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A Large-Scale, International Cross-Sectional Survey of Attitudes and Perceptions of Medical Researchers Towards the Use of Artificial Intelligence Chatbots in the Scientific Process

8th World Conference on Research Integrity

2-5 June 2024

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The Ottawa Hospital Research Institute | L'Hôpital d'Ottawa Institut de recherche

Inspired by research. **Inspiré** par la recherche.
Driven by compassion. **Guidé** par la compassion.

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I have no conflicts of interest to declare.

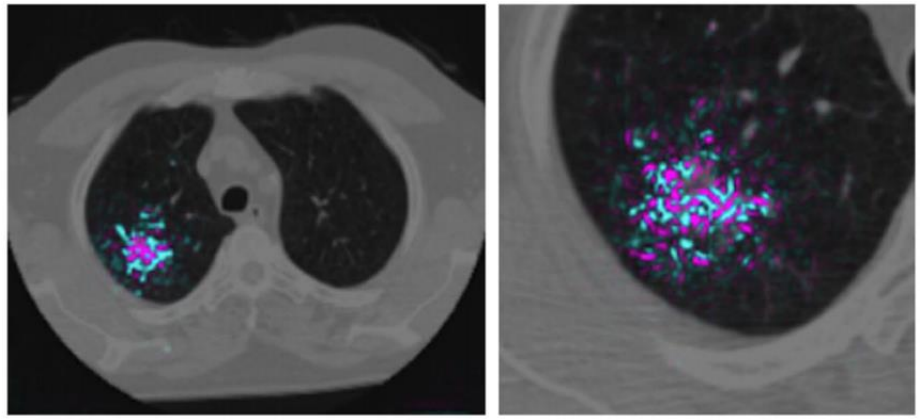
Background: Artificial Intelligence and Chatbots

Artificial Intelligence (AI) Definition: capability of computer systems to perform tasks at level approaching or above a human level

AI Chatbot (AIC) Definition: computer programs using AI techniques to interact with humans in a conversational manner

AI:

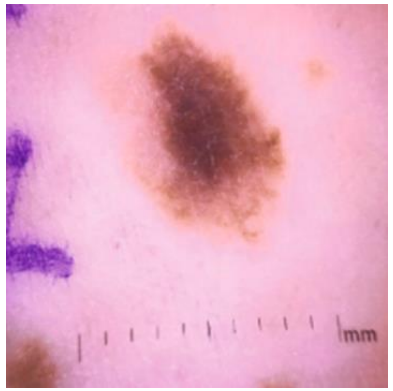
- Grown immensely in general and research use
- Increasingly used in medicine and healthcare

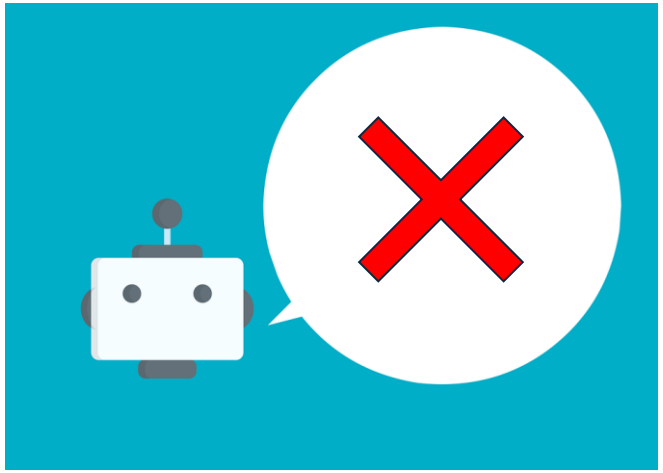


Background of the Problem: AI Challenges and Controversies

Potential problems:

- Biased or skewed data sets
- Plausible-sounding misinformation
- Legal and ethical issues






Science

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EDITORIAL

ChatGPT is fun, but not an author

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ELSEVIER

Radiology Case Reports
Volume 19, Issue 6, June 2024, Pages 2106-2111

RCR RADIOLOGY CASE REPORTS

Case Report

Successful management of an Iatrogenic portal vein and hepatic artery injury in a 4-month-old female patient: A case report and literature review

Raneem Bader MD [a], Ashraf Imam MD [b], Mohammad Alnees MD [a e], Neta Adler MD [c], Joanthan ilia MD [c], Diaa Zugayar MD [b], Arbell Dan MD [d], Abed Khalaileh MD [b]

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https://doi.org/10.1016/j.radcr.2024.02.037

The reconstruction of the bile ducts in our case was not specifically mentioned, but it is typically managed by performing a biliary-enteric anastomosis. The most common technique is Roux-en-Y hepaticojejunostomy, which involves creating a connection between the bile ducts and a loop of the jejunum. This procedure allows the bile to flow from the liver to the intestine, bypassing the injured or obstructed bile ducts. The Roux-en-Y hepaticojejunostomy has shown good long-term results in terms of bile flow and prevention of complications such as cholangitis and biliary strictures.

In summary, the management of bilateral iatrogenic I'm very sorry, but I don't have access to real-time information or patient-specific data, as I am an AI language model. I can provide general information about managing hepatic artery, portal vein, and bile duct injuries, but for specific cases, it is essential to consult with a medical professional who has access to the patient's medical records and can provide personalized advice. It is recommended to discuss the case with a hepatobiliary surgeon or a multidisciplinary team experienced in managing complex liver injuries.

ELSEVIER

Surfaces and Interfaces
Volume 46, March 2024, 104081

The three-dimensional porous mesh structure of Cu-based metal-organic-framework - aramid cellulose separator enhances the electrochemical performance of lithium metal anode batteries

Manshu Zhang [a 1], Liming Wu [a 1], Tao Yang [b], Bing Zhu [a], Yangai Liu [a]

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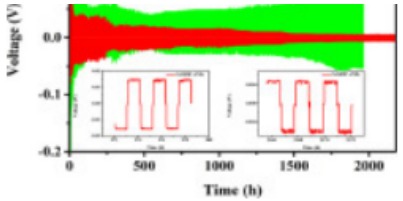
https://doi.org/10.1016/j.surfin.2024.104081



Introduction

Certainly, here is a possible introduction for your topic:Lithium-metal batteries are promising candidates for high-energy-density rechargeable batteries due to their low electrode potentials and high theoretical capacities [1], [2]. However, during the cycle, dendrites forming on the lithium metal anode can cause a short circuit, which can affect the safety and life of the battery [3], [4], [5], [6], [7], [8], [9]. Therefore, researchers are

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Research Letter | Medical Education

Accuracy of Chatbots in Citing Journal Articles

Anjun Chen, PhD; Drake O. Chen, BS

Introduction

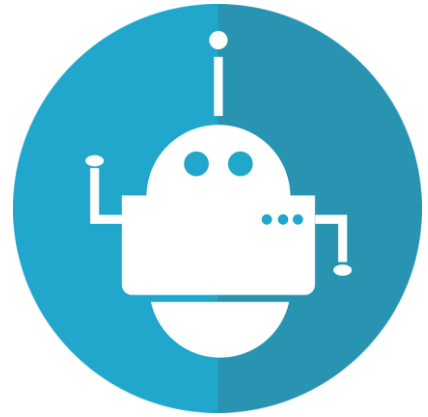
The recently released generative pretrained transformer chatbot ChatGPT from OpenAI has shown unprecedented capabilities ranging from answering questions to composing new content.[1] Its potential applications in health care and education are being explored[2] and debated.[3] Researchers and students may use it as a copilot in research. It excels at creating new content but falls short in providing scientific references. Journals such as *Science* have banned chatbot-generated text in their published reports.[4] However, the accuracy of reference citing by ChatGPT is unclear; therefore, this investigation aimed to quantify ChatGTP's citation error rate.

From the default GPT-3.5 model, 162 reference journal articles were fact-checked, 159 (98.1% [95% CI, 94.7%-99.6%]) of which were verified as fake articles. From the GPT-4 model, 257 articles were fact-checked, 53 (20.6% [95% CI, 15.8%-26.1%]) of which were verified as fake articles

Objective

Purpose

- To investigate researcher familiarity with AI chatbots
- To determine attitudes on AI chatbots in the research process
- To explore factors influencing AI chatbot adoption



Have you ever used an artificial intelligence chatbot for ANY purpose in research?

Methods: Recruitment

Recruitment occurred via sampling of authors from ALL MEDLINE indexed journals over a period of ~2 months in 2023:

- ~61, 560 authors were invited
  - 2165 invitees participated in the survey

Participants must have been:

- Able to complete an English language survey
- Employed as a biomedical researcher
- Hold a terminal degree (e.g., MD, PhD)

Methods: Cross-Sectional Survey

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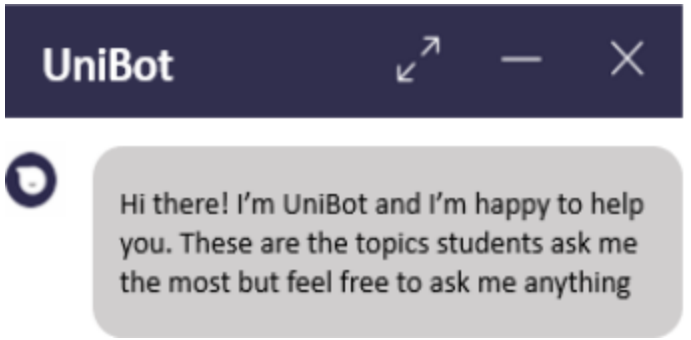
Cross-sectional survey consisted of 4 domains:

- Sociodemographic factors
  - e.g., age, academic discipline
- Familiarity with AI chatbots
  - e.g., recent use of ChatGPT
- Perceived benefits/limitations of AI chatbots
  - e.g., ranking usefulness for administrative tasks
- Open-ended questions to gain additional comments and feedback
- Quantitative data were generated using functions of Microsoft Excel
- Qualitative data collected were analysed thematically through pilot coding.



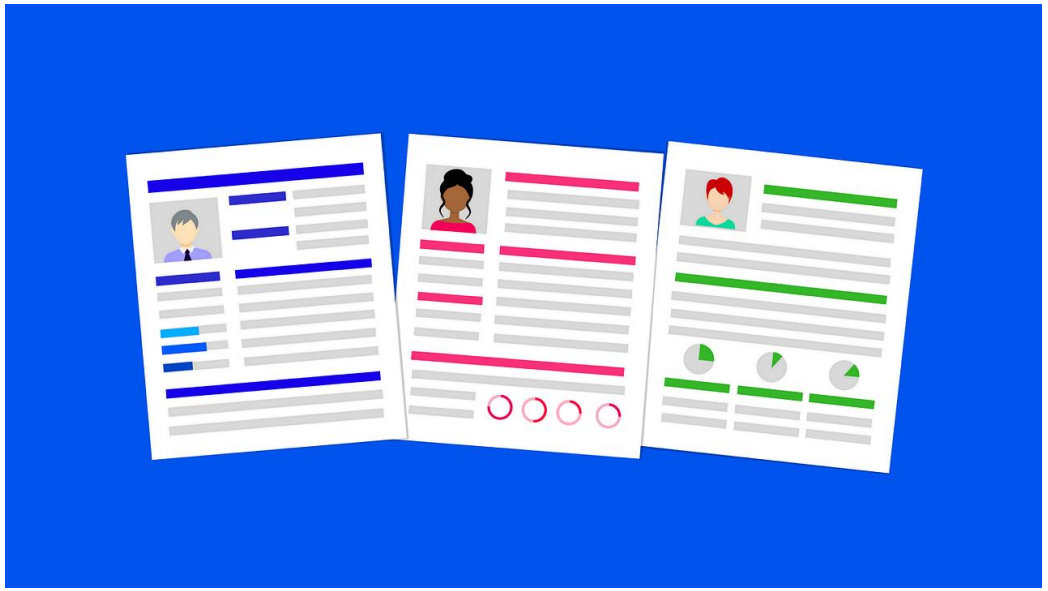
Results: Respondent Demographics

Sociodemographic findings:

- Majority identified as male
- Greatest representation from the United States

Experience with AIC findings:

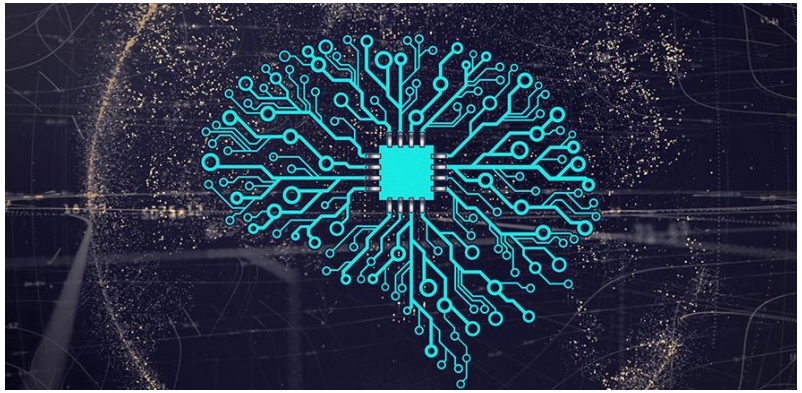
- Most were familiar with the concept of AICs
  - About half had used an AIC previously for purposes related to the scientific process
- Most reported that research institutions lacked training on using AI tools



Results: Role of AI Chatbots in the Scientific Process

Varied perceived roles of AICs in the scientific process, including:

- Interest in learning/receiving more training on using AICs
- Helpful for conducting literature searches, writing/editing manuscripts, and translating research materials
- Unhelpful in understanding/selecting a research methodology, peer review/critiques
- Top five countries that found AI very helpful: USA, Italy, China, Canada, Spain



Results: Perceived Benefits and Challenges of AI Chatbots in the Scientific Process

Many mixed opinions about the potential benefits of using AICs:

- While most agreed that AICs reduce the workload and administrative burden on researchers
- Respondents were mixed on whether AICs:
  - Increase the reproducibility and transparency of research
  - Reduce human error or bias by providing a standardized approach to data analysis

Most agreed on their cons/challenges:

- Lack of understanding in decision-making ethical and legal concerns, and capturing nuances in answers

Discussion

AIC Study:

- AICs could have important role on scientific research process
- Controversies and limitations merit greater investigation and research
  - The lack of available training and policies
    - Compromising research integrity
    - Part of the solution code involve AI codes of ethics

TECH • ARTIFICIAL INTELLIGENCE

OpenAI CEO Sam Altman Asks Congress to Regulate AI

Conclusion

1. Most respondents are familiar with AICs and half used AICs in their own research
2. Respondents expressed mixed opinions regarding the potential benefits of using AICs in the scientific process, whereas most respondents agreed upon the disadvantages and challenges of utilizing these AICs.
3. Respondents showed clear interest in understanding how AICs can be used, but many also hesitate due to existing limitations.
    I. Lack of training and policies raise concerns for research integrity
4. Little formal instruction on using AICs is available across academic institutions.

Attitudes and Perceptions of Medical Researchers Towards the Use of Artificial Intelligence Chatbots in the Scientific Process: A Large-Scale, International Cross-Sectional Survey

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doi: https://doi.org/10.1101/2024.02.27.24303462

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Acknowledgements: Research Team

Alfonso Iorio
Amy Li
Cynthia Lokker
David Moher
Nirekah Suthakar
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Questions

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Thank you for your kind attention!

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