An abstract graphic consisting of several thin, black, overlapping lines that form a complex, geometric pattern. The lines intersect to create various shapes, including triangles and polygons, some of which are nested within others. The overall effect is a sense of depth and complexity, resembling a stylized architectural drawing or a network diagram.

**What we believe and  
who we know:  
Misinformation in the  
Information Age.**

# Land Acknowledgement

# Dr. Kate Mercer

- STEM Librarian at University of Waterloo
- PhD from University of Waterloo in Shared Decision Making, Health Communication
- Publishes on a range of topics including information literacy, misinformation, AI, scientific communication, artificial intelligence, and empathy in engineering teaching and learning.



# When information is cheap, attention becomes expensive

James Gleick, *The Information: A History, a Theory, a Flood.*

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Is misinformation new?

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# History of Misinformation



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In 44 BC, Caesar was  
assassinated.

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Battle for the throne

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Massive disinformation  
campaign

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Similar tactics

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Coins = tweets

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- In 1835, the *New York Sun*, claimed that the moon had billions of inhabitants.
- More recently? Fox News in 1995 broadcast Alien Autopsy: Fact or Fiction





<https://www.consilium.europa.eu/en/documents-publications/library/library-blog/posts/disinformation-during-the-covid-19-pandemic/>

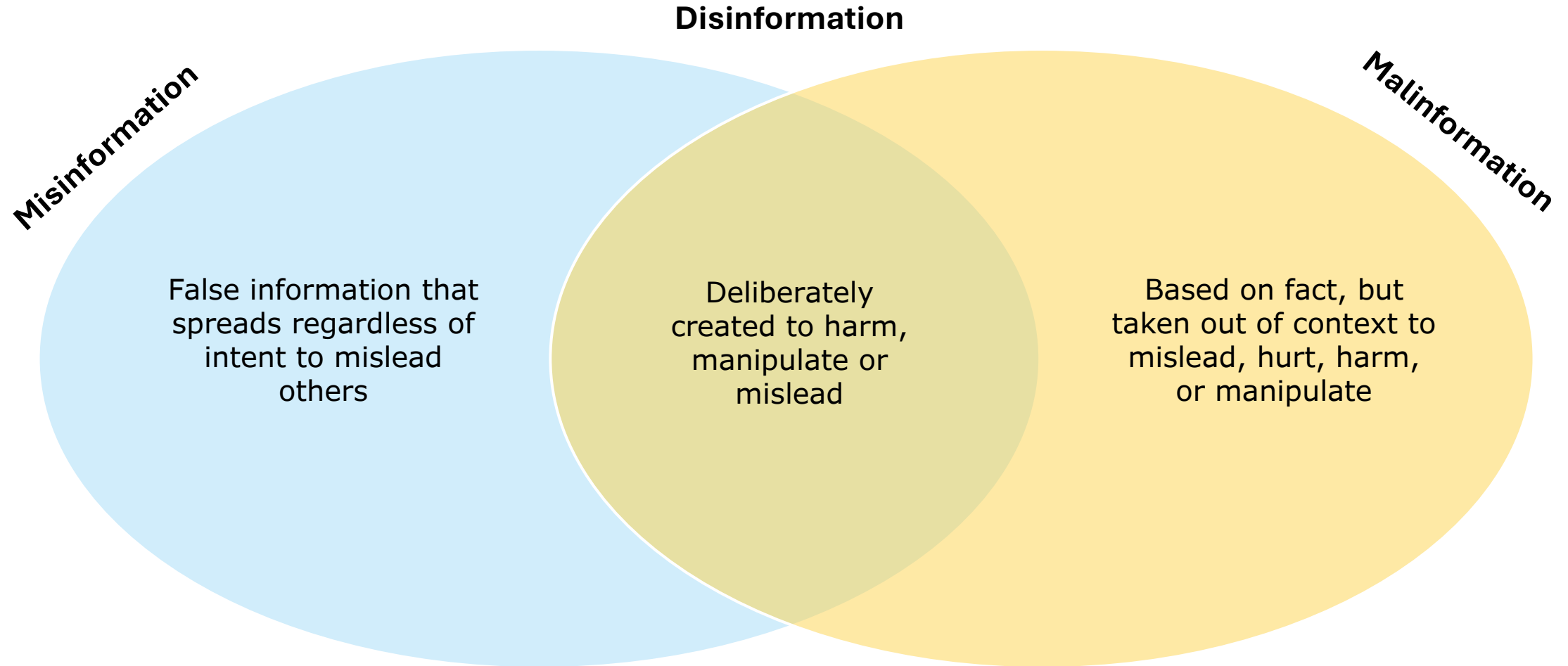
## Health Misinformation

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What is misinformation anyways?

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# What does it mean



# What is misinformation?



Misinformation is false, misleading, or inaccurate information that is communicated regardless of an intention to deceive. That is to say, misinformation is information that is false, but the person who is disseminating it believes that it is true or believes it is clearly satire when it may not be.



Technically speaking, factual statements that are presented in a way that undermine social policy goals, instigate distrust of legitimate experts and authorities, and/or lead people towards making harmful decisions are also misinformation.



# Misinformation

- Examples of misinformation may include:
  - Rumours;
  - Pranks;
  - Fake news;
  - Satire;
  - Misleading facts.

# Different types of misinformation

**Fabricated  
content**

**Manipulated  
content**

**Imposter  
content**

**Misleading  
content**

**False  
context of  
connection**

**Satire and  
parody**



## Causes & spread of misinformation

**Misinformation spreads more quickly and is viewed by up to 100 times as many people as accurate information.**

**Misinformation is spread for a variety of reasons including:**

- Political motivations;
- Monetary gain;
- Emotional manipulation;
- Converting popularity into legitimacy.

- Individual characteristics may also play a part in spreading misinformation and people with the following traits tend to spread misinformation more readily:
  - Disagreeable personalities;
  - Limited subject knowledge.

# Misinformation by the numbers



82% of U.S. consumers are worried about misinformation on social media.



In the U.S., only 44% of people trust social media for news



About 90% of American adults fact-check their news.



December 2020 survey found that 38.2% of U.S. news consumers had unknowingly shared fake news or misinformation on social media.



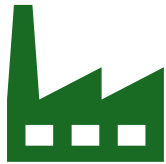
## Misinformation by the numbers

- 73% of Canadians reported seeing online content they suspected to be false
- 1 in 10 Canadians do not know how to fact check information.
- 1 in 7 Canadians share online news without checking accuracy.
- Adults 55 and older are most concerned with misinformation, but only 46% fact check
- 83% of Canadians don't always fact check, and 50% of those report a lack of interest in doing so
- 53% of Canadians have low trust in media
- 66% of Canadians with a college degree or higher are concerned, vs 52% of Canadians with a trade diploma or high school.

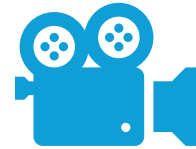
# How toxic information is spread



Creation



Production



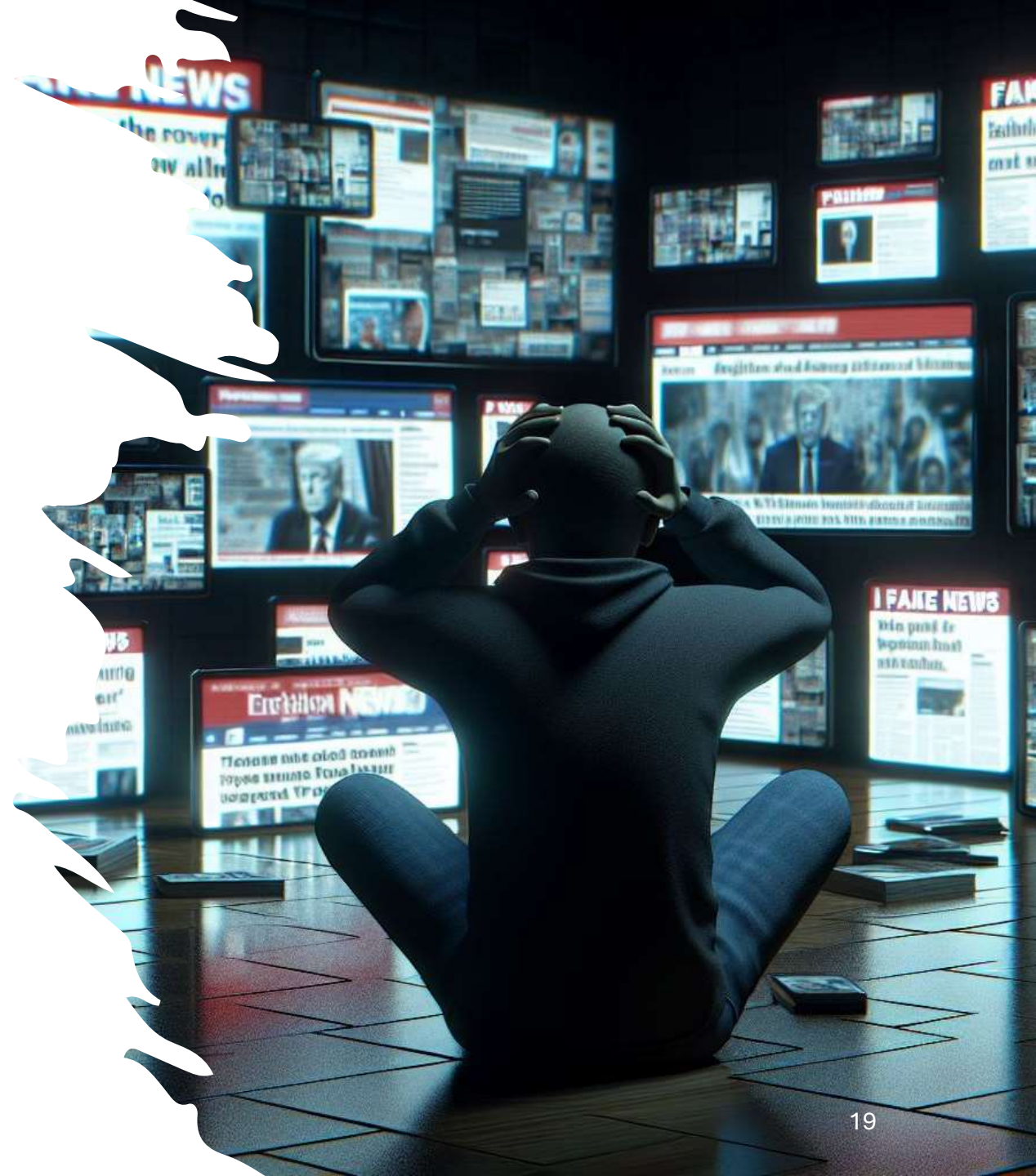
Distribution



Re-production

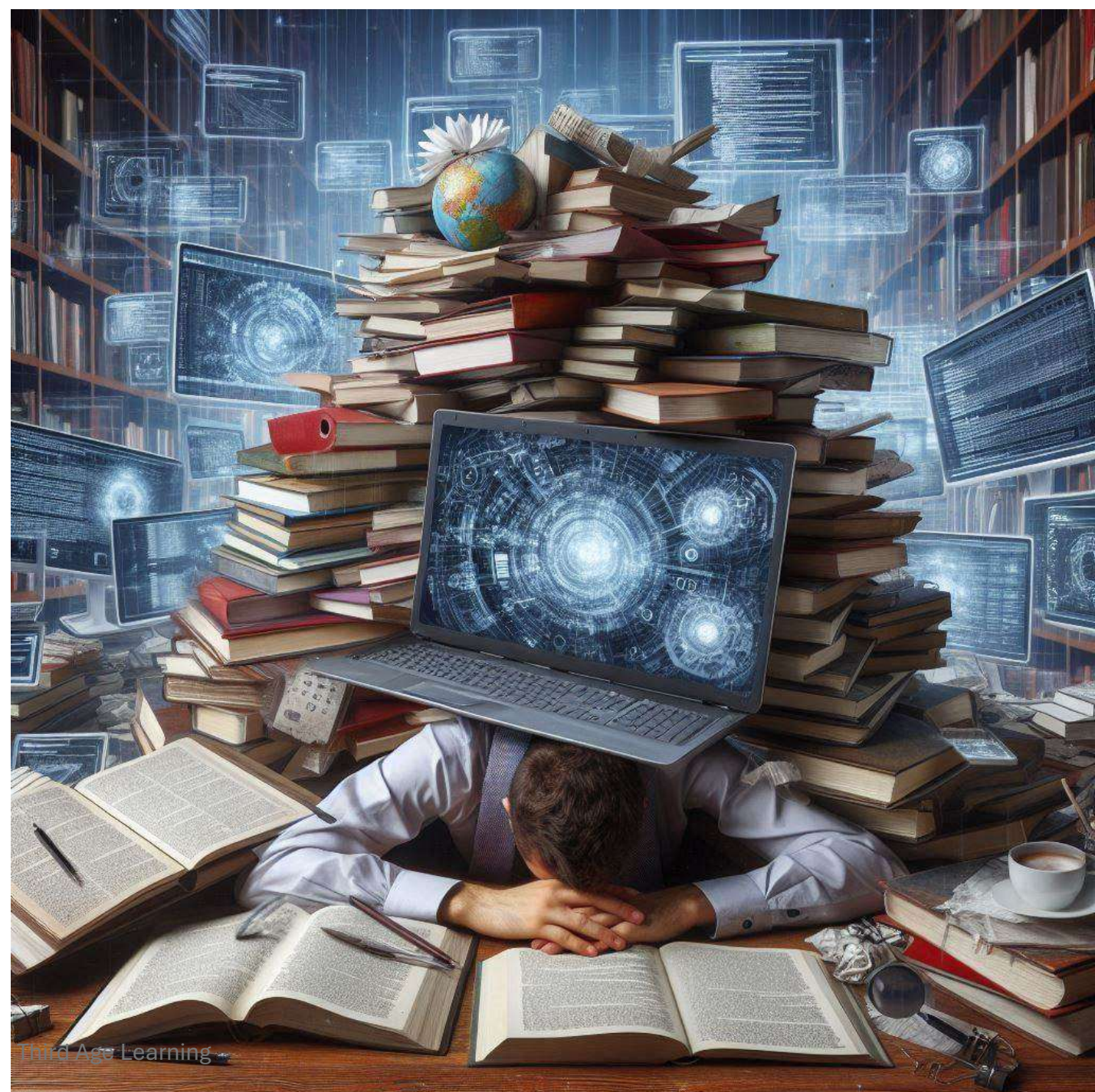
# Misinformation spreads differently online

- Traditional news outlets generally have safeguards
- The speed of online news, paired with peer to peer sharing means that generally it's policed *after*
- Algorithms promote echo chambers, that trick engagement based most commonly on heavy feelings – like outrage, or fear



We're taught not to ignore information, but we're not taught to critique it.

We cannot process the amount of information available now.



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# Information Overload

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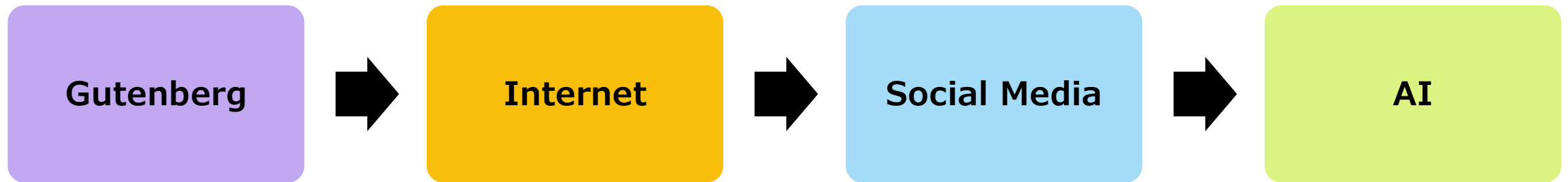
# Information overload

**Information overload** is the difficulty in understanding an issue and effectively making decisions when one has **too much information** (TMI)



[https://en.wikipedia.org/wiki/Information\\_overload](https://en.wikipedia.org/wiki/Information_overload)

# Information Overload





# The Science.

- Cognitive bias means we trust, who we know
- We're more likely to share information about risks
- This is evolutionary
- The problem, is modern technology amplifies this in dangerous ways
- We also can't process the amount of information, and mental shortcuts are dangerous





# The Science.

- The evidence tells us that algorithm manipulators exploit cognitive vulnerabilities
- 2020 election was an example of that
- On Facebook, people were seeing content their peer engaged with, even when they didn't like it.
- “Troll farms” were spreading provocative content, and people were deeply engaging



Basically: If everyone starts running, you should start running.

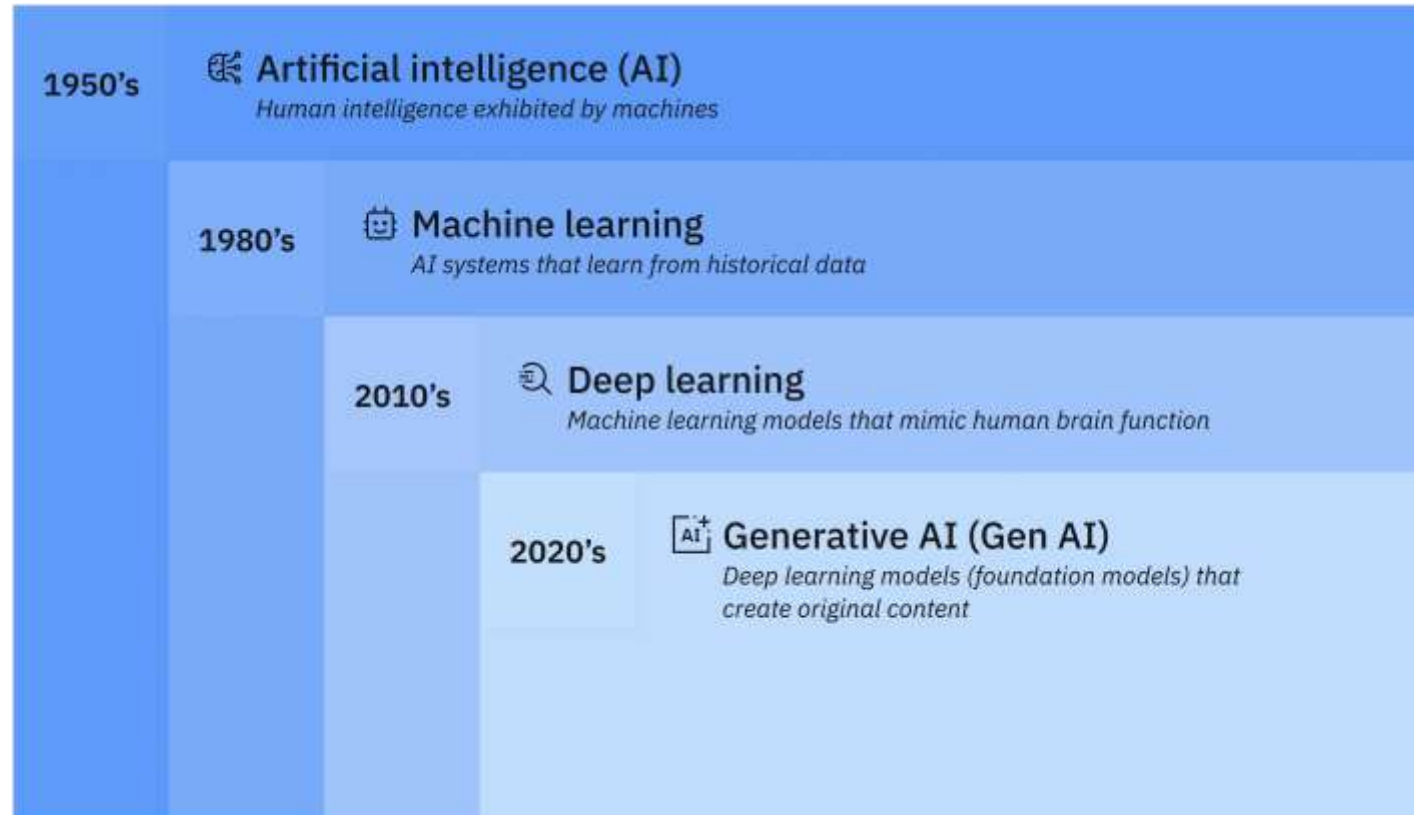
# Rise of AI



# What is Artificial Intelligence

- Artificial intelligence (AI) is a set of technologies that enable machines to perform tasks that typically require human reasoning, learning, and decision-making
  - AI Generated
- Artificial intelligence (AI) is technology that enables computers and machines to simulate human learning, comprehension, problem solving, decision making, creativity and autonomy.
  - IBM

# A Brief History



There's no one there.  
You are interacting with  
algorithms and data.



# What does AI know?

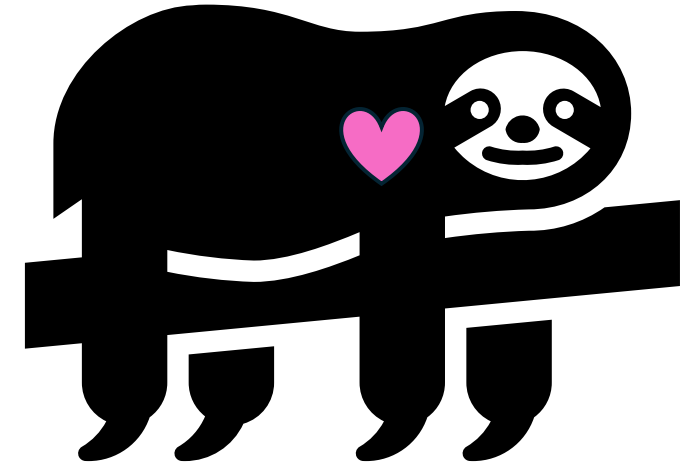
AI can be helpful, if it's  
been well trained


# What can we do?

- We can't fact check in the same way we used to
- We have to start having difficult conversations with each other
- We can be more aware about our cognitive biases, which lets us better guard against them
- Have empathy
- Verify online information look at tools like BotSlayer, Hoaxy, Fakey, Bad News, Disinformation Index, Factcheck.org

# Slow down.

Today information moves at a frantic pace. Misinformation hides in plain sight, and its vendors rely on your distraction.





Free communication is not free. By decreasing the cost of information, we have decreased its value and invited its adulteration.

# FURTHER READING

- *The Misinformation Age: How False Beliefs Spread* by Cailin O'Connor & James Owen Weatherall
- *The Death of Expertise: The Campaign against Established Knowledge and Why it Matters* by Tom Nichols
- *The Information: A History, A Theory, A Flood* by James Gleick
- *Calling Bullshit: The Art of Skepticism in a Data-Driven World* by Carl T. Bergstrom and Jevin D. West

**Thank you**