



Large Language Models + Giant AI Experiments = A Whole New World?

Jennifer Renoux

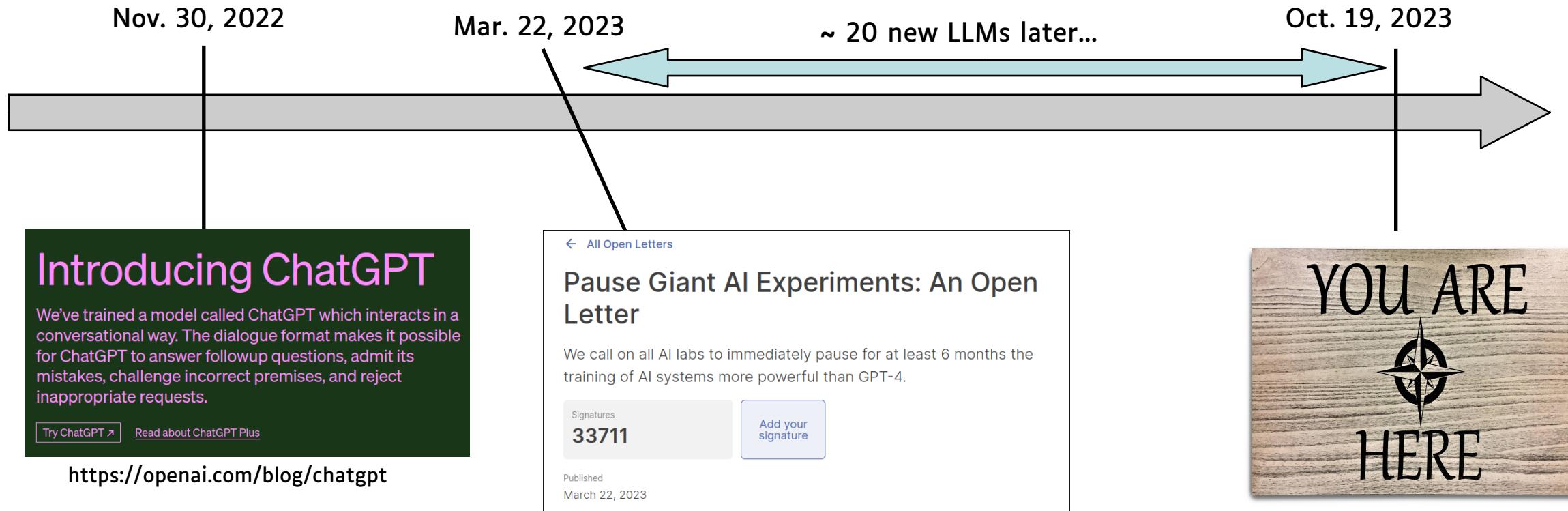
Center for Applied Autonomous Sensor Systems
Örebro University

Who am I?

- Senior Researcher in Human-Machine Communication at the Cognitive Robotics System Lab, Örebro University
- Lecturer in Ethics of AI and Robotics (under-graduate and graduate courses)



Background



Background - The Future of Life Institute Letter

- “AI systems with human-competitive intelligence can pose profound risks to society and humanity”
- Call for a 6 month pause on “the training of AI systems more powerful than GPT-4”
- Call for the creation of regulatory bodies for AI development

Background - My opinion on the letter

- I did **not** sign it, though I was torn
- I agree with the need to stop the "AI Race" that is ongoing in tech leading companies and to install regulations
- But for completely different reasons
- I believe the letter is detrimental for actual constructive discussions on AI and ethics ("existential risk" and longtermism phrasing, "Criti-Hype")
- The letter misuses some research on the ethics of AI (Bender et al. 2021)

WHAT IS ARTIFICIAL INTELLIGENCE?

What is AI?

Artificial intelligence (AI) is the [intelligence](#) of machines or software, as opposed to the intelligence of human beings or animals.

Wikipedia

artificial intelligence (AI), the ability of a digital [computer](#) or computer-controlled [robot](#) to perform tasks commonly associated with intelligent beings.

Encyclopaedia Britannica

Q. What is artificial intelligence?

A. It is the science and engineering of making intelligent machines, especially intelligent computer programs. It is related to the similar task of using computers to understand human intelligence, but AI does not have to confine itself to methods that are biologically observable.

McCarthy, 2004

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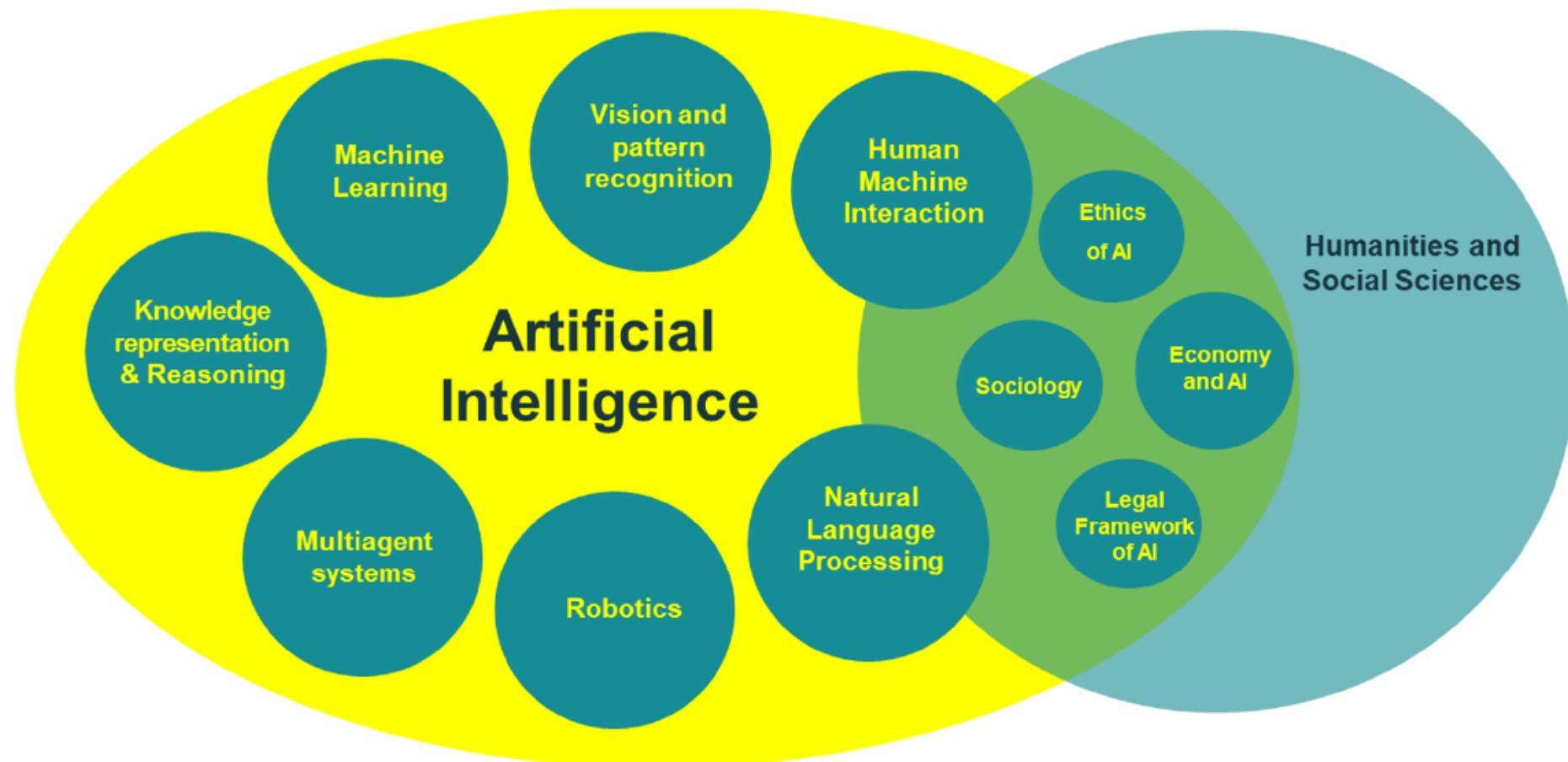
Encyclopaedia Britannica

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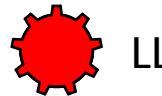
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McCarthy, 2004

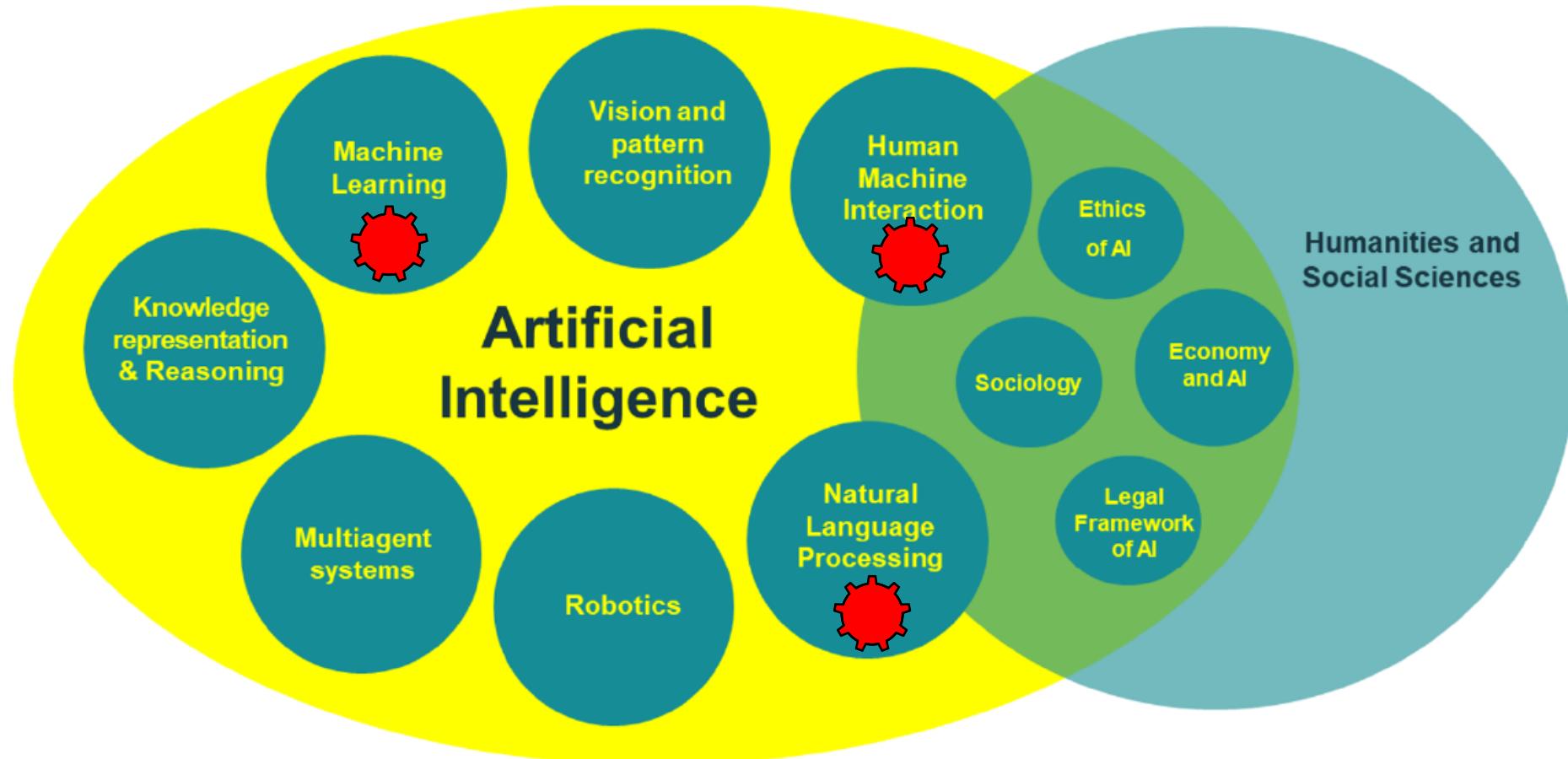
What is AI?



What is AI?



LLMs are there



By BlueRadical, DevianArt



WHAT ARE (LARGE) LANGUAGE MODELS?

What are Language Models?

$S = \text{Where are we going}$

The diagram illustrates a sequence of words S as "Where are we going". A bracket labeled "Previous words (Context)" spans from the start of the sequence to the word "we". An arrow points upwards from this bracket to the word "going", which is highlighted in pink. This visualizes how a language model uses past words to predict the next word.

Previous words
(Context)

Word being
predicted

$$P(S) = P(\text{Where}) \times P(\text{are} \mid \text{Where}) \times P(\text{we} \mid \text{Where are}) \times P(\text{going} \mid \text{Where are we})$$

What are Language Models used for?

The screenshot shows the kagi AI interface. At the top is the kagi logo with a small cartoon character below it. The main input field contains the text "Oh my god, the volcano is". Below the input field is a list of five search suggestions, each preceded by a magnifying glass icon:

- oh my god the volcano is here
- oh my god the volcano is coming
- oh my god the volcano is in
- oh my god the volcano is erupting
- oh my god the volcano is called

At the bottom of the interface are navigation links: Web, Academic, Forums, PDFs, Programming, and World News, followed by a pen icon.



The screenshot shows a translation interface with two panels. The left panel is for English and the right panel is for Swedish. Both panels have dropdown menus for "English" and "Swedish" and a "Glossary" button. The English panel contains the sentence "Jennifer is giving a talk at Örebro University". The Swedish panel contains the translated sentence "Jennifer håller ett föredrag vid Örebro universitet". There is also a small "X" icon between the two panels.

What are *Large Language Models*?

**Language Models with millions of parameters and
trained on a large amount of data**

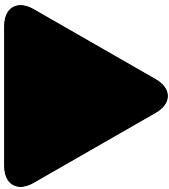
Are LLMs the New AI?

- Impact they will have is debated
- But general agreement is that they are not going to replace all of AI
- “General-purpose language *understanding* and generation.”
(Wikipedia)



BEYOND THE HYPE. A SHALLOW DIVE IN LLMs LIMITATIONS

Information retrieval



what are all the schools from Örebro University?

Web search ▶

Here are some of the schools that make up Örebro University:

- School of Humanities, Education and Social Sciences
- School of Science and Technology
- School of Health and Medical Sciences
- School of Business
- School of Law, Psychology and Social Work
- School of Nursing
- School of Music, Theatre and Art
- School of Informatics
- School of Hospitality, Culinary Arts and Meal Science
- School of Sports Science
- School of Environment, Energy and Building Technology
- School of Mathematical Sciences

Search web ⓘ Economics

Ask anything

Model: OpenAssistant/oasst-sft-6-llama-30b · Generated content may be inaccurate or false.

Share this conversation

Attempt #1

Information retrieval

Web search ▶

Here are some of the schools at Örebro University:

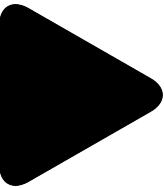
- School of Business
- School of Humanities, Education and Social Sciences
- School of Law, Psychology and Social Work
- School of Science and Technology
- School of Health and Medical Sciences
- School of Medicine
- School of Teacher Education

Note that the specific schools and programs offered by Örebro University may vary depending on the source and date of the information provided.

Sources: [oru.se](#) [oru.se](#) [oru.se](#)

Attempt #2

LLMs and information retrieval



What are the three most influential papers of the Artificial Intelligence journal?

Web search

Based on the provided context, it appears that the Artificial Intelligence journal has not yet announced the winners of its annual awards for the year 2023. Therefore, we cannot determine the three most influential papers of the journal for the current year.

However, we can suggest some highly influential papers published in the Artificial Intelligence journal in recent years based on their impact factor, citations, and contributions to the field of artificial intelligence. Here are three examples:

1. "Deep Reinforcement Learning" by Mnih et al., published in 2013 (Volume 28, Issue 1): This paper introduced deep reinforcement learning, which combines deep neural networks with reinforcement learning algorithms to learn complex behaviors from raw sensory input. It has been cited over 2,300 times and has had a significant impact on the development of AI applications such as AlphaGo and autonomous driving.
2. "Generative Adversarial Networks" by Goodfellow et al., published in 2014 (Volume 31, Issue 2): This paper proposed generative adversarial networks (GANs), a new framework for training generative models. GANs have revolutionized the field of computer vision and have led to breakthroughs in image generation, video prediction, and style transfer. The paper has been cited over 1,800 times.
3. "Attention Is All You Need" by Vaswani et al., published in 2017 (Volume 40, Issue 1): This paper introduced the Transformer model, which replaces traditional recurrent neural network architectures with attention mechanisms. Attention allows the model to selectively focus on parts of the input sequence when generating output, leading to significant improvements in machine translation and other sequential data tasks. The paper has been cited over 10,000 times.

Search web

arts of the input sequence when generating output, leading to significant improvements in machine translation and other sequential data tasks. The paper has been cited over 10,000 times.

Ask anything

Model: meta-llama/Llama-2-70b-chat-hf · Generated content may be inaccurate or false. [View details](#) Share this conversation

LLMs and information retrieval in the wild

New York lawyers sanctioned for using fake ChatGPT cases in legal brief

By Sara Merken

June 26, 2023 10:28 AM GMT+2 · Updated 2 months ago



ChatGPT is making up fake Guardian articles. Here's how we're responding
Chris Moran



The risks inherent in the technology, plus the speed of its take-up, demonstrate why it's so vital that we keep track of it

● Chris Moran is the Guardian's head of editorial innovation

Common sense

What is the third letter of the word ohvnb?

- The word "ohvnb" contains only four letters: o, h, v, and n. Therefore, there is no third letter in the word "ohvnb."

In the following sentence : "The ball does not fit in the suitcase because it is too small", which object is smaller?

- The ball is smaller than the suitcase.

The assistant refused to date the lawyer because she was married. In the previous sentence, who does "she" refer to?

- I apologize for any confusion caused by my response earlier. To clarify, "she" refers to the woman who works at the law firm where the assistant interned. She is not the same person as the lawyer that the assistant worked with on the case involving the man who died after falling off his roof while cleaning gutters.

LLMs and common sense in the wild

Supermarket AI meal planner app suggests recipe that would create chlorine gas

Pak 'n' Save's Savye Meal-bot cheerfully created unappealing recipes when customers experimented with non-grocery household items



An app launched by a New Zealand supermarket that produces AI-generated recipes for leftovers has recommended cooks try 'bleach-infused rice surprise' among other things. Photograph: Jacobs Stock Photography Ltd/Getty Images

Pratar du svenska?

 **HuggingChat** v0.6.0

Making the community's best AI chat models available to everyone.

NEW Websearch 2.0, now with RAG & sources [Discuss](#)

Current Model
meta-llama/Llama-2-70b-chat-hf

[Model page](#) [Website](#)

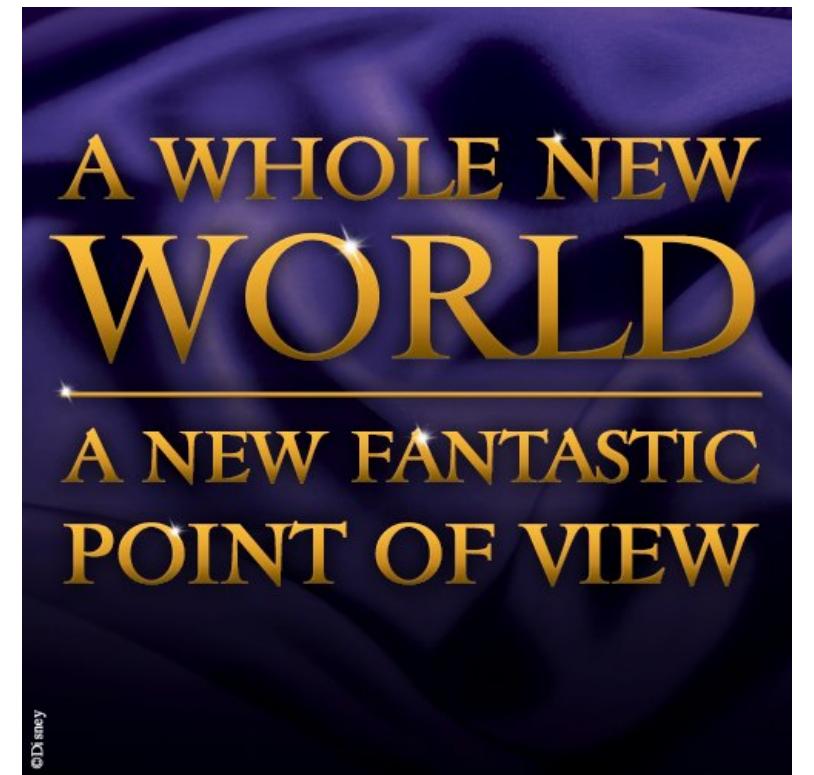
Examples

[Write an email from bullet list](#) [Code a snake game](#) [Assist in a task](#)

[Search web](#)

Ask anything 

Model: meta-llama/Llama-2-70b-chat-hf · Generated content may be inaccurate or false.



LLMs : A WHOLE NEW WORLD?

A whole new world?

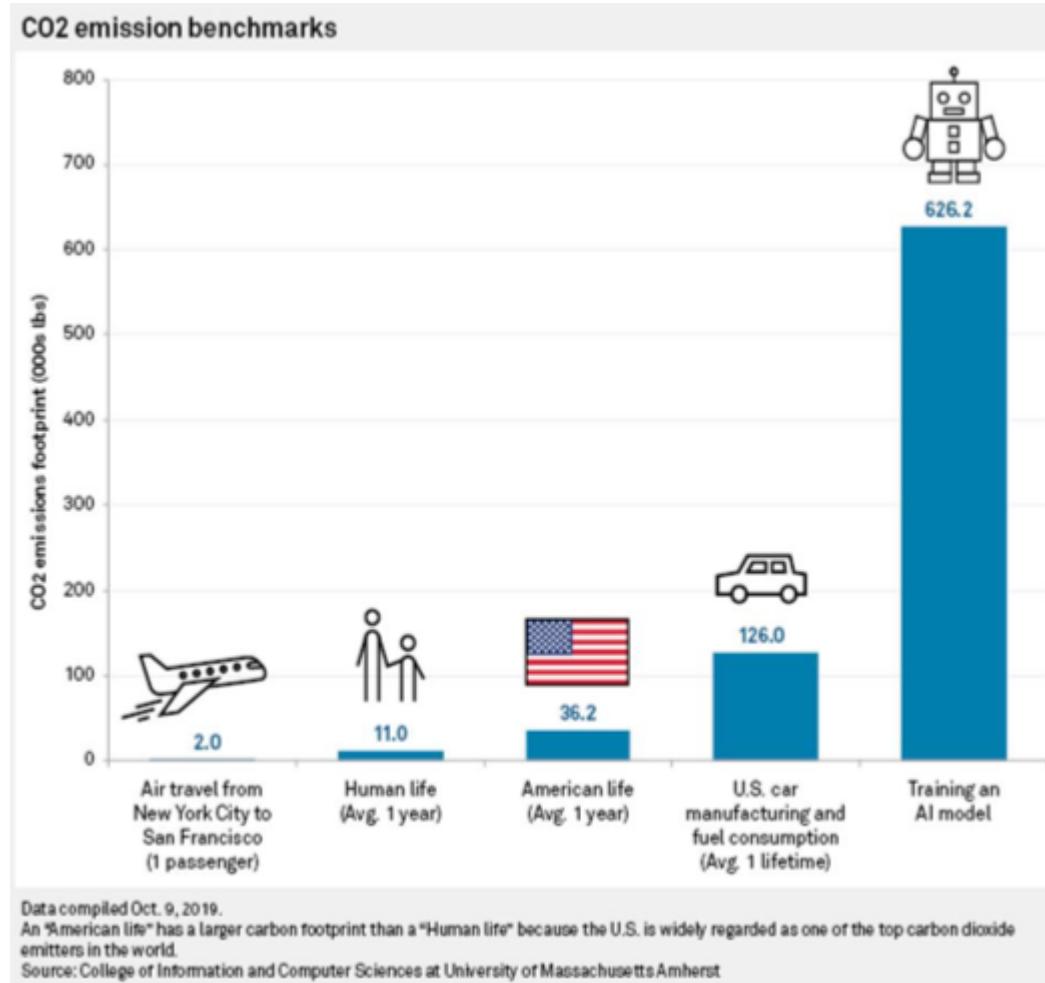
LLMs and generative AI are changing our world

But not in the way you think



The persistence of Memory, Salvador Dali

Development of LLMs (and other large AI models) is costly

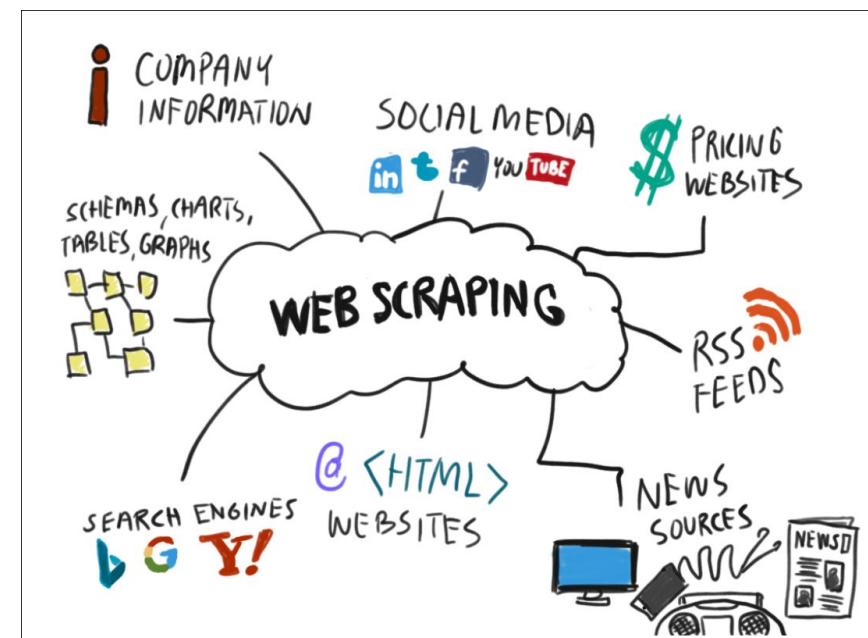


- Training a model consumes 700 000 L of clean freshwater
- Using a model consumes $\frac{1}{2}$ L of water every 20 interactions

Li et al. 2023

Generative AI has a tremendous impact on legal discussions

- Scrapping of data



Generative AI has a tremendous impact on legal discussions

- Scrapping of data

MEDIA

'New York Times' considers legal action against OpenAI as copyright tensions swirl

August 16, 2023 · 5:53 PM ET



Bobby Allyn

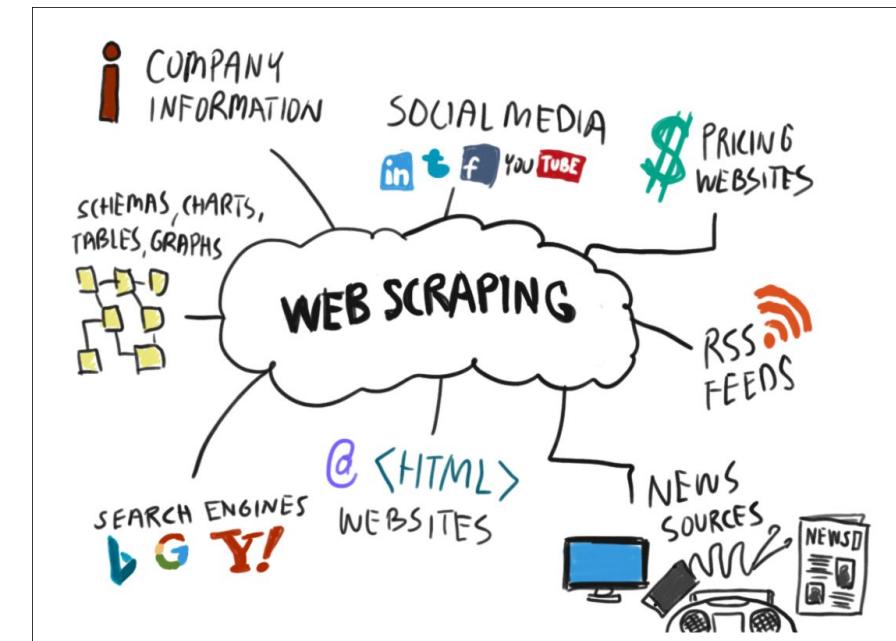
<https://www.npr.org/2023/08/16/1194202562/new-york-times-consider斯-legal-action-against-openai-as-copyright-tensions-swirl>

OpenAI faces class-action lawsuit over how ChatGPT uses data — here's what we know

By Tony Polanco published June 29, 2023

This could be a huge blow to AI chatbots like ChatGPT

<https://www.tomsguide.com/news/openai-faces-class-action-lawsuit-over-how-chatgpt-uses-data-heres-what-we-know>



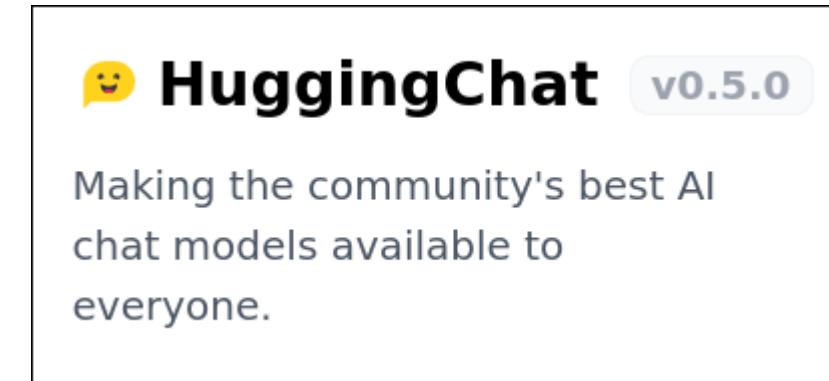
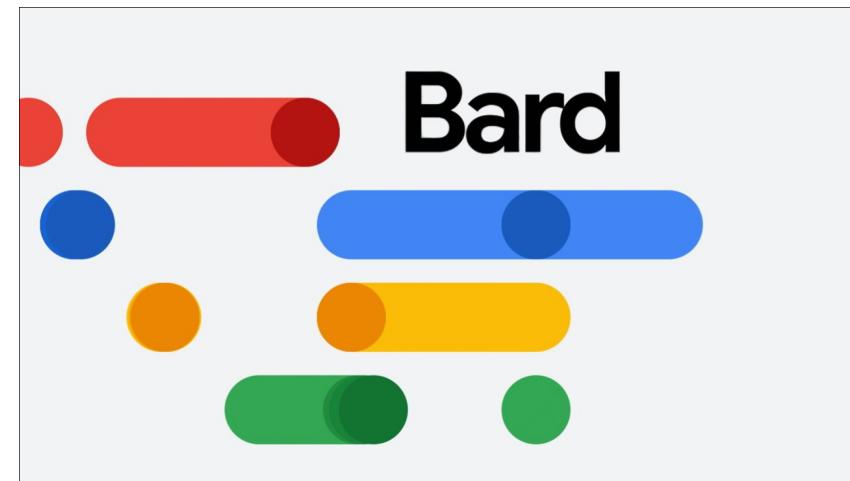
The economical context in which they are developed matters

- Monopoly

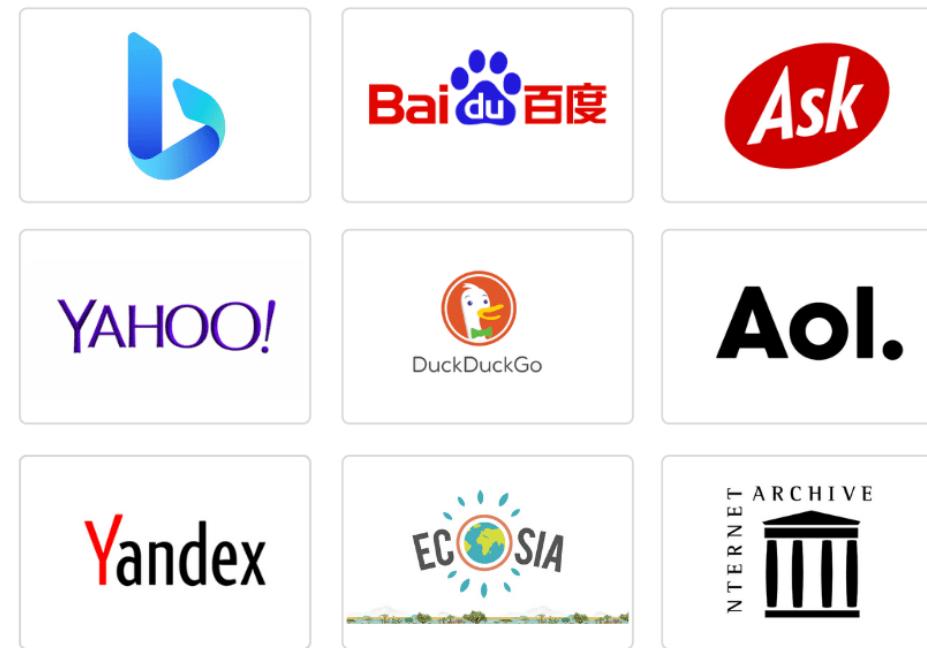


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The economical context in which they are developed matters



The economical context in which they are developed matters

- Monopoly

Let me search for it (on the Internet)



Let me Google this

The economical context in which they are developed matters

- Monopoly

Let me ask an AI Chatbot



Let me ask ChatGPT

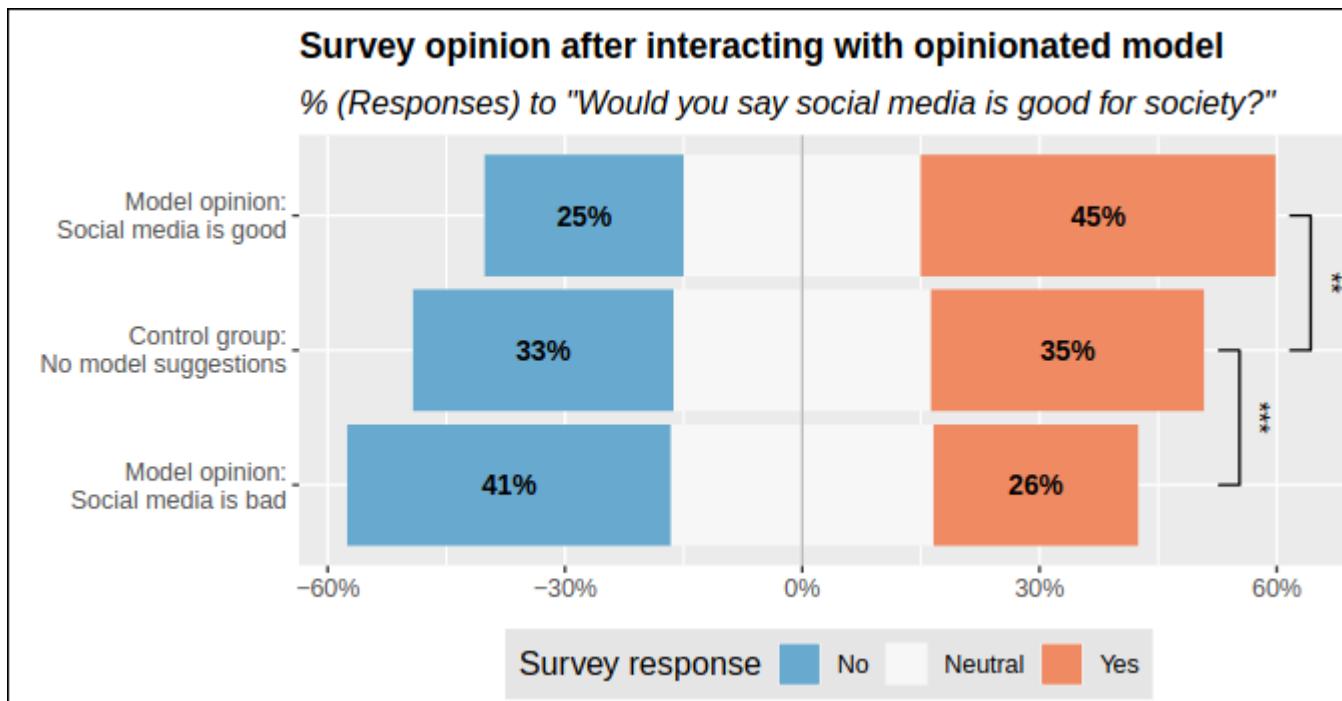
The economical context in which they are developed matters

BUSINESS • TECHNOLOGY

Exclusive: OpenAI Used Kenyan Workers on Less Than \$2 Per Hour to Make ChatGPT Less Toxic

<https://time.com/6247678/openai-chatgpt-kenya-workers/>

Generative AI influences us



<https://dl.acm.org/doi/10.1145/3544548.358119>

6

RESEARCH-ARTICLE OPEN ACCESS •

Co-Writing with Opinionated Language Models Affects Users' Views

Authors: Maurice Jakesch, Advait Bhat, Daniel Buschek, Lior Zalmanson, Mor Naaman [Authors Info & Claims](#)

Generative AI influences us

AI and the American Smile

How AI misrepresents culture through a facial expression.



jenka · [Follow](#)

10 min read · Mar 26

<https://medium.com/@socialcreature/ai-and-the-american-smile-76d23a0fbfaf>



**HUMANS ARE BIASED.
GENERATIVE AI
IS EVEN WORSE**

Stable Diffusion's text-to-image model amplifies stereotypes about race and gender – here's why that matters

By [Leonardo Nicoletti](#) and [Dina Bass](#) for **Bloomberg Technology + Equality**

[Gift this article](#)

<https://www.bloomberg.com/graphics/2023-generative-ai-bias/>

The pollution of our information ecosystem



nytimes.com

A New Frontier for Travel Scammers: A.I.-Generated Guidebooks

Shoddy guidebooks are flooding Amazon. Their authors claim to be renowned travel writers, but are they A.I. inventions? And how big is the problem?

The pollution of our information ecosystem



nytimes.com

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[washingtonpost.com](https://www.washingtonpost.com)

ChatGPT invented a sexual harassment scandal and named a real law prof as the accused

Pranshu Verma, Will Oremus

10–13 minutes

The pollution of our information ecosystem



nytimes.com

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NEWS

'Life or Death:' AI-Generated Mushroom Foraging Books Are All Over Amazon

SAMANTHA COLE · AUG 29, 2023 AT 9:04 AM

Experts are worried that books produced by ChatGPT for sale on Amazon, which target beginner foragers, could end up killing someone.

[washingtonpost.com](https://www.washingtonpost.com)

ChatGPT invented a sexual harassment scandal and named a real law prof as the accused

Pranshu Verma, Will Oremus

10–13 minutes

Detectors for AI-writing discriminate

Design and Human-Computer Interaction, Language Processing, Machine Learning

AI-Detectors Biased Against Non-Native English Writers

Don't put faith in detectors that are "unreliable and easily gamed," says scholar.

<https://hai.stanford.edu/news/ai-detectors-biased-against-non-native-english-writers>

IN CONCLUSION

In summary LLMs

- Are changing our world, but not in the way we may think...
 - Time cost is obvious (verifying the output, our working practices)
 - Time gain are still unclear (beyond anecdotal evidence)
 - Pollution of our information system (when has this book been published?)
- Are excellent at generating plausible text
- Have no concept of “right” or “wrong”
- Have no concept of “I don’t know”
- Can fail in spectacular or subtle way, and are un-predictable. The subtle failures are more dangerous.

Should I throw away all LLMs and disconnect from the Internet?

- NO!
- LLMs are good for applications that requires you to be statistically similar to a native English speaker
 - Recommendation letters
 - Talk or article titles (if originality is not what you are looking for)
 - Correcting grammar or spelling
- With supervision and careful verification, if you have the competencies to check yourself
- And while being aware of the ethical challenges behind

Resources



A.I. is B.S.

Adam Conover

1 M de vues • il y a 4 mois

https://www.youtube.com/watch?v=ro130m-f_yk



Artificial Intelligence: Last Week Tonight with John...

LastWeekTonight

0,7 M de vues • il y a 5 mois

<https://www.youtube.com/watch?v=Sqa8Zo2XWc4>

Resources

On the Dangers of Stochastic Parrots: Can Language Models Be Too Big? 🦜

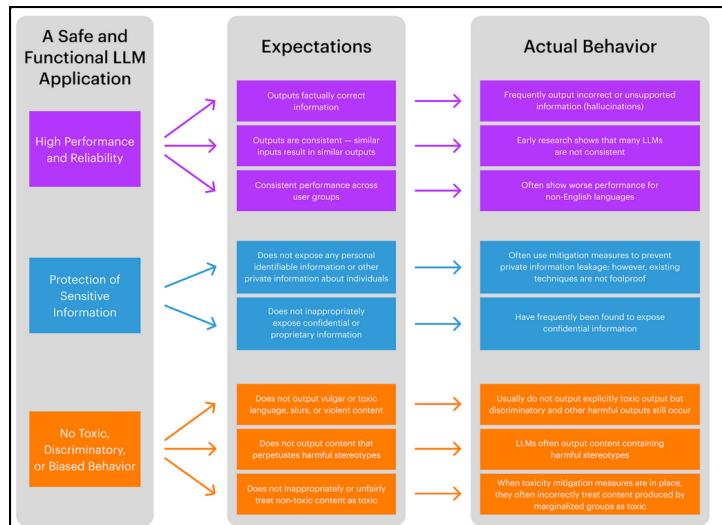
Emily M. Bender*
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Timnit Gebru*
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Palo Alto, CA, USA

Shmargaret Shmitchell
shmargaret.shmitchell@gmail.com
The Aether

<https://dl.acm.org/doi/pdf/10.1145/3442188.3445922>



What Is ChatGPT Doing ... and Why Does It Work?

February 14, 2023

<https://writings.stephenwolfram.com/2023/02/what-is-chatgpt-doing-and-why-does-it-work/>

ChatGPT Explained: A Normie's Guide To How It Works

Once you understand a few core concepts, modern chatbots are less mysterious.

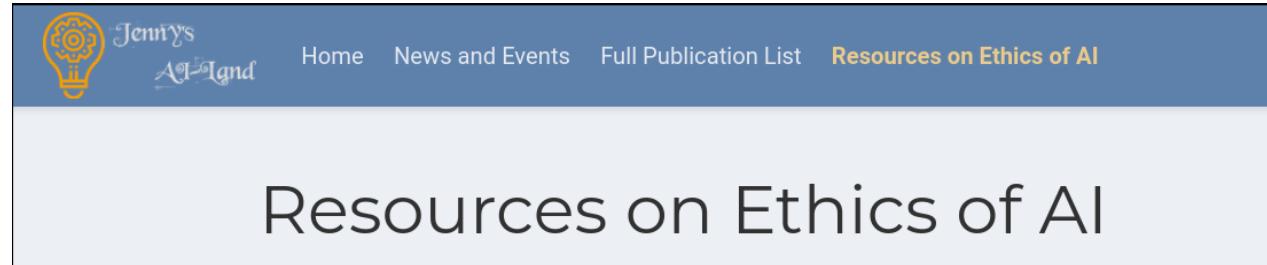


JON STOKES
MAR 1, 2023

<https://www.jonstokes.com/p/chatgpt-explained-a-guide-for-normies>

<https://www.arthur.ai/blog/the-real-world-harms-of-langs-part-1>

Resources



The screenshot shows a website header with a blue background. On the left is a logo featuring a yellow lightbulb icon with two gears inside, next to the text "Jenny's" and "AI Land". To the right of the logo are navigation links: "Home", "News and Events", "Full Publication List", and "Resources on Ethics of AI" (which is highlighted in red). Below the header, the main content area has a white background and features a large, bold, dark gray title "Resources on Ethics of AI".

<https://jrenoux.github.io/resources-ai-ethics/>

