

Data Ethics + Communicating [in the Age of AI] ISEA Session 14

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Overview

1. **Data ethics [in the age of AI]**
2. **Communicating results**
[as part of a reproducible workflow]

**In other words, today is more about
implications than *implementation***



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Data ethics [in the age of AI]

Potential + peril

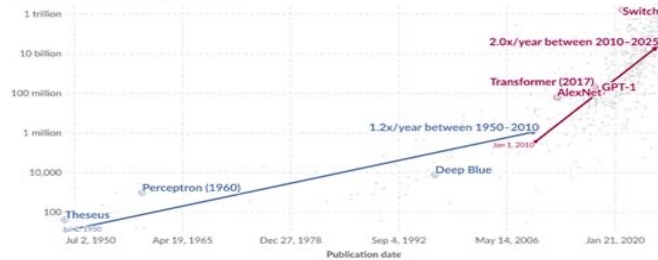
> Massively accelerated rate of:

- Data generation
- How data are analyzed & interpreted

Exponential growth of parameters in notable AI systems

Parameters are variables in an AI system whose values are adjusted during training to establish how input data gets transformed into the desired output; for example, the connection weights in an artificial neural network.

Number of parameters (plotted on a logarithmic axis)

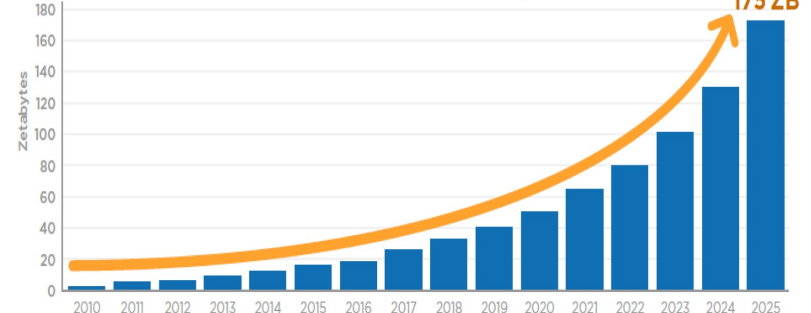


Data source: Epoch AI (2025)

Note: Estimates are based on AI literature with uncertainty up to a factor of 10. The regression lines show a sharp rise in parameters since 2010, driven by the success of deep learning methods that leverage neural networks and massive datasets.

OurWorldinData.org/artificial-intelligence | CC BY

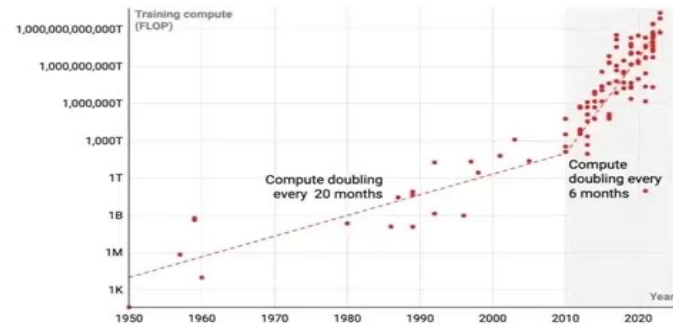
Annual Size of the Global Datasphere



Source: Data Age 2025, sponsored by Seagate with data from IDC Global DataSphere, Nov 2018

The amount of compute used to train AI systems has been increasing since 1950, the rate of increase increased in 2010

Amount of compute used to train notable AI models



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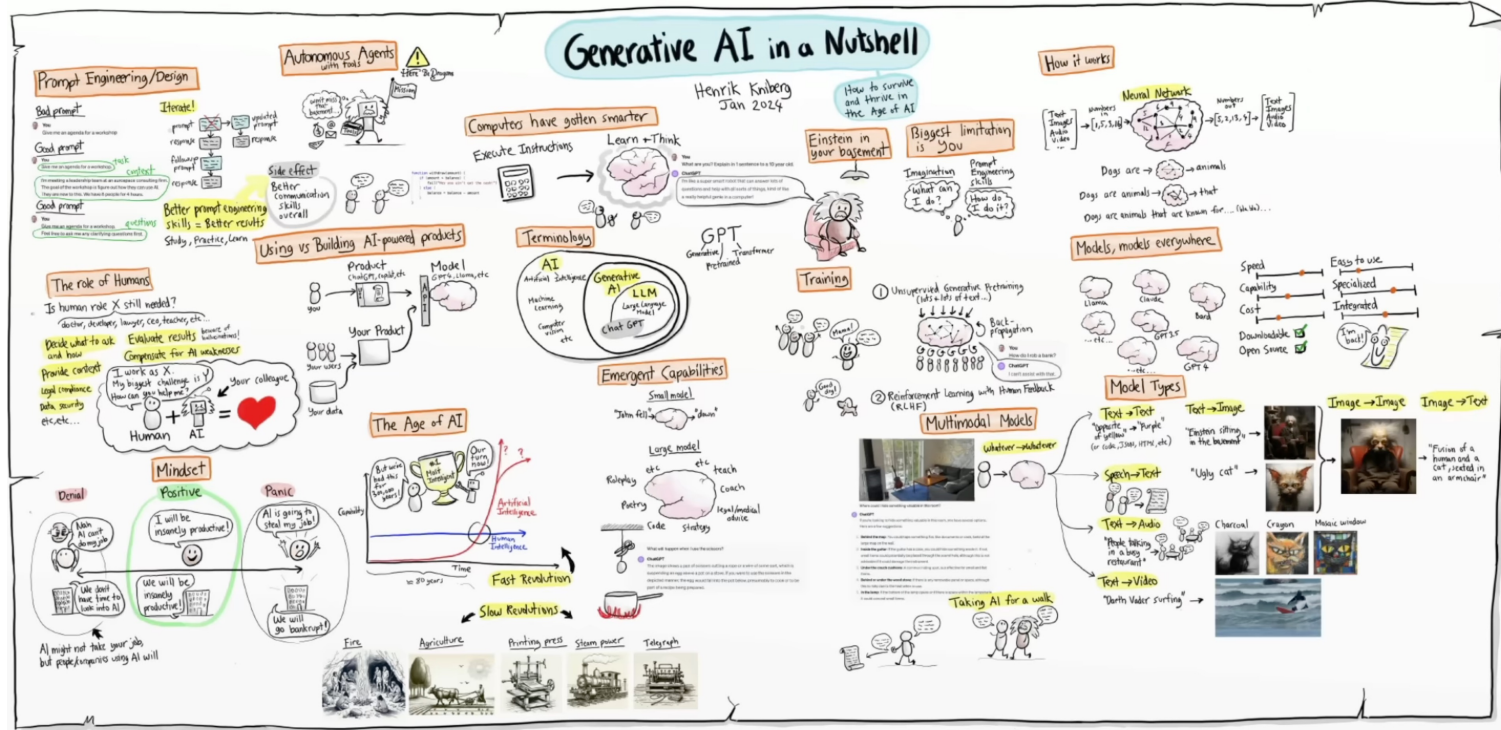
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Artificial intelligence (AI)

- > The use of technology to mimic human cognitive capabilities (Stahl & Wright, 2018)
- > A computer system that can learn, make decisions, and perform tasks [traditionally] needing human intelligence (Washington Office of Superintendent of Public Instruction, 2024)



<https://www.youtube.com/watch?v=2IK3DFHRFfw>

AI is ubiquitous

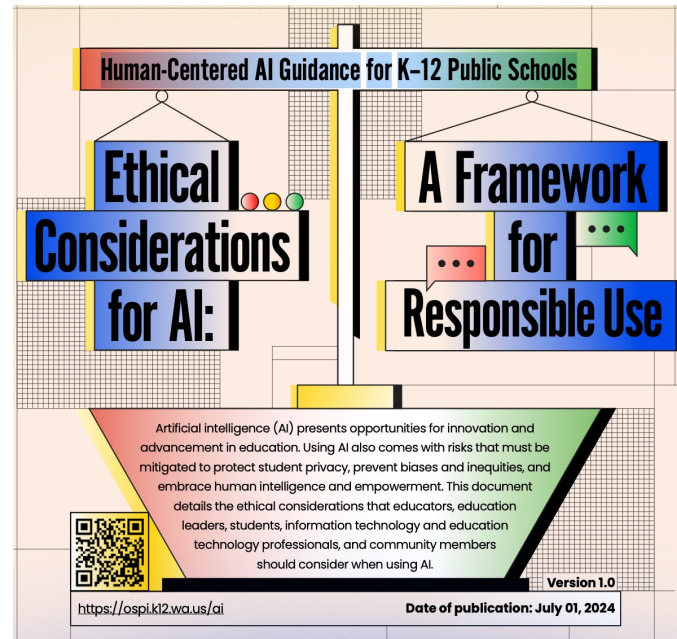
- > Shopping recommendations
- > Internet search results
- > Social media feeds
- > Other examples?
- > Facilitates collection of more, and highly granular, information
- > Schools [and systems they use] have tons of info about students

AI ethics

- > **Long history of technology ethics** (Stahl & Wright, 2018)
- > **Impact of AI systems on society and how to ensure those systems are developed and used responsibly**
- > **Relevant not just to developers, but everyone who interacts with these systems**

Human-centered AI guidance

- > Washington Office of Superintendent of Public Instruction offers pragmatic guidelines for educators, students, families, etc.
- > <https://ospi.k12.wa.us/sites/default/files/2024-07/ethical-considerations-accessible-format.pdf>



AI ethics



Focused on qualities inherent to AI



Biases in training data can perpetuate + amplify societal inequalities



Emphasizes transparency, fairness, bias, + environmental sustainability

Ethical use of AI



Focused on how AI is used



AI as an amplifier of human potential



Empower educators + students to augment learning, creativity, problem-solving



Informed + conscientious choices to elevate students' educational experience



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AI norms

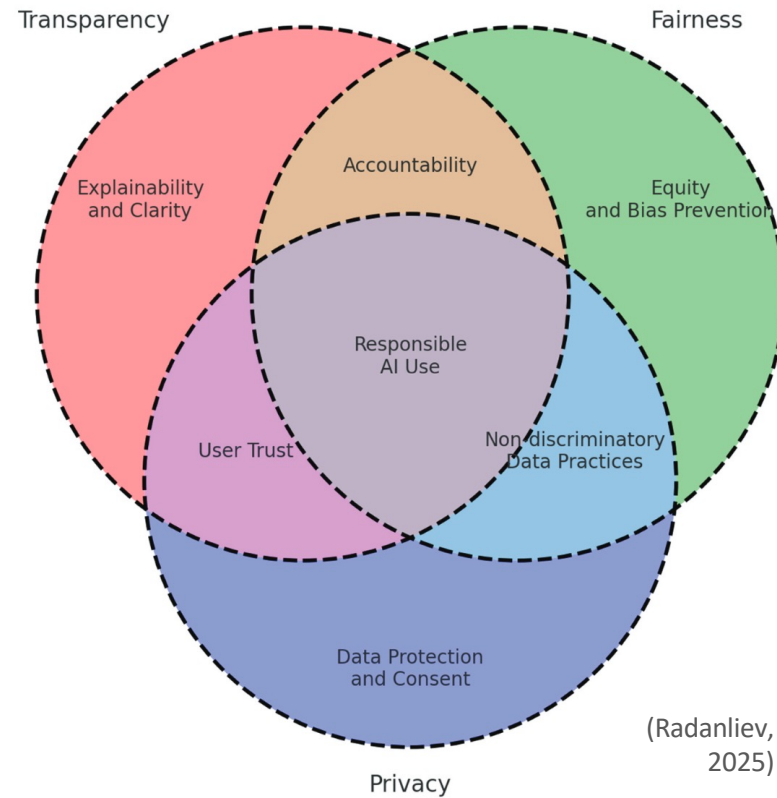
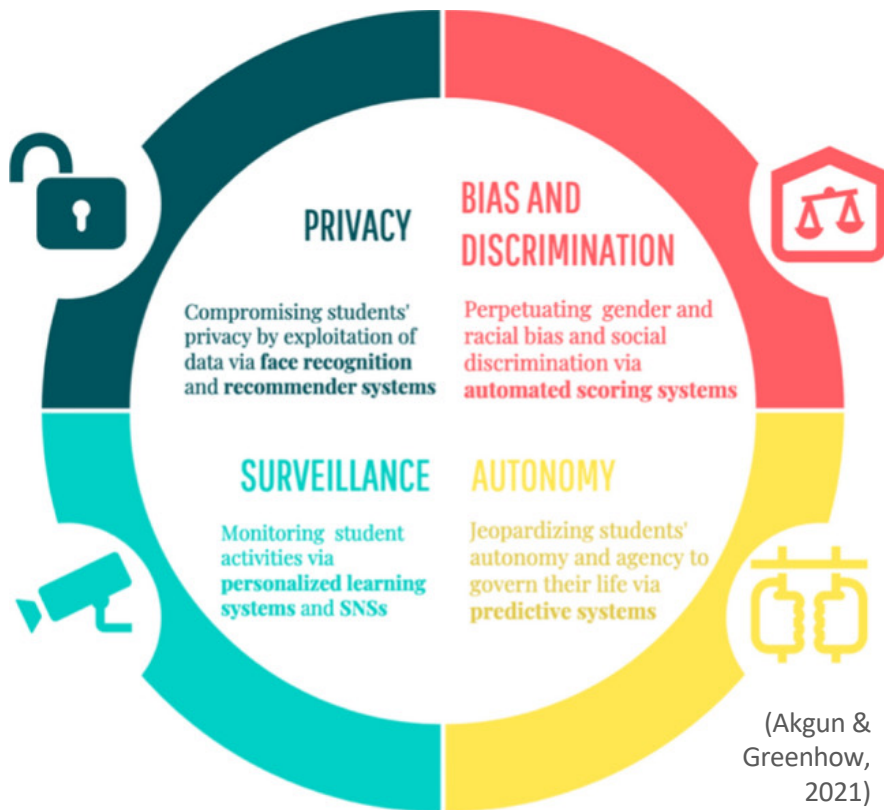
> Ethics is inherently subjective

- Include diverse perspectives
- Respect the opinions of others
- Consider the positives and negatives
- Present data and sources as support
- Focus on common goals and solutions
- Expect and accept non-resolution

(Washington Office of Superintendent of Public Instruction, 2024)

Privacy

- > Ethics discussions in US have historically focused on privacy with respect to data protection (Regan, 1995) & avoiding *inappropriate* access
 - Limit information collected to what is required for purpose
 - Addressed by fair information practice principles: notice, consent, choice, and transparency
- > Focusing only on privacy is insufficient



Fairness [equity / bias]

- > **Technology can**
 - Perpetuate prejudices and accentuate social inequities in subtle ways
 - Create new forms of inequality
 - Introduce potential for bias from:
 - > Those who design the systems
 - > The algorithms themselves
- > **Algorithmic complexity can make identifying bias and discrimination difficult**

***Average* person in four US states**



Bias vs. personalization

- > Is personalization “*appropriate*” bias?
- > Intended vs. unintended?
- > Could too much personalization deprive exposure to important information, and ultimately lead to inequitable outcomes?

Autonomy

- > Algorithms jeopardize autonomy by steering people to make specific decisions
- > Educational systems may influence what instruction students receive without offering them a choice

Surveillance

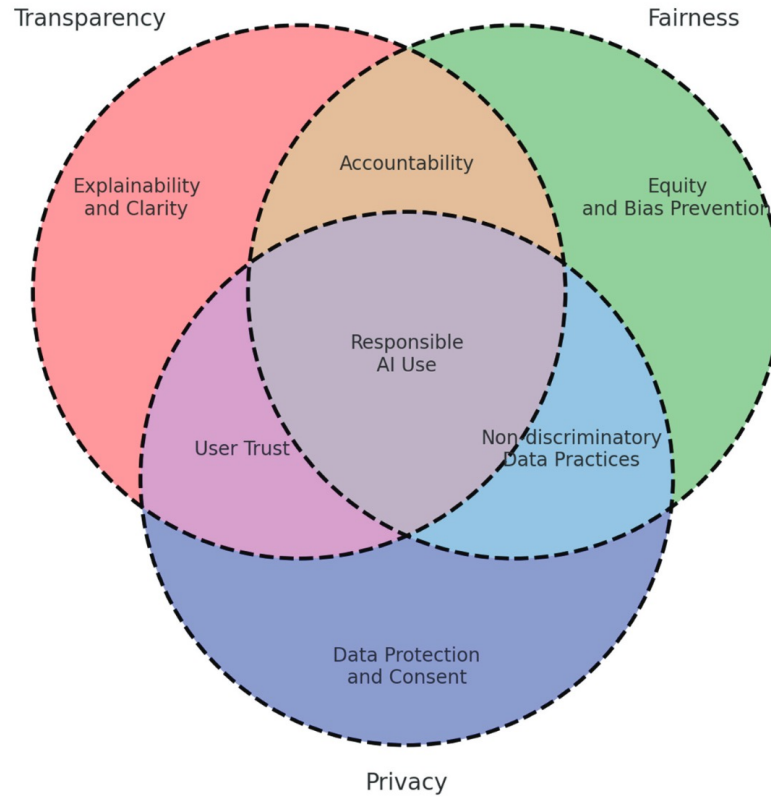
- > **Monitoring & analyzing activity**
 - Time on page
 - Keystrokes or response patterns
 - Location, time of day, other students doing same task
 - Cross-matched with other data (e.g., how much a student moves, or time spent on social networking)
 - Predictive analytics to determine patterns, strengths and weaknesses, and advice about how to personalize

Transparency

- > Open, intentional, & proactive in communicating challenges and issues of ethics of practice
- > Most technology systems do this poorly [if they do it at all]

Discussion

- > **Join the breakout room most relevant to you**
 - 1) privacy; 2) fairness; 3) transparency
- > **Discuss implications of that topic in your work**
 - What can we, as educators with data science training, do to bring awareness to or help mitigate the issue?
 - How can we help develop a culture of responsibility among stakeholders for the data and AI processes and outcomes developed and implemented in schools?



(Radanliev, 2025)

Research on ethical use of AI

- > Efforts to ensure that both AI processes and outcomes are acceptable, desirable, and sustainable
- > Built on principles of technology ethics, technology assessment, science and technology studies, and philosophy of technology (Stahl & Wright, 2018)

Implications of AI use [1/2]

Commonly Used AI Phrases: Transition Words to Cut First

These are the words AI uses to link ideas because they are the most common connectors in academic and professional writing. When they appear back-to-back in paragraph after paragraph, they create the mechanical rhythm that identifies AI text.

AI phrase	Human alternative
Moreover	Also, and, on top of that
Furthermore	What's more, beyond that, plus
Consequently	So, which means, as a result
In addition	And, also, there's also
Therefore	So, that's why, this means
Subsequently	After that, then, next
Nevertheless	Still, even so, that said
It is worth noting that	Note that, worth knowing
As previously mentioned	As we covered, earlier
It is important to note that	Just say the point directly

To fix this is not to avoid all transitions, but to use ones that are specific to what you actually said. For instance, "that's why" connects better than "therefore" because it shows you understand the relationship between your ideas.

Overused AI buzzwords

These words appear in AI writing because they are common in the training data — business reports, marketing copy, academic papers. They signal credibility without saying anything concrete.

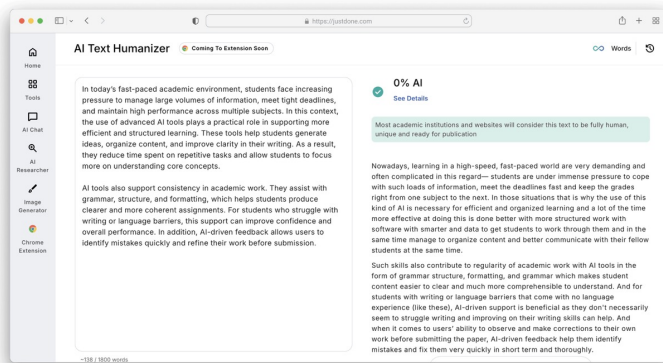
AI word	Why it fails	Use instead
Leverage	Vague action verb	Use, apply, build on
Utilize	Fancier version of "use"	Use
Facilitate	Removes the actual action	Help, allow, support
Implement	Can almost always be simplified	Start, roll out, put in place
Optimize	Means nothing without context	Improve, speed up, cut down on
Streamline	Generic process word	Simplify, speed up
Harness	Sounds like a commercial	Use, tap into, apply
Robust	Overused quality claim	Strong, reliable, solid
Seamlessly	Too smooth to be real	Works well, fits easily
Scalable	Vague growth claim	Grows with you, easy to expand

When a student writes "leveraging AI tools to facilitate better outcomes," they could just write "using AI to get better results." The second version is shorter, clearer, and sounds like a person wrote it.

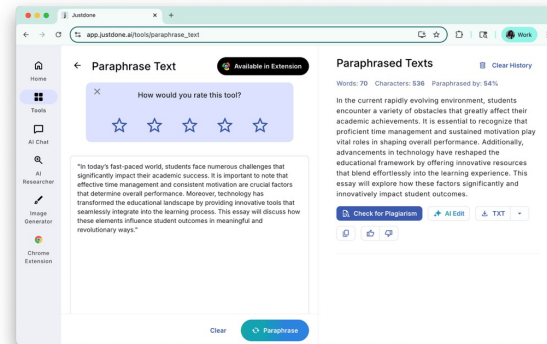
Implications of AI use [2/2]

Manual rewriting takes time, since you need to totally rebuild your structure and write additional details. However, you can [humanize AI](#) text with JustDone's AI Humanizer. This tool is built to catch exactly AI words, phrases, and patterns. When you paste in a high-AI-confidence draft, it restructures at the sentence level — not just swapping words but changing rhythm and reducing the pattern density that detectors flag.

Here's what it can do in Auto mode for the same text:

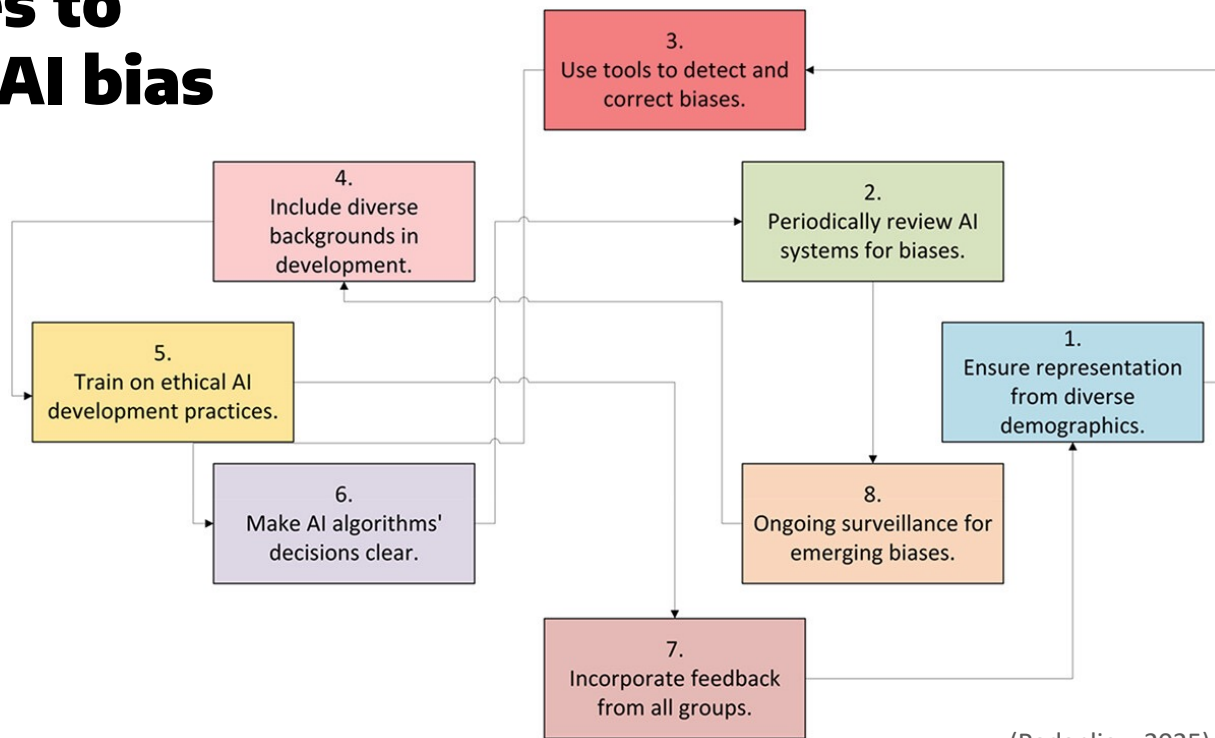


You can also use the [AI paraphraser](#). This tool does a different job: it gives you alternative phrasings for sentences where the structure itself is the problem, not the individual words. See it on the next screen.



Used together in the detect-humanize-recheck workflow, AI humanizer and AI paraphraser remove most of what lands writing in the AI-flagged category. These tools don't replace your voice. They help you find it.

Strategies to mitigate AI bias



(Radanliev, 2025)

AI norms [revisited]

- > Encourage inclusivity
- > Training and transparency are essential
- > Focus on common goals and solutions
- > Prioritize iterative and incremental improvement
- > Expect and accept non-resolution

Communicating results [as part of a reproducible workflow]

A reproducible workflow



> Plan

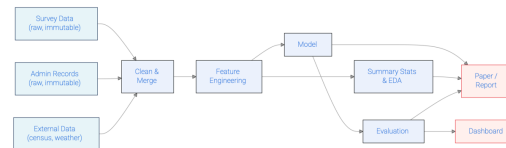
- Develop a well-defined [question](#)
- Write and [register](#) study protocol
- Justify the proposed sample size
- Construct a [data management plan](#)
- Proactively address ethics issues

> Execute

- [Avoid questionable practices](#)
- Interpret significance carefully
- Make research [open](#)

> Report

- Report all findings
- Follow relevant [reporting guidelines](#)



(Schwab et al., 2022)

Clear communication [1/2]

- > **Consistent with ethics principle of transparency**
 - Motivate the contribution
 - Contextualize what's known
 - Balance interpretability/accuracy
 - Use easily understood visuals



A Checklist for Communicating Science and Health Research to the Public: <https://www.nih.gov/about-nih/what-we-do/science-health-public-trust/checklist-communicating-science-health-research-public>

Clear communication [2/2]

- > Be respectful
- > Avoid potentially offensive terms
- > Include other relevant resources
- > Provide citations and sources

A Checklist for Communicating Science and Health Research to the Public: <https://www.nih.gov/about-nih/what-we-do/science-health-public-trust/checklist-communicating-science-health-research-public>

Innovative communication [1/3]

- > **Get the basics right**
 - Define objectives, specify your audience, frame your message, and develop a dissemination plan
- > **Foster participation and collaboration**
- > **Make your work visible**

(Ross-Hellauer et al., 2020)

Innovative communication [2/3]

- > **Embrace open science**
 - Principles of equitable participation & transparency that enable others to collaborate in, contribute to, evaluate & reuse work, & spread knowledge widely
- > **Think beyond traditional outputs**

(Ross-Hellauer et al., 2020)

Innovative communication [3/3]

- > Engage stakeholders
- > Think data visualization
- > Reflect and respect diversity
- > Find and use the right tools
- > Evaluate, iterate, evaluate

(Ross-Hellauer et al., 2020)

Reproducibility resources

- > UW eScience Reproducible and Open Research
 - <http://uwescience.github.io/reproducible/>
- > Coursera Reproducible Research course
 - <https://www.coursera.org/learn/reproducible-research>
- > Reproducibility and Replicability in Science
 - <https://www.ncbi.nlm.nih.gov/books/NBK547537/>

Reflect

- > **Write a brief reflection (300-500 words) on your current or anticipated experience with ethics and communication in your own work.**
 - **What areas are most pertinent to you? How might principles of reproducibility help address (some of) these issues?**

References

- > Akgun, S., & Greenhow, C. (2021). Artificial intelligence in education: Addressing ethical challenges in K-12 settings. *AI and Ethics*, 2(3), 431–440. <https://doi.org/10.1007/s43681-021-00096-7>
- > Radanliev, P. (2025). AI Ethics: Integrating Transparency, Fairness, and Privacy in AI Development. *Applied Artificial Intelligence*, 39(1). <https://doi.org/10.1080/08839514.2025.2463722>
- > Regan, P.M., & Jesse, J. (2019). Ethical challenges of edtech, big data and personalized learning: twenty-first century student sorting and tracking. *Ethics and Information Technology*, 21, 167–179. <https://doi.org/10.1007/s10676-018-9492-2>
- > Ross-Hellauer, T., Tennant, J.P., Banelyte, V., Gorogh, E., Luzi, D., Kraker, P., et al. (2020) Ten simple rules for innovative dissemination of research. *PLoS Comput Biol* 16(4): e1007704. <https://doi.org/10.1371/journal.pcbi.1007704>
- > Schwab, S., Janiaud, P., Dayan, M., Amrhein, V., Panczak, R., Palagi, P. M., Hemkens, L. G., Ramon, M., Rothen, N., Senn, S., Furrer, E., & Held, L. (2022). Ten simple rules for good research practice. *PLoS Computational Biology*, 18(6), <https://doi.org/10.1371/journal.pcbi.1010139>
- > Stahl, B.C. & Wright, D. (2018). Ethics and privacy in AI and big data: Implementing Responsible Research and Innovation. *IEEE Security & Privacy*, 16 (3), 26-33. <https://doi.org/10.1109/MSP.2018.2701164>



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