, and Elena Bignami. 2023. "Evaluating the Feasibility of ChatGPT in Healthcare: An Analysis of Multiple Clinical and Research Scenarios." *Journal of Medical Systems* 47 (1): 1–5. <https://doi.org/10.1007/s10916-023-01925-4>.
- Dave, Tirth, Sai Anirudh Athaluri, and Satyam Singh. 2023. "ChatGPT in Medicine: An Overview of Its Applications, Advantages, Limitations, Future Prospects, and Ethical Considerations." *Frontiers in Artificial Intelligence* 6 (May). <https://doi.org/10.3389/frai.2023.1169595>.
- Feng, Yunhe, Pradhyumna Poralla, Swagatika Dash, Kaicheng Li, Vrushabh Desai, and Meikang Qiu. 2023. "The Impact of ChatGPT on Streaming Media: A Crowdsourced and Data-Driven Analysis Using Twitter and Reddit." *Proceedings - 2023 IEEE 9th International Conference on Big Data Security on Cloud, IEEE International Conference on High Performance and Smart Computing, and IEEE International Conference on Intelligent Data and Security, BigDataSecurity-HPSC-IDS 2023*, 222–27. <https://doi.org/10.1109/BigDataSecurity-HPSC-IDS58521.2023.00046>.
- Gill, Sukhpal Singh, and Rupinder Kaur. 2023. "ChatGPT: Vision and Challenges." *Internet of Things and Cyber-Physical Systems* 3: 262–71. <https://doi.org/10.1016/j.iotcps.2023.05.004>.
- Hao, K. (2020). OpenAI has released the largest version yet of its fake-news-spewing AI. MIT Technology Review. Retrieved from <https://www.technologyreview.com/2019/08/29/133218>
- Heaven, W. D. (2023). GPT-4 is bigger and better than chatgpt-but Openai won't say why. MIT Technology Review. Retrieved from <https://www.technologyreview.com/2023/03/14/1069823>
- Heumann, Maximilian, Tobias Kraschewski, and Michael H. Breitner. 2023. "ChatGPT and GPTZero in Research and Social Media: A Sentiment-and Topic-Based Analysis." *SSRN Electronic Journal*, no. May. <https://doi.org/10.2139/ssrn.4467646>.
- Hu, Xin, Yu Tian, Keisuke Nagato, Masayuki Nakao, and Ang Liu. 2023. "Opportunities and Challenges of ChatGPT for Design Knowledge Management." <http://arxiv.org/abs/2304.02796>.
- Huang, Jingshan, and Ming Tan. 2023. "The Role of ChatGPT in Scientific Communication: Writing Better Scientific Review Articles." *American Journal of Cancer Research* 13 (4): 1148–54. <http://www.ncbi.nlm.nih.gov/pubmed/37168339> <http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=PMC10164801>.
- Leiter, Christoph, Ran Zhang, Yanran Chen, Jonas Belouadi, Daniil Larionov, Vivian Fresen, and Steffen Eger. 2023. "ChatGPT: A Meta-Analysis after 2.5 Months." <http://arxiv.org/abs/2302.13795>
- Lund, Brady D., and Ting Wang. 2023. "Chatting about ChatGPT: How May AI and GPT Impact Academia and Libraries?" *Library Hi Tech News* 40 (3): 26–29. <https://doi.org/10.1108/LHTN-01-2023-0009>.
- Mussarrat, Nazifa. 2023. "Impact of ChatGPT & AI on University Education," no. March: 1–6.
- Ratnam, Martand, Bharti Sharma, and Ankit Tomer. 2023. "ChatGPT: Educational Artificial Intelligence." *International Journal of Advanced Trends in Computer Science and Engineering* 12 (2): 84–91. <https://doi.org/10.30534/ijatcse/2023/091222023>.
- Singh, Harjit, and Avneet Singh. 2023. "ChatGPT: Systematic Review, Applications, and Agenda for Multidisciplinary Research." *Journal of Chinese Economic and Business Studies* 21 (2): 193–212. <https://doi.org/10.1080/14765284.2023.2210482>.
- Zhu, Jun Jie, Jinyue Jiang, Meiqi Yang, and Zhiyong Jason Ren. 2023. "ChatGPT and Environmental Research." *Environmental Science and Technology*, 1–4. <https://doi.org/10.1021/acs.est.3c01818>.