

How Psychology, Social Media, and Artificial Intelligence Shape the Information Ecosystem

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Outline

- The social psychology of information processing
- The influence of social media on our beliefs
- How artificial intelligence (AI) is shaping our information ecosystem

Defining Misinformation

- Misinformation: False or misleading information (intentional or unintentional)
 - Broad umbrella & academic term
- Disinformation – Intentionally false info to influence beliefs
- Propaganda – Agenda-driven disinformation campaigns

Challenges in Defining Truth

- Mixed truth/falsehoods make classification hard
 - Intent is often hidden or unverifiable
 - Ambiguous political language increases subjectivity
 - Rapidly evolving situations blur truth (e.g., new virus identified)
 - Transparency in labeling information is critical
-
- How does our psychology impact information processing?

What are Identities?

- Identity =

“a set of meanings that defines individuals in terms of the **roles** they occupy,
the **social categories** or groups they belong to,
and the **individual characteristics** that define them as unique persons” ¹



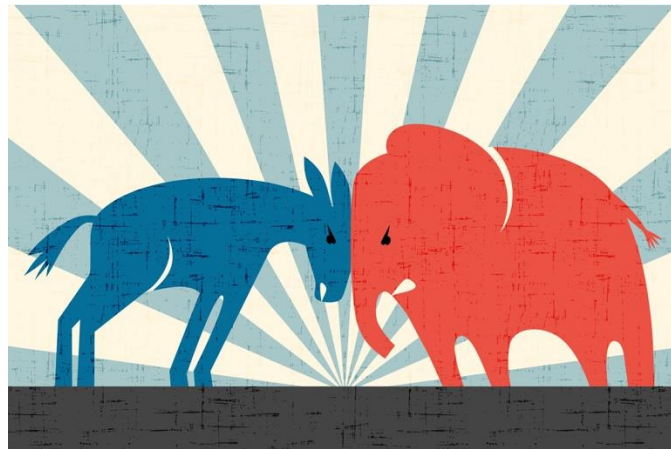
The Power of Identity

- Our identities influence our beliefs and behavior
 - Identity feedback loop¹
 - Motivation to support our important identities (identity verification = self-esteem boost)



The Power of Identity

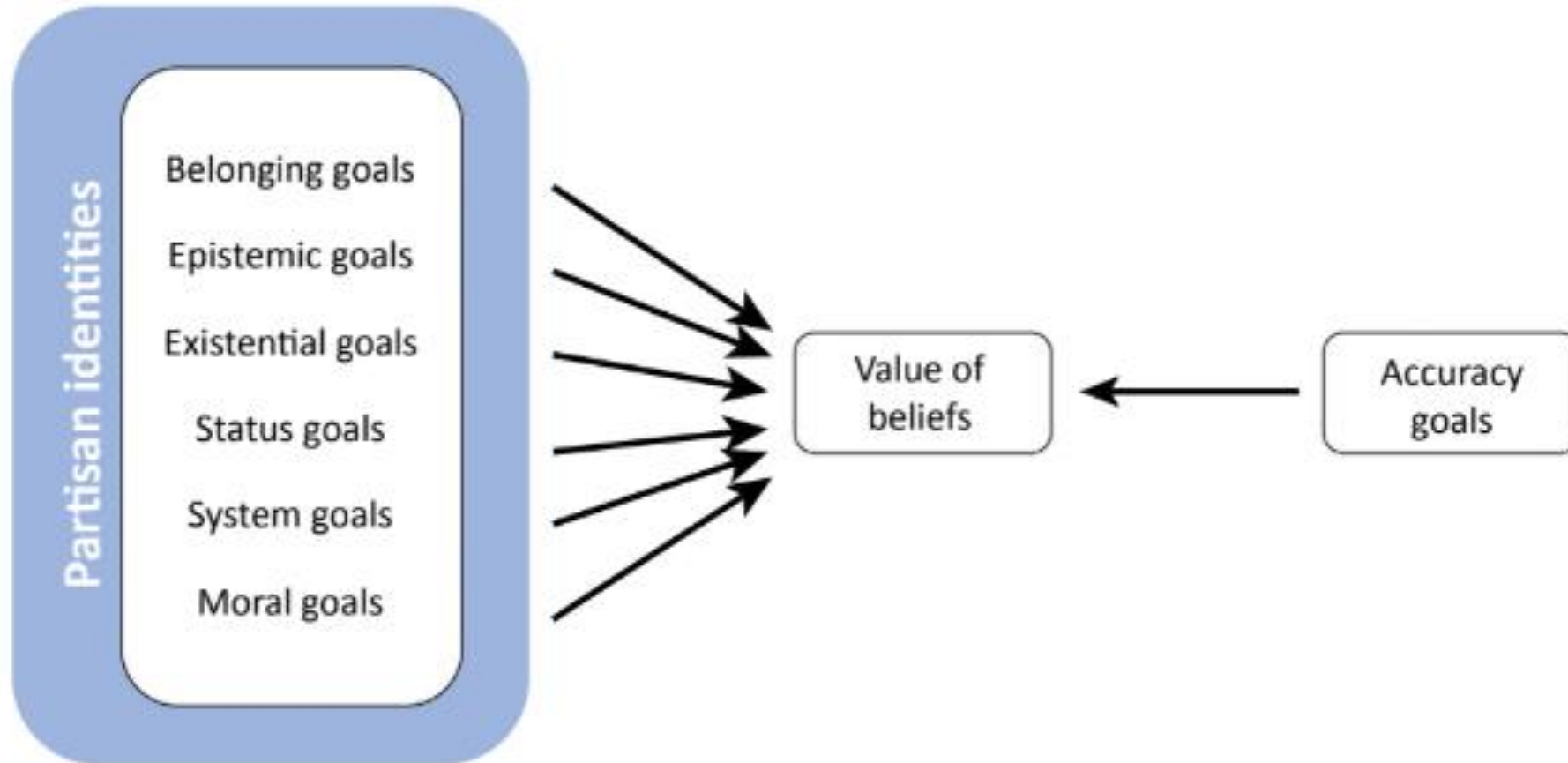
- Identities help us navigate our social worlds and provide us with meaning ¹
- We want to support our important identities ²



1) Burke and Stets 2009

2) Kahan et al 2017 ⁷

The Partisan Brain: An Identity-Based Model of Political Belief



Trends in Cognitive Sciences

Figure 1. Accuracy Goals Compete with Identity Goals To Determine the Value of Beliefs. Accuracy goals can promote accurate beliefs about the social and physical world unless the net value of alternative goals outweighs the value of the accuracy goal. Partisan identities can subserve numerous goals (including, belonging, epistemic, existential, status, **system justification**, and moral goals) which can distort belief when their net value outweighs accuracy goals.

Political Polarization and Misinformation

- Misinformation = false or misleading information
 - Biased processing of information from identities & emotions
- Political identities bias us to support our ingroup and attack outgroup
- Politics in the United States have a very clear ingroup & outgroup, but these processes apply identities more broadly



Polarization Due to Low Social Identity Complexity

- Having many important identities that independent from each other = greater social identity complexity
- Higher social identity complexity predicts higher openness and tolerance for different outgroups ¹
 - Intergroup contact can help create higher social identity complexity ²
- Greater overlap between identities (lower identity complexity)
 - = increased impact & bias from particular identities
- Identities become more important to us when they share meanings with other identities ³

1) Roccas and Brewer 2002

2) Miller et al 2009

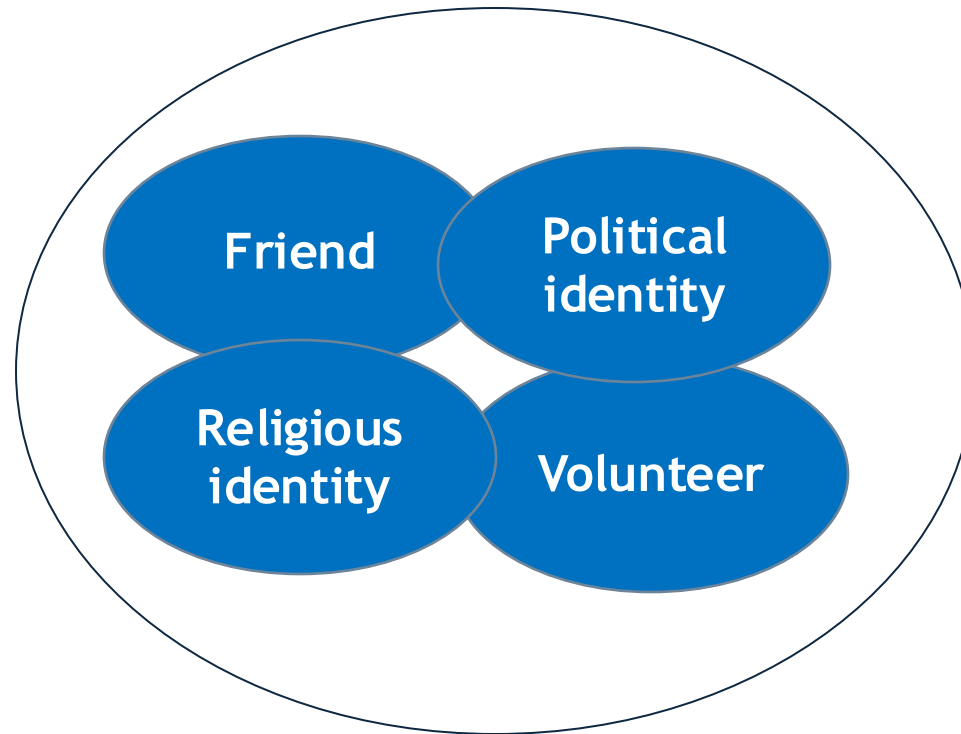
3) Burke 2023



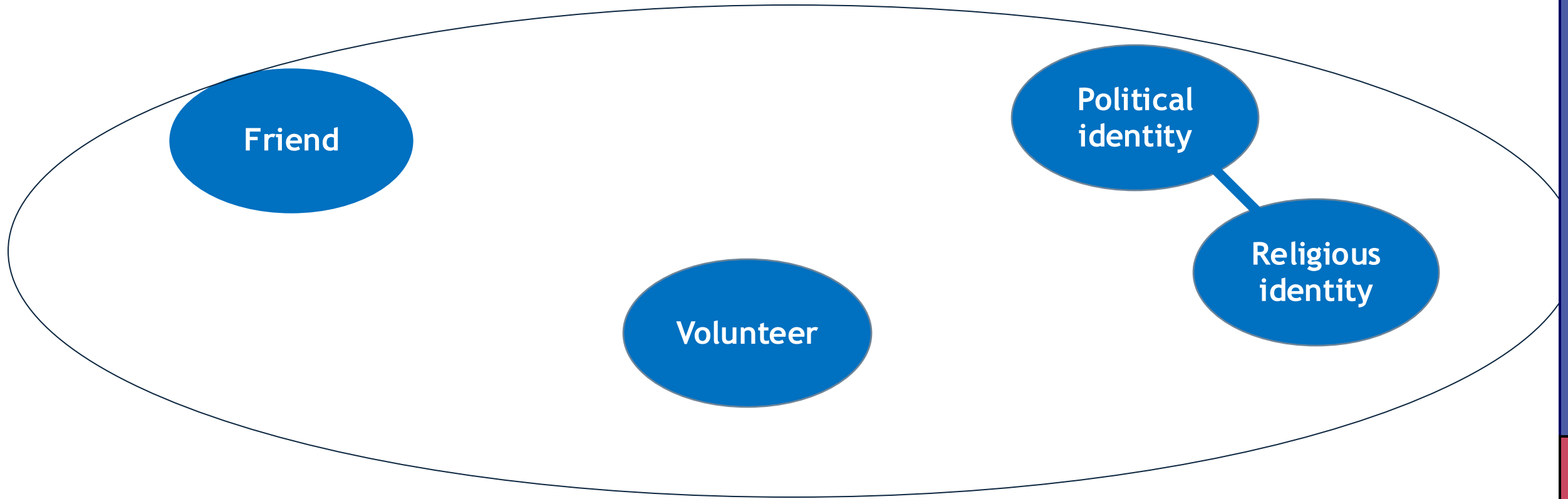
Social Identity Complexity and Political Identities

- American polarization is linked to low social identity complexity
 - Many American political identities are “mega identities” ¹
- Understanding how our identities overlap can reduce political polarization ²

Low Social Identity Complexity



High Social Identity Complexity



The Power of Identity and Political Misinformation

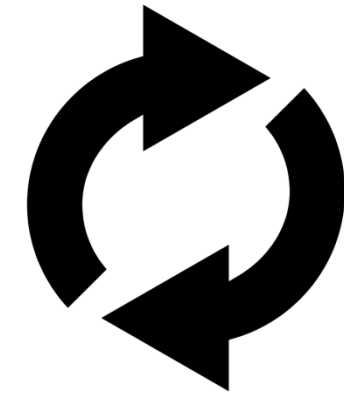
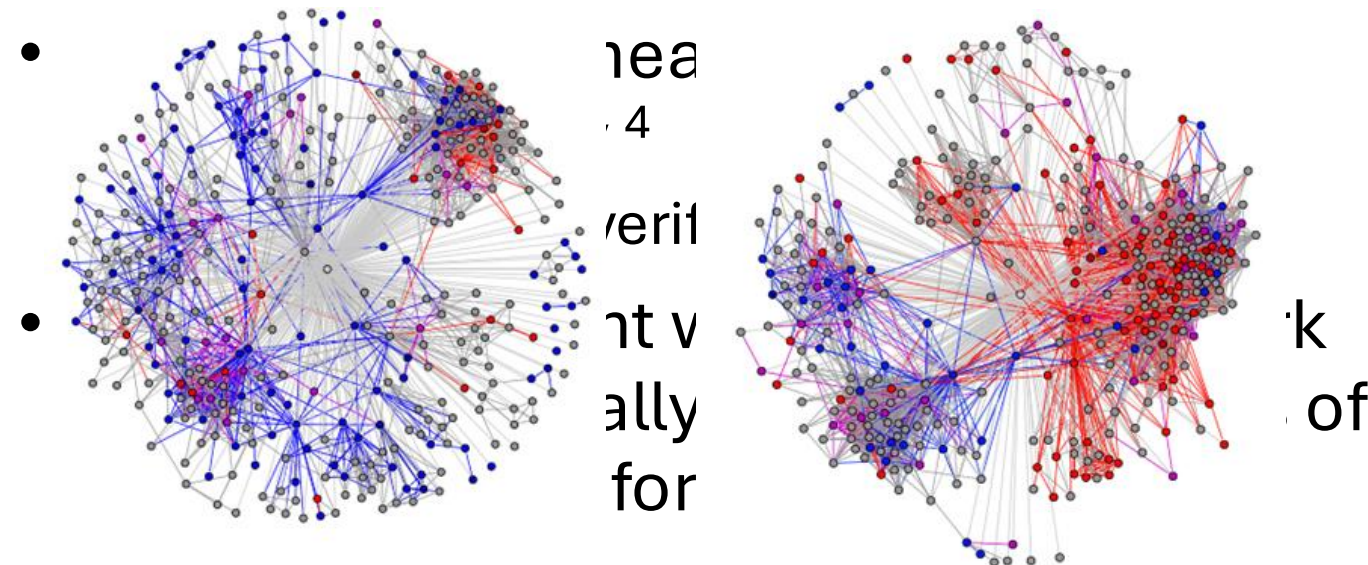
- Both Democrats and Republicans are motivated to process information in a way that affirms identity ¹
- Increased importance of one's political identity predicts even higher political bias in Democrats & Republicans when evaluating misinformation ²
- Identities also intersect with networks!

1) Ditto et al 2019

2) Facciani & Traberg 2024

The Intersection of Identities and Networks

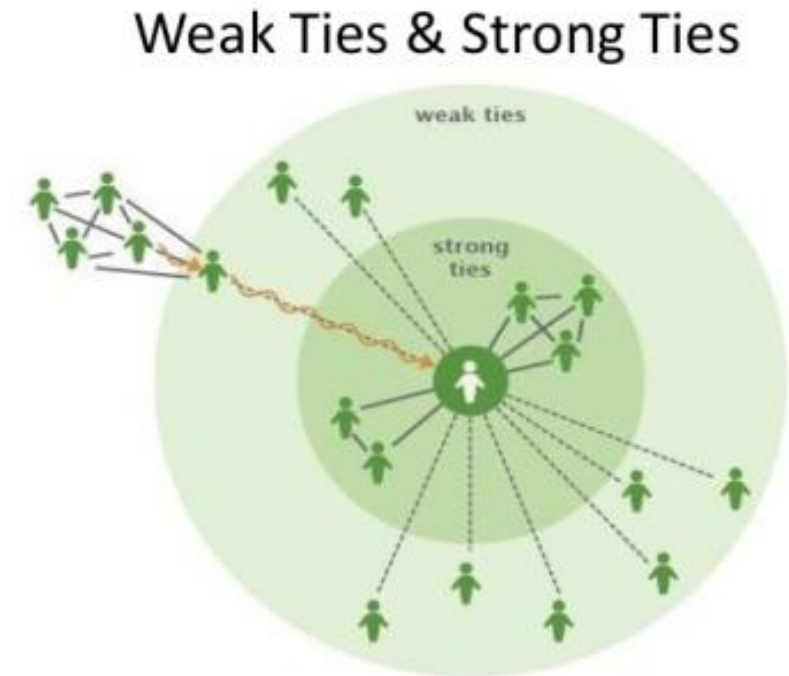
- We prefer homophily ¹
- Democrats and Republicans have politically homogenous social media networks ^{2 3}



- 1) McPherson, Smith-Lovin, and Cook 2001
- 2) Survey Center on American Life 2020
- 3) Bakshy, Adamic, Messing 2015
- 4) Stets et al 2021
- 5) Van Bavel et al 2020

The Type of Relationship Matters

- Shared agreement among one's personal network can bolster political beliefs ² and endorsement of conspiracy theories ³
- Superficial exposure with the outgroup (such as following a politician on Twitter) can increase polarization! ¹
- Closeness of social ties is particularly relevant for belief commitment and identity verification ⁴



- 1) Bail et al 2018
- 2) Facciani & Brashears 2019
- 3) Suthaharan & Corlett 2023
- 4) Smith and Emerson 1998

Disinformation and Identity Biases

- Disinformation can take advantage of our identity and network biases
- Disinformation can also sow confusion and undermine trust in information and institutions ¹
- Individuals lacking status and social support are especially vulnerable to extremism & propaganda ²

1) Kreps 2020
2) Bail 2022

Identities, Networks, and Misinformation

- Identities are powerful, but also create a vulnerability for believing misinformation (and disinformation)
- Networks composition predicts additional bias towards misinformation & polarization
 - Diversity within networks may help and there are techniques to improve dialogue between political groups (connecting via shared identity)
- The social elements of trust dictate why someone listens to one person or group over another (warmth and competence)

How Does Social Media and AI Impact our Information Landscape?

Social Media and Misinformation

- False information spreads more quickly than factual information ¹
- Social media does not necessarily create polarization or susceptibility to misinformation, but they can exacerbate it. ²
- Social media algorithm helps people find politically congruent content by “making it easier for people to do what they’re inclined to do.” ³

1) Vosoughi et al, 2018

2) Bail, 2022

3) Forture, 2023

Social Media Algorithms

- Algorithms adapt to what you interact with, so you spend more time online
 - The most engaged with (often sensationalist and misleading) content gets promoted in the algorithm ¹
- 97% of tweets about national politics came from just 10% of Twitter accounts. ²
- Those with moderate views are more likely to self-censor online, furthering this effect ³

1) Corsi, 2024

2) Pew Research, 2019

3) Bail, 2022

The Impact of Bots and Trolls

- Up to 20% of social media could be bots (fake accounts) ¹
- Trolls (humans or bots) can make social media experience feel more hostile, and spread toxicity ²
 - Toxicity on social media is positively linked to higher engagement ³
- Online trolls typically have dark triad personalities (especially sadism & psychopathy) ⁴
 - “don’t feed the trolls” is a component of critical ignoring

1) Ng & Carley, 2025

2) Shankaran & Sharma, 2024

3) Beknazar-Yuzbashev et al, 2025

4) Volkmer et al, 2023

AI and The Information Landscape

LLMs and Misinformation

- Large language models (LLMs) are trained on tons of data that can understand and create language (and other content) to do many different tasks.
 - AI chatbots (i.e. ChatGPT) are applications built on LLMs
 - AI chatbots can provide false answers when trained on poor/incomplete data (even small amounts). ¹
 - The amount of false information shared by AI chatbots has nearly doubled in just one year. ²
- IBM suggests that smaller, specialized generative models are a better fit—and tend to hallucinate less—than huge, general-purpose LLMs. ³

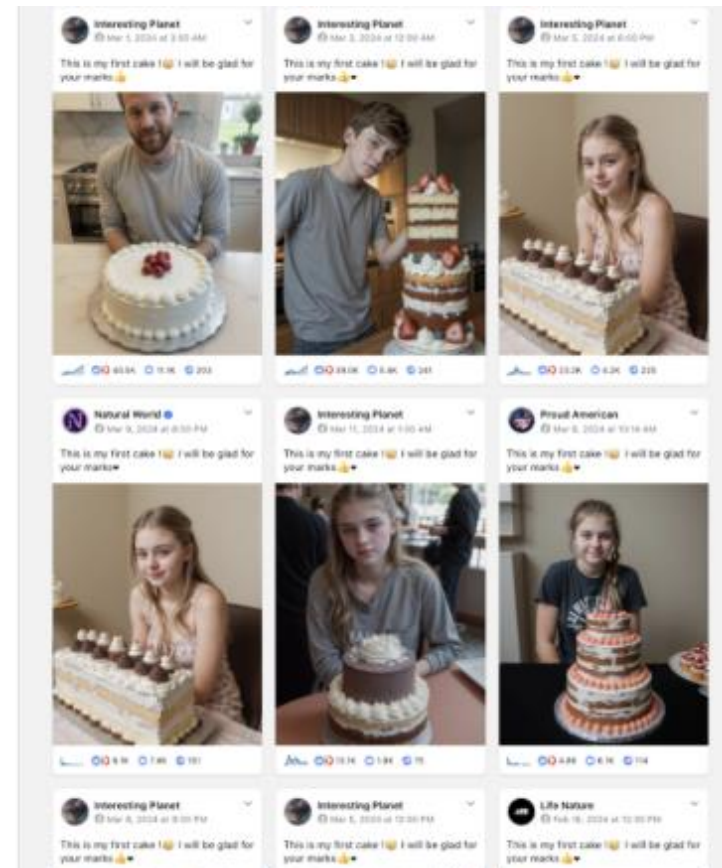
1) Alber et al, 2025

2) Newsguard, 2025

2) IBM, 2025

AI and Fake Images and Videos

- Fake images/videos used to be much easier to spot than today
 - And much more difficult to make!



The Economic Incentives of AI Spam

- AI imagery is widely used by commercial actors to increase visibility and drive clicks or engagement.
- Algorithm design matters: engagement-driven systems can unintentionally elevate synthetic content
- Rapid Facebook page takeover and repurposing suggest vulnerabilities that can be exploited for malicious reach. ¹

AI Makes Fakes Faster

- Fake headlines & social media posts can drastically affect the stock market



World ▾

Business ▾

Markets ▾

Sustainability ▾

Legal ▾

Commentary ▾

Technology ▾

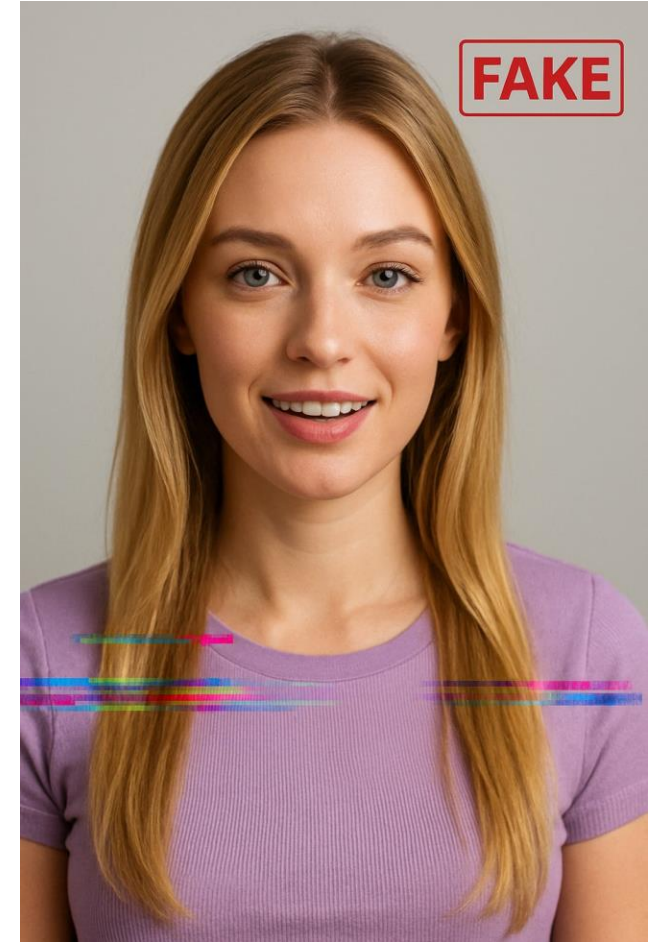
Investigations

More ▾

AI-generated content raises risks of more bank runs, UK study shows

Political Disinformation and AI

- In 2022, Facebook estimated two-thirds of online influence campaigns used AI-generated profile pictures.¹
 - AI can bolster propaganda campaigns²
- Research shows AI-generated political messages can be as persuasive as human-written ones³
 - both have small effects individually, but are meaningful at scale



1) Facebook, 2022

2) Wack et al, 2025

2) Bai et al, 2025

Wolf News



A deepfake video shared on Twitter, appearing to show Russian President Vladimir Putin declaring peace, has resurfaced.



AI-Generated Weather Misinformation

#WATCH : Hurricane Milton has flooded Disney World in Orlando
#flwx #hurricane #Milton #HurricaneWarning #HurricaneAlert
#HurricaneMilton #DisneyWorld



1) Guardian, 2024



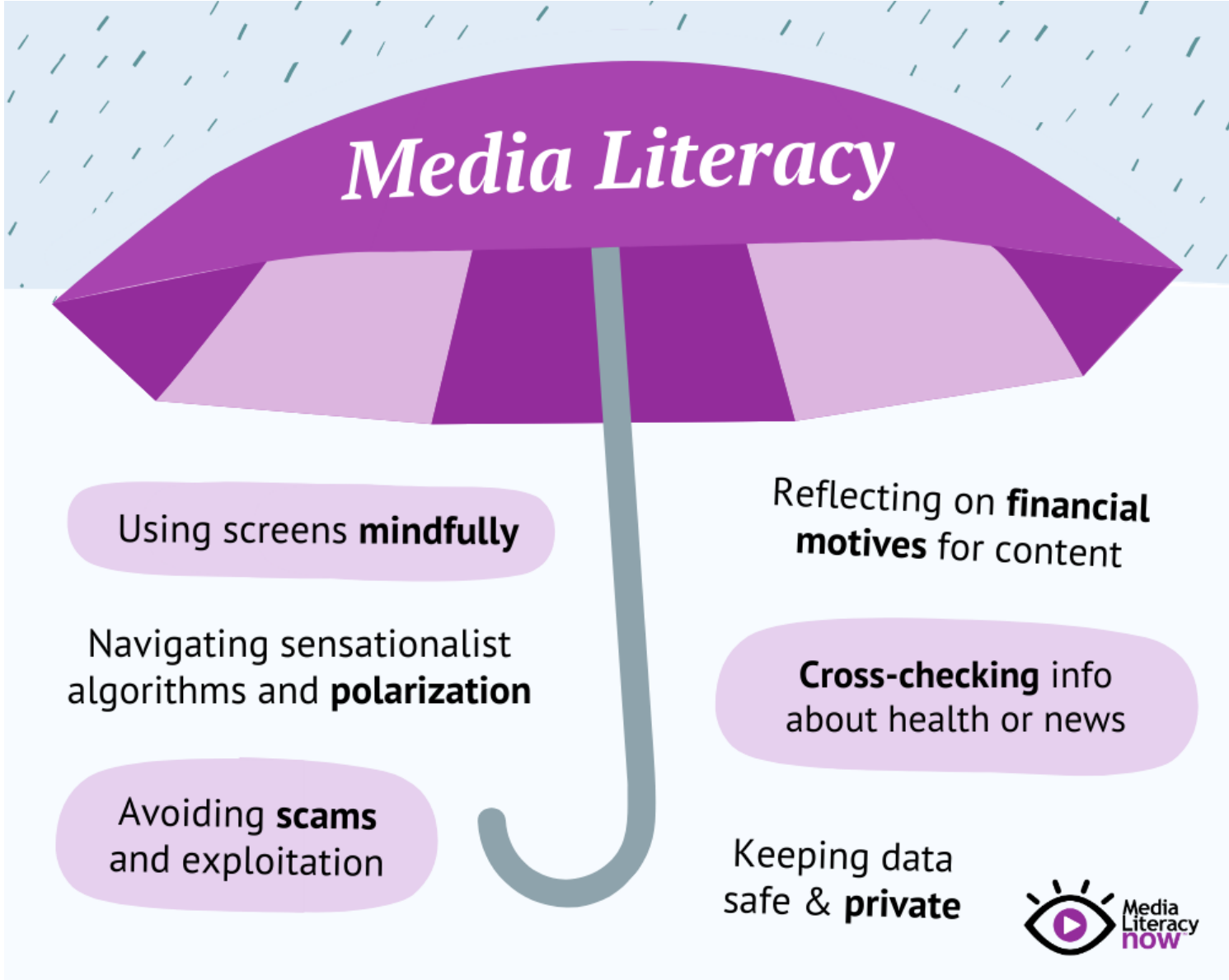
AI-Generated



What can help?

- Education
- AI tools

Media Literacy



Using screens **mindfully**

Navigating sensationalist algorithms and **polarization**

Avoiding **scams** and exploitation

Reflecting on **financial motives** for content

Cross-checking info about health or news

Keeping data safe & **private**



The Impact of Media literacy

- The ability to critically evaluate media and information:
 - verify the credibility of a source, identify manipulation techniques, reflect on our own biases ¹
- Higher media literacy levels predict greater ability to discern true vs false headlines ²
- About $\frac{3}{4}$ people believed they were better at detecting fake news than their accuracy scores indicated ³
- People generally do not have strong research skills ⁴

1) Vinhas & Bastos 2021

2) Austin et al. 2021

3) Lyons et al 2021 ³⁵

4) Chinn & Hasel, 2023

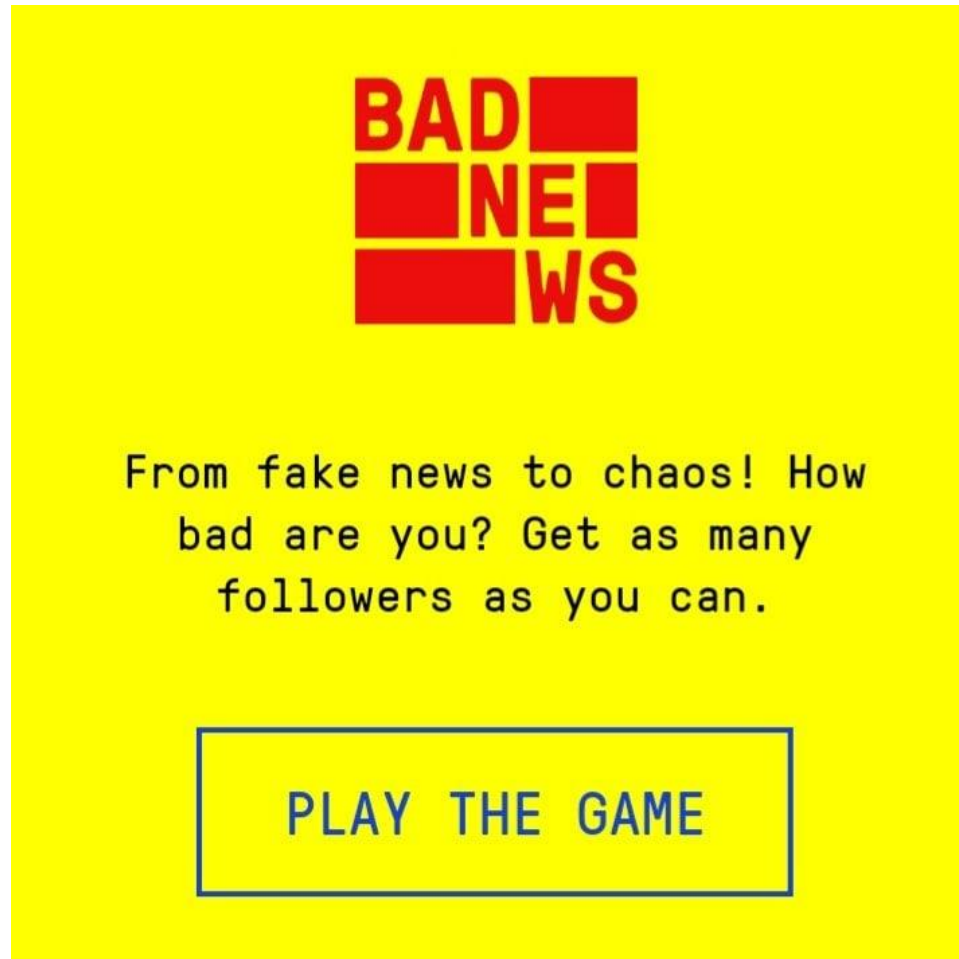
Improving Media Literacy

- Teaching people media literacy skills in the classroom can improve their ability to detect false headlines ¹
 - But this is resource intensive
- Researchers have developed online “prebunking” games that are scalable and successful at helping people identify misinformation techniques online ²

1) Duran et al 2008

2) Rozenbeek & Van der Linden 2020

Prebunking Games





Literata

GALI FAKTA

5 minutes game! Can you save
your family from the danger of
hoaxes and misinformation?

[Play now](#)

[Privacy](#) | [Terms & Conditions](#)

Digital Literacy

Control:
Example Image



Treatment 1:
Feedback

Participants in
Control Group



Participants in
Treatment 1 Group

Splicing Image Manipulation

Splicing represents a more complex form of image manipulation where a portion of one image is superimposed onto another. These forgeries often involve transformations, such as resizing or skewing, to make the inserted segment blend seamlessly with the new background.

Original Image



Image Forgery



Treatment 2:
Feedback + Education

APRIL 2, 2025

SHARE     

DOWNLOAD PDF

PEER REVIEWED

Feedback and education improve human detection of image manipulation on social media

This study investigates the impact of educational interventions and feedback on users' ability to detect manipulated images on social media, addressing a gap in research that has primarily focused on algorithmic approaches. Through a pre-registered randomized and controlled experiment, we found that feedback and educational content significantly improved participants' ability to detect manipulated images on social media. However, the educational content did not result in a significantly greater improvement compared to feedback alone. These findings underscore feedback as a powerful tool for enhancing digital literacy, with practical implications for combating misinformation.

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Spot The Troll Quiz

- Playing the “spot the troll quiz” significantly improved participants’ ability to detect inauthentic social media accounts
 - It also significantly reduced retweeting ¹
-



The quiz where YOU examine images of *real social media content* and decide whether they're from a legitimate account or an internet troll.

1) Lees et al, 2023



Harmony Anderson

@HarmonyAnders

The college girl who managed to stay conservative [#prolife](#) [#pro2A](#) [#AmericaFirst](#)
This is my 2nd account where I share my political and social views

Ankeny, Iowa

Joined September 2019

3162 Following **4216** Followers

Correct.



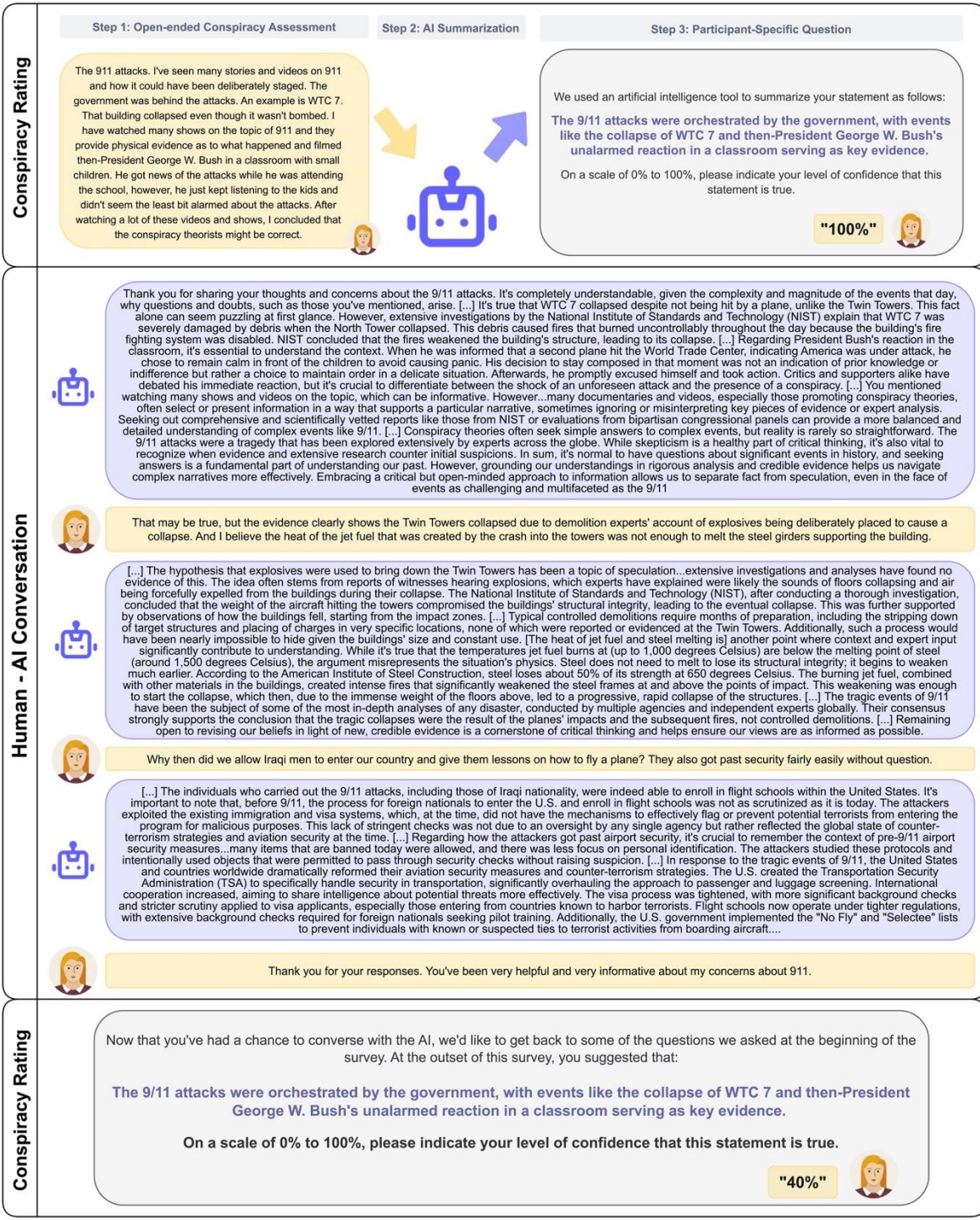
Harmony is a troll we attributed to the Russian Internet Research Agency in March 2020. We then worked with Twitter to have her account suspended. Like many other trolls, Harmony poses as a young woman who has very strong political opinions and sets herself up in direct opposition to an extreme version of people on the other side of the political divide. Harmony's goal is to make us more entrenched and disgusted with one another and make meaningful compromise more difficult. Read our [full analysis](#) to get a more in-depth look at this profile before you continue.

The Power of AI Tools

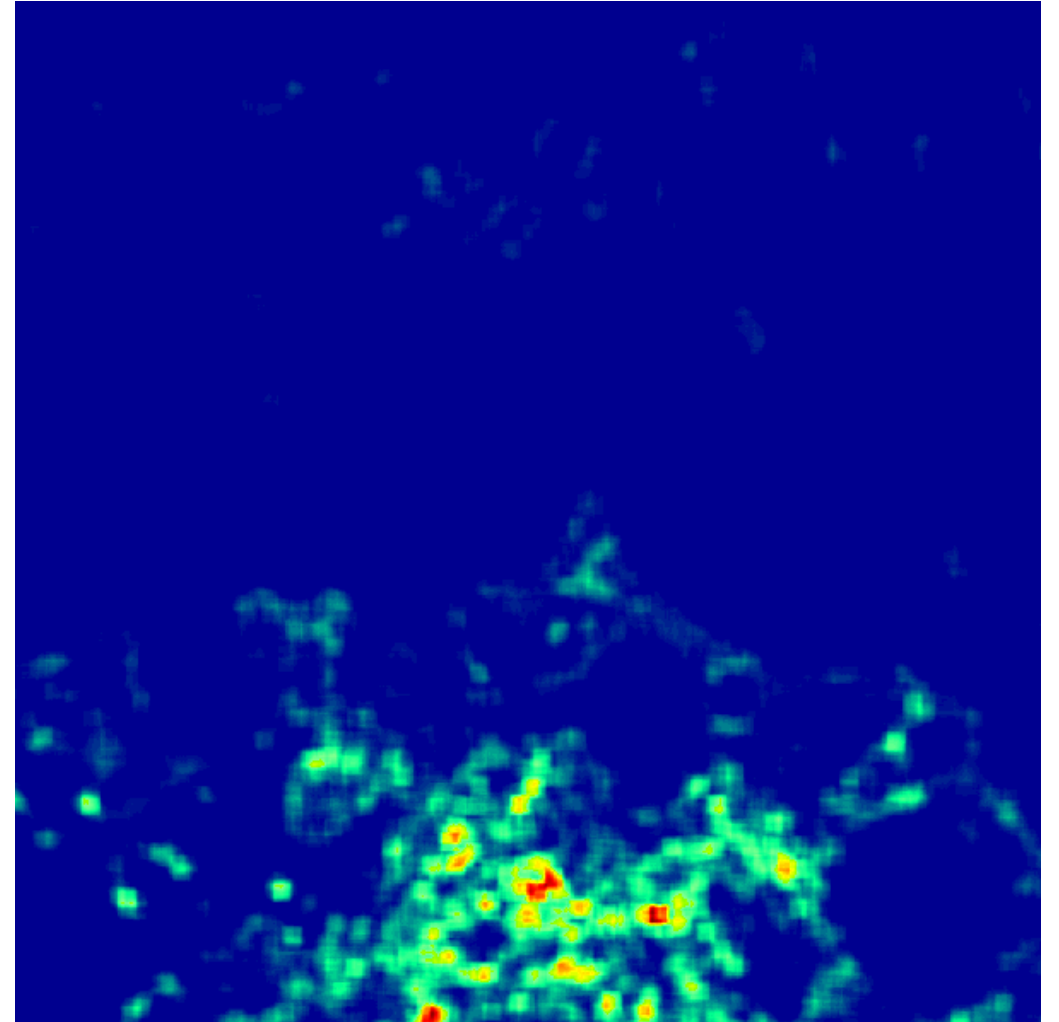
AI Chatbots Help Debunk Conspiracy Theories

- After engaging with an AI chatbot, participants decreased belief in their chosen conspiracy theory by 20% ¹

1) Costello, Pennycook & Rand 2024

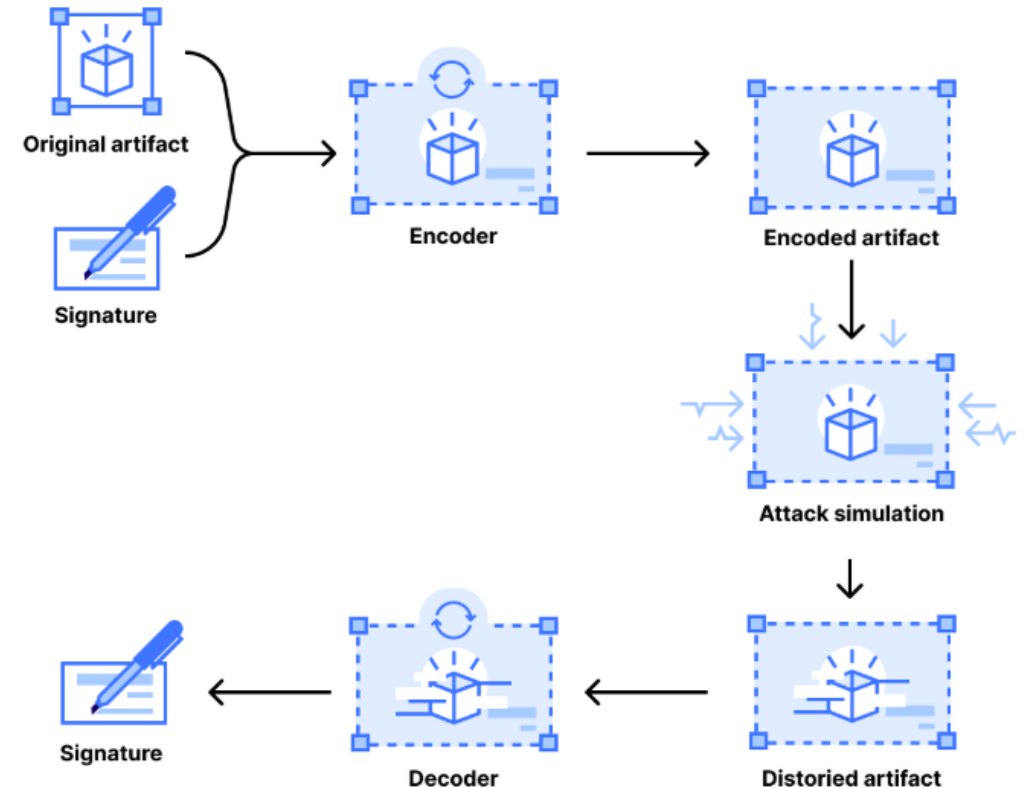


Detect & Identify Manipulated Images



Strategies to Reduce AI Information Pollution

- Cryptographic watermarks could help authenticate sources of images/videos. ¹
- Platforms can also demonetize AI spam



1) Brooks-Mejia & Patton 2025

AI Can Help Fact-Checking

- Identify falsehoods spreading in real time
- Quickly translate & share fact-checks to reach more people ¹
- Having humans involved in this process is critical ²

1) Kahn, 2024

2) Agunlejika, 2025

Conclusion

- Algorithms, bots, trolls, and social media can shape what information we see and how we think
- Artificial intelligence adds another layer of risk by generating and amplifying false or misleading content
- Education and AI tools can push back

Thank you!

- Questions?
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