DMACC HONORS PROGRAM

EXPLORING AI AND CHATGPT:

A COMPREHENSIVE RESEARCH GUIDE FOR STUDENTS

By David Nguyen

David Nguyen is a student in his 2nd year at the Des Moines Area Community College. This research guide was conducted as part of the Honors Program and Honors English Composition I (ENG105) with Professor M. Nicole Vogler in the Fall 2023 term. Reach out to him with any questions at: dnguyen24@dmacc.edu

AI and ChatGPT Research Guide

Introduction

Welcome to the AI and ChatGPT Research Guide! This guide aims to provide students with essential information about the uses, limitations, and ethical considerations surrounding artificial intelligence (AI) and ChatGPT-like generative models. Used responsibly, generative AI can become a powerful tool for students and teachers alike.

While exploring the fascinating world of AI, it's crucial to navigate responsibly, critically evaluate information, and understand the potential impact on various aspects of our lives.

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Definitions and Terms Q&A

Q: What is Artificial Intelligence (AI)?

- A: AI refers to the development of computer systems that can perform tasks that typically require human intelligence. This includes learning, reasoning, problem-solving, and understanding natural language.

Q: What is Generative AI?

- A: Generative AI is a subset of artificial intelligence that focuses on creating models capable of generating new content, such as text, images, or even music, often based on patterns learned from large datasets.

Q: What is ChatGPT?

- A: ChatGPT is a language model developed by OpenAI. It's a generative AI model that can generate human-like text responses based on the input it receives. It has been trained on diverse internet text to understand and respond to a wide range of queries.

Q: How does ChatGPT work?

- A: ChatGPT works by utilizing a deep language processing model that was trained on large online datasets to generate human-like responses based on the input it receives. It has been trained on a vast amount of data, allowing it to understand context and generate coherent and relevant responses.

Q: What are some other examples of AI available?

- A: Other examples of AI include virtual personal assistants (like Siri and Alexa), recommendation systems (like Netflix recommendations), image and speech recognition systems, and autonomous vehicles.
- Versions of generative AI include ChatGPT, GrammarlyGo, Google Bard, OpenAI’s Dall-E, Microsoft Bing Copilot.

Q: What can AI be used for in education?

- A: AI in education can assist with personalized learning, grading automation, and creating intelligent tutoring systems. It has the potential to enhance the learning experience by adapting to individual student needs.

Q: How could I use AI in my research?

- A: AI can be a powerful tool to assist in research by quickly processing and analyzing large datasets, automating repetitive tasks, and providing valuable insights. It can be a time-efficient and innovative addition to the research process.

Q: Can AI be biased?

- A: Yes, AI systems can inherit biases present in the data they are trained on. It's crucial to be aware of potential biases and actively work towards mitigating them to ensure fair and unbiased results.

Q: How can AI be used for positive change in education?

- A: AI in education can be leveraged to provide personalized learning experiences, identify learning gaps, and assist educators in creating tailored educational content. It has the potential to positively transform the education landscape– but only if we use it correctly and responsibly.

AI and Bias

Understanding Bias in AI:

- Although AI has great potential to positively impact the learning process, it is necessary to be aware of the weaknesses and biases that can be present.
- AI learns from data, inheriting biases present in datasets. According to Reid Blackman, a digital ethics advisor:
    - *"AI is just software that learns by example"*, according to Reid Blackman, author of *Ethical Machines*, a book on the ethics of artificial intelligence. (source).
- AI can display bias in areas such as gender, race, and socio-economic status.

Examples of Bias:

- Facial recognition systems exhibit inaccuracies based on ethnicity. A 2018 landmark study called "Gender Shades" revealed significant differences in the accuracy of AI powered facial recognition of different genders and ethnicities.
- Language models, like ChatGPT, can generate biased content from training data.
- *Hallucinations* refers to the phenomenon where generative models, like ChatGPT, may produce inaccurate or false information that appears realistic. Generative AI may not always give you correct information!

Implications of Bias:

- AI bias may lead to unintended discrimination and reinforcement of stereotypes.
- There could be a potential for inequitable treatment and impact on individuals and communities.
- As a result, we should be careful about how we use AI and be aware of potential biases.

AI in Academic Setting: Using AI Responsibly as a Student

Starting Point for Research:

- **Strategy:** Employ ChatGPT as a valuable tool for generating initial insights and ideas. Examples of use:
    - **Question rephrasing:** "Rephrase the research question: [your research question]."
    - **Thesaurus:** Ask for alternate words in different tones, impact, length, or complexity.
    - **Virtual peer-reviewer:** Ask questions like "What do you think my tone is?" or “What might be a weakness of this argument?”.
- **Reminder:** Be aware that generative AI, including ChatGPT, may provide inaccurate or false results. Do not solely rely on AI-generated content; instead, use it as a supplementary tool in conjunction with thorough traditional research to ensure accuracy and reliability.

Avoiding Plagiarism:

- Caution: Be aware of unintentional plagiarism with AI-generated content.
- Best Practice: Adhere to faculty policies on citation and proper usage of generative AI. As always, NEVER claim someone/something’s work as your own.
- *Example of MLA citation:*
    - “Name of AI conversation” prompt. ChatGPT, GPT-3.5, OpenAI, Date, chat.openai.com/chat.
- *Example of APA citation:*
    - OpenAI. (2023). ChatGPT 3.5 (Mar 14 version) [Large language model]. https://chat.openai.com/chat

Engaging with Faculty Guidelines:

- Awareness: DMACC does not have any specific institutional-wide Generative AI policy. Stay informed about any specific guidelines or recommendations from your instructors regarding the use of AI in academic assignments.
- Communication: When in doubt, communicate BEFOREHAND with your instructors to clarify any concerns or questions about using AI responsibly. <u>Ask first, use later.</u>

Quick Guideline to Using AI: C.A.R.E.

Use the acronym C.A.R.E. to help remember proper usage of AI.

C - Conduct Ethically:

- Adhere to ethical guidelines in your AI research. Use AI as the “starting point” to research-- not as the endpoint!
- Protect privacy and handle sensitive data responsibly.
- Properly attribute AI models and algorithms used in your work with citations.

A - Active Understanding:

- Understand the limitations and biases in AI.
- Stay informed about AI developments and ethical considerations.
- Continuously update your knowledge on faculty and institution expectations.

R - Review Data:

- Double-check and verify AI-generated information with traditional research methods.
- Document data preprocessing steps for transparency.
- Be mindful of biases in training datasets.

E - Embrace Transparency:

- Clearly explain the role of AI in your research and assignments.
- Provide access to code, datasets, and prompt details.
- Acknowledge any uncertainties and limitations in your AI applications.

In the News (Recent Press)

- FACT SHEET: President Biden Issues Executive Order on Safe, Secure, and Trustworthy Artificial Intelligence | The White House
- Iowa school districts, universities work on policies for AI tools that could be used to cheat
- How AI might improve online discourse: Academic Minute
- I'm a Student. You Have No Idea How Much We're Using ChatGPT.
- ChatGPT and Fake Citations - Duke University Libraries Blogs
- 'Thirsty' AI: Training ChatGPT Required Enough Water to Fill a Nuclear Reactor's Cooling Tower, Study Finds
- Inside the AI Factory: the humans that make tech seem human - The Verge
- Artificial intelligence technology behind ChatGPT was built in Iowa — with a lot of water | AP News
- We're getting a better idea of AI's true carbon footprint | MIT Technology Review
- Freaking Out About ChatGPT—Part I - Inside Higher Ed
- Guest Post: AI Will Augment, Not Replace - Inside Higher Ed
- How to Use ChatGPT and Still Be a Good Person - The New York Times
- UK announces AI funding for teachers: how this technology could change the profession
- Google Launches Its 'Largest And Most Capable' AI Model Gemini To Compete With ChatGPT
- One Year of ChatGPT: How A.I. Changed Silicon Valley Forever - The New York Times
- AI is a boon for Washington — and its federal workforce
- Offensive and Defensive AI: Let's Chat(GPT) About It
- Google Just Launched Gemini, Its Long-Awaited Answer to ChatGPT | WIRED
- Who should be Time's Person of the Year? Taylor Swift or Chat GPT? | | myheraldreview.com

Other Institutions' Research Guides

- Student Guide to ChatGPT [University of Arizona University Libraries]
  A basic guide to ChatGPT, including what it is and is not good for and fact checking.
- Key Takeaways for Using Generative AI in Research [University of Southern California Libraries]
  Main points to keep in mind when using generative AI (ChatGPT) in your research.
- AI, ChatGPT, and the Library [Salt Lake Community College Libraries]
  This concise guide provides a starting place to learn how generative AI intersects with research and how to use it responsibly.
- Artificial Intelligence [University of Washington Health Sciences Library]
  An in-depth guide to AI, including definitions, uses and limitations, bias, and more resources.
- Guiding Student Use of AI - ChatGPT and AI Tools Faculty Research Guide [Tidewater Community College] - An extensive breakdown of ChatGPT and AI, geared for Faculty and Instructors.
- Teaching & Learning - ChatGPT & Generative AI - LibGuides at Austin Community College - Research guide from Austin Community College focusing on ChatGPT and Generative AI, and resources to read about.

Future Approaches to AI and Data Literacy

Data Literacy: the ability to explore, understand, and communicate with data in a meaningful way (source)

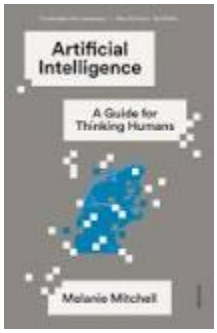
AI and similar tools will continue to spread and will be a large part of the future world. Instead of curbing the skills that future employers might expect workers to have, we should instead teach students how to use these tools– in an ethical and responsible manner. By establishing a foundation to use AI the *right way*– through the data literacy approach– students will be well prepared to face the challenges and opportunities presented by the ever-expanding landscape of artificial intelligence.

This approach aims to empower students to approach AI with a thoughtful and informed mindset, ensuring that they not only utilize the technology effectively but also actively participate in shaping its ethical and responsible use in the future.

Additional Resources

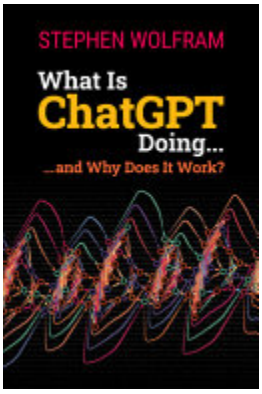
Explore the following resources to deepen your understanding of AI and ChatGPT.

Books:



"Artificial Intelligence: A Guide for Thinking Humans" by Melanie Mitchell

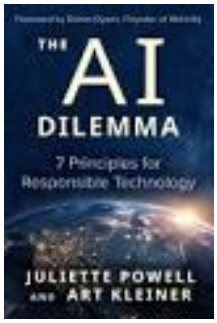
ISBN: 9780374715236. Date Published:



October 15, 2019

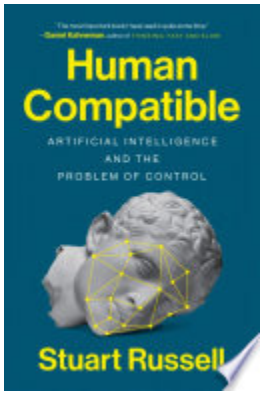
“What is ChatGPT Doing… and Why Does It Work?” by Stephen Wolfram

ISBN: 9781579550813. Date Published: 2023.



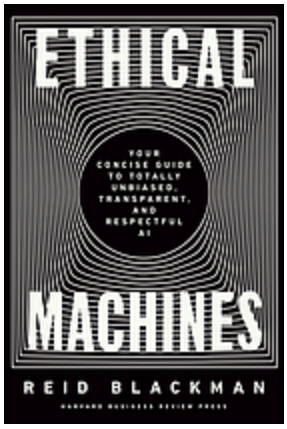
“The AI Dilemma: 7 Principles for Responsible Technology” by Juliette Powell, Art Kleiner

ISBN: 9781523004225. Date Published: August 15, 2023



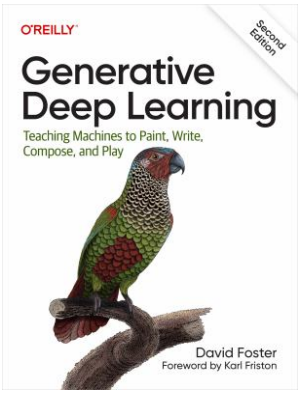
“Human Compatible: Artificial Intelligence and the Problem of Control” (2019) by Stuart Russell

ISBN: 978-0-525-55861-3. Date Published: October 8, 2019



“Ethical machines : your concise guide to totally unbiased, transparent, and respectful AI” by Reid Blackman

ISBN: 9781647822828. Date Published: September 20, 2022.



“Generative Deep Learning: Teaching Machines to Paint, Write, Compose, and Play” by David Foster

ISBN: 9781098134143. Date Published: June 18th, 2022

Websites and Courses:

- OpenAI's Blog: Stay updated on the latest developments in AI, including research and ethical considerations.
- AI Tech Trends: Explore trends and recent discussions in AI.
- Coursera - AI for Everyone: Gain a foundational understanding of AI concepts.
- Coursera - AI for Teachers: AI Education for Teachers/Instructors with IBM

Conclusion

As you explore AI and ChatGPT-like generative AI, make sure to approach the information critically, be aware of potential biases, and use these tools responsibly. If you have any questions or need assistance, don't hesitate to reach out to your instructors or the DMACC Library.

Author Biography and Information

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