

# Ethical Development of AI-Enabled Open Educational Resources (OER)

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# Context

- This exploratory research focuses on the need to equip educators with a critical perspective to understand how AI comprises ethical issues such as algorithmic discrimination so they anticipate and respond to issues related to the collection, processing and use of AI in the development of OER.

# Open Education and AI

- OE advocates for reducing the barriers to access and participation, widening learning opportunities while aiming at democratising education. This often involves the OEP which promotes collaboration and sharing good, effective, creative and innovative practices and the use and creation of OERs, which are currently defined as “*teaching and learning materials that are freely available to use, adapt, and share*”. However, this definition, does not address AI-enabled OER, despite AI currently providing an opportunity to create, adapt, personalise and contextualise resources in all shapes and forms, but considering that there are risks implied in this process, due to the number of biases incrustated in algorithmic driven systems.

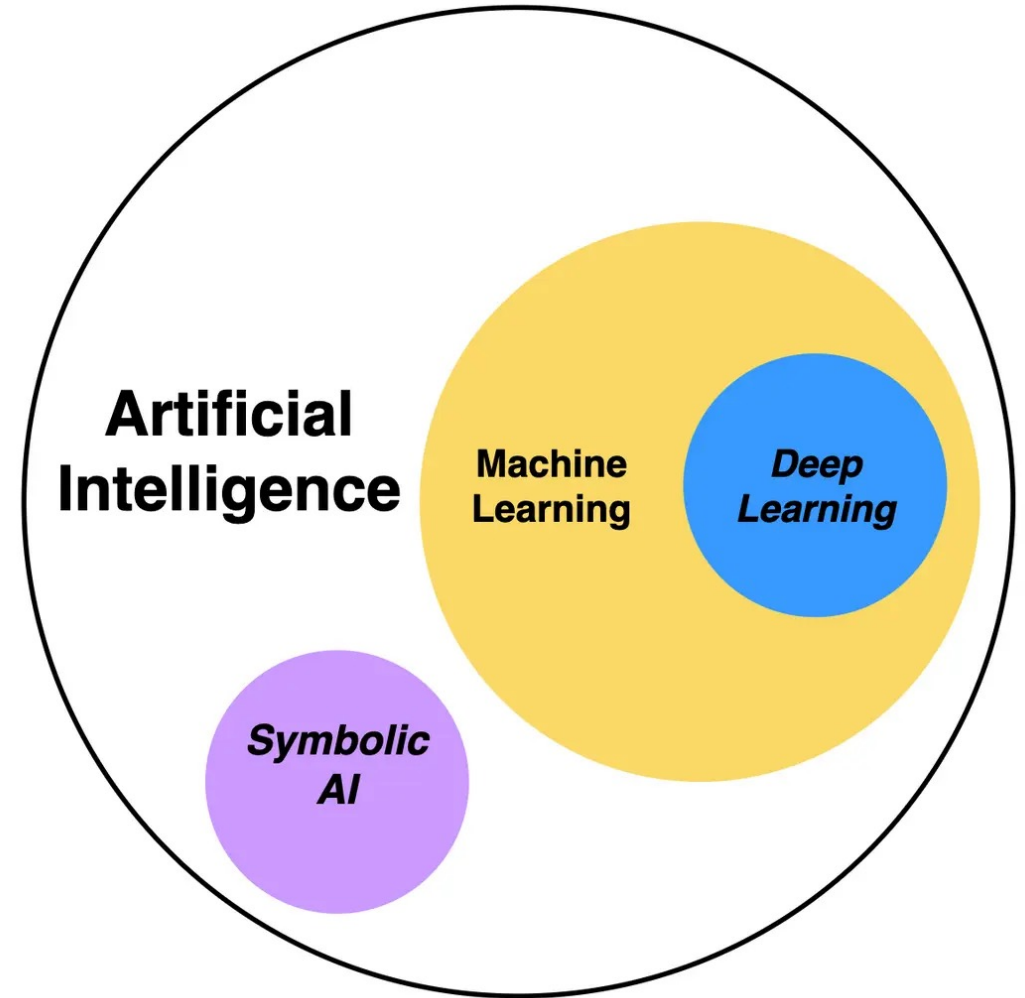
# Ethical considerations

- The development of AI-enabled OER must address issues related to bias and discrimination as the biased datasets used to inform generative AI platform can amplify perpetuate societal inequalities and reinforce discriminatory practices, leading to biased outcomes and unfair treatment or portrayal of communities
- Thus, AI-enabled OER need to be designed to support learners considering elements of data justice and data ethics to ensure AI-enabled OER are inclusive, representative and challenge power inequalities instead of amplifying them.

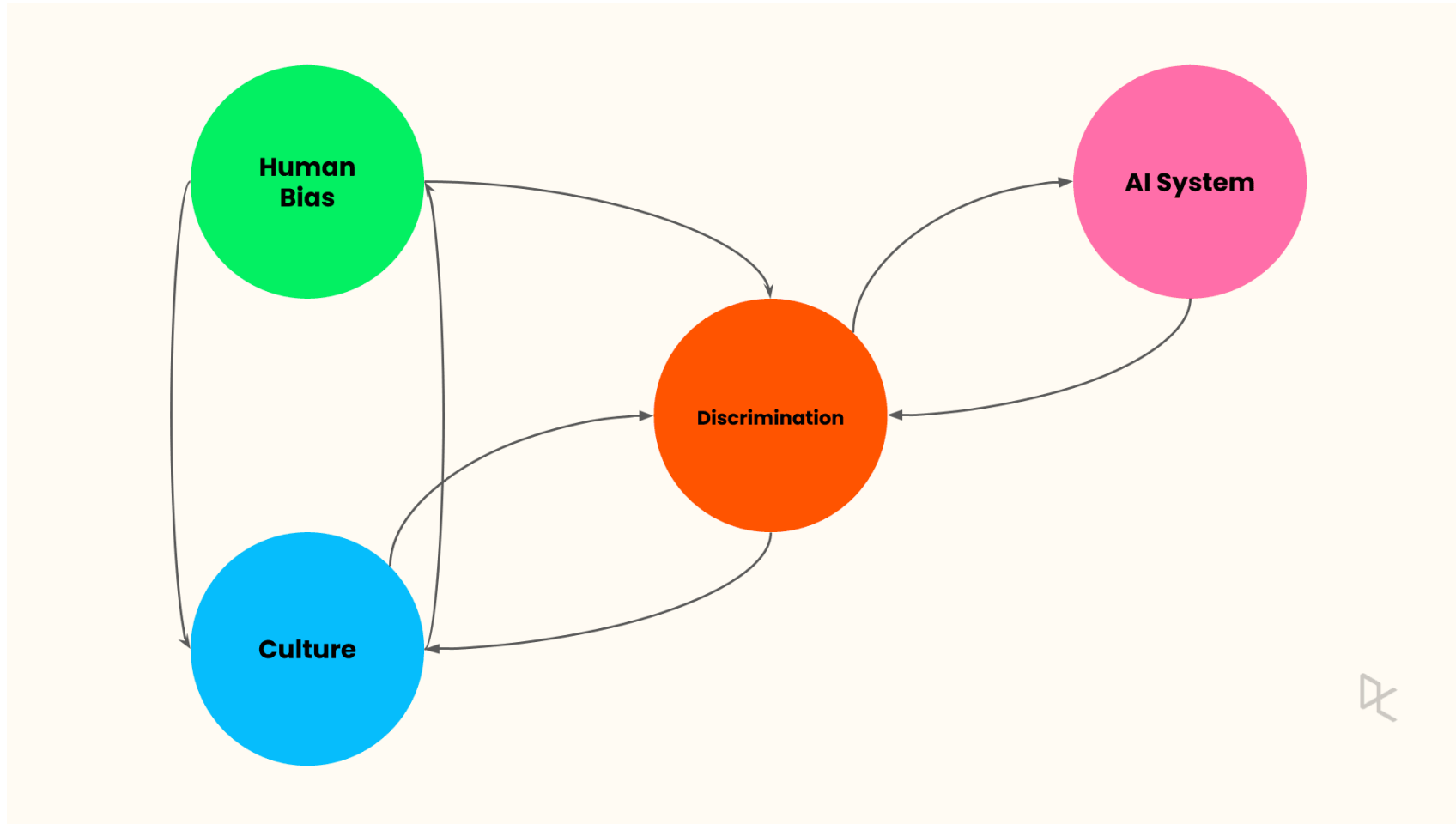
# IA y Machine Learning

Machines are trained by humans, and if biased information or data reflecting existing inequities is fed into machine learning programs, the algorithms will learn and perpetuate those biases, leading to discrimination.

But we need to consider that the generative AI systems are powered by millions of underpaid workers globally, performing repetitive tasks under precarious labour conditions, often recruited from impoverished populations

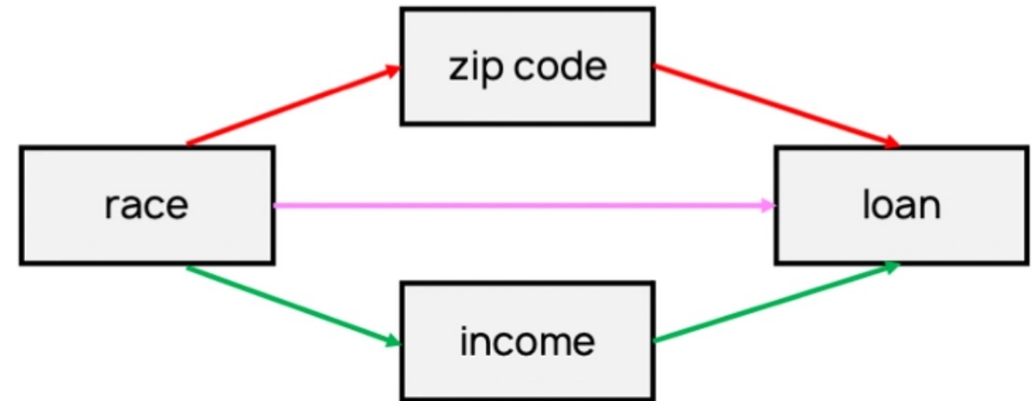
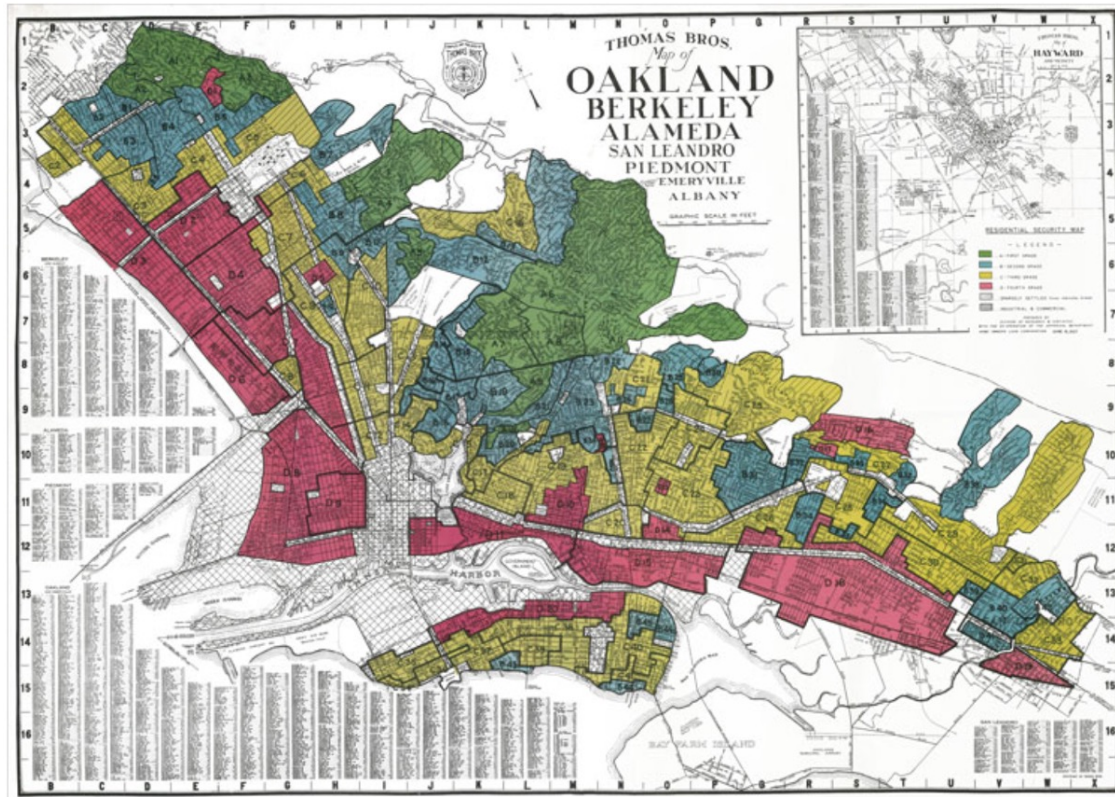


# Bias in AI



Fuente: Datacamp [Data Literacy](https://www.datacamp.com/blog/data-demystified-the-different-types-of-ai-bias) Richie Cotton  
**Data Demystified: The Different Types of AI Bias** <https://www.datacamp.com/blog/data-demystified-the-different-types-of-ai-bias>

# Biases in AI – an historical example



# Bias in AI

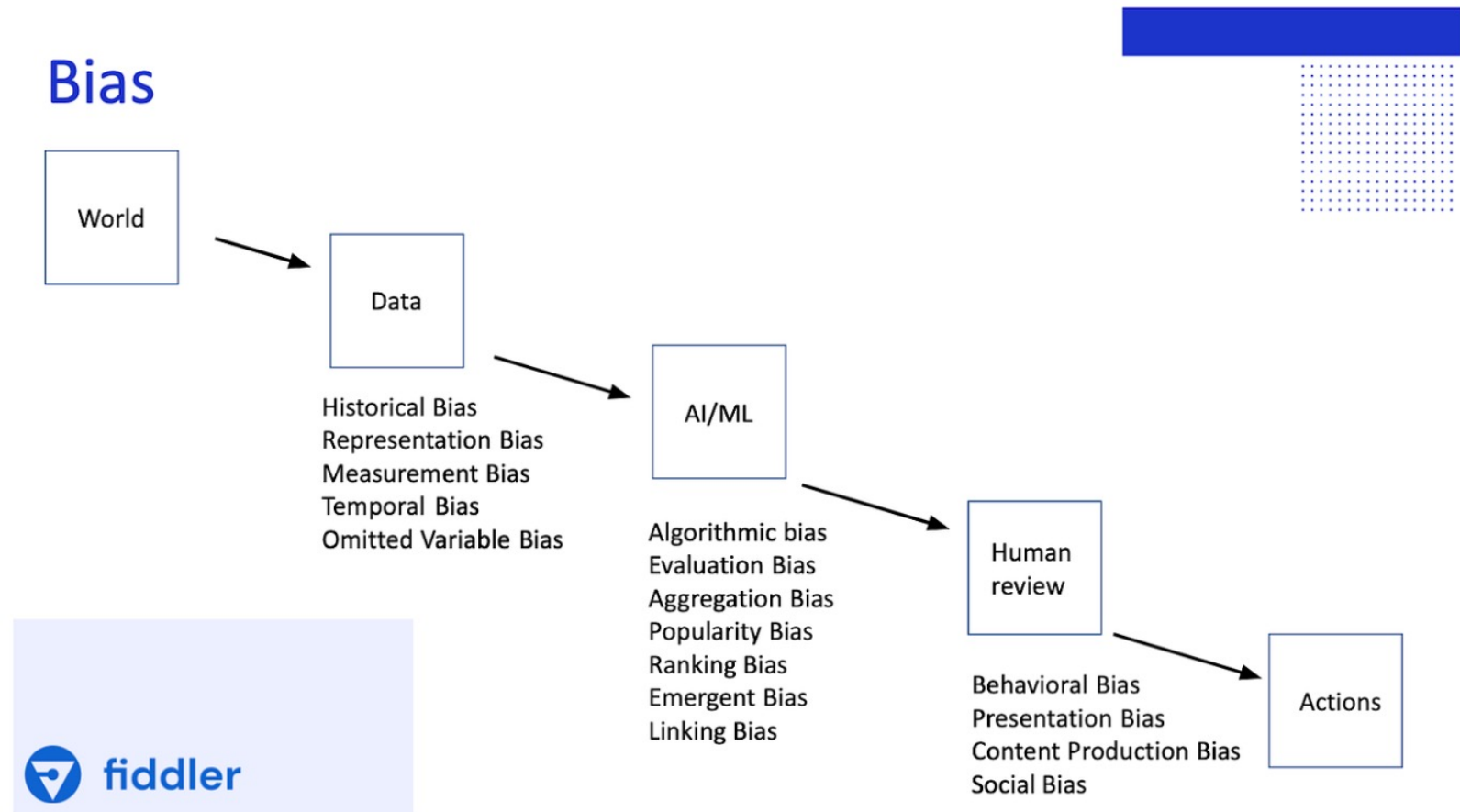


Image by author

Fuente: Mary Reagan <https://towardsdatascience.com/understanding-bias-and-fairness-in-ai-systems-6f7fbfe267f3>



# A very simple example

## Learning Theories and Theorists in Childhood Education



You

can you generate an OER for childhood education students describing the main theories and theorist of learning in a simple table?

**ChatGPT**

Certainly! Here's an Open Educational Resource (OER) that presents an overview of the main theories of learning and their key theorists in a simple table format:

Theory	Key Focus	Key Theorists
<b>Behaviorism</b>	Observable behaviors, rewards, and punishments	Ivan Pavlov, B.F. Skinner, John B. Watson
<b>Cognitivism</b>	Mental processes, memory, problem-solving	Jean Piaget, Lev Vygotsky
<b>Constructivism</b>	Active building of knowledge through experiences	Jerome Bruner, Lev Vygotsky, Jean Piaget
<b>Social Learning Theory</b>	Learning through observing and imitating	Albert Bandura
<b>Multiple Intelligences</b>	Various forms of intelligence	Howard Gardner
<b>Experiential Learning</b>	Hands-on experiences and reflection	David Kolb






# A very simple example

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I'll try to create that. Here are some of the most influential theorists in education:

- Jean Piaget:** Known for his theory of cognitive development, which explains how children actively construct their understanding of the world around them <sup>1</sup>.
- Lev Vygotsky:** Known for his sociocultural theory of development, which emphasizes the role of social interaction in cognitive development <sup>1</sup>.
- Benjamin Bloom:** Known for his taxonomy of educational objectives, which classifies different types of learning and helps teachers create effective lesson plans <sup>1</sup>.
- Howard Gardner:** Known for his theory of multiple intelligences, which suggests that intelligence is not a single entity, but rather a collection of different abilities <sup>1</sup>.
- B.F. Skinner:** Known for his theory of operant conditioning, which explains how behavior is shaped by the consequences that follow it <sup>1</sup>.



# A very simple example

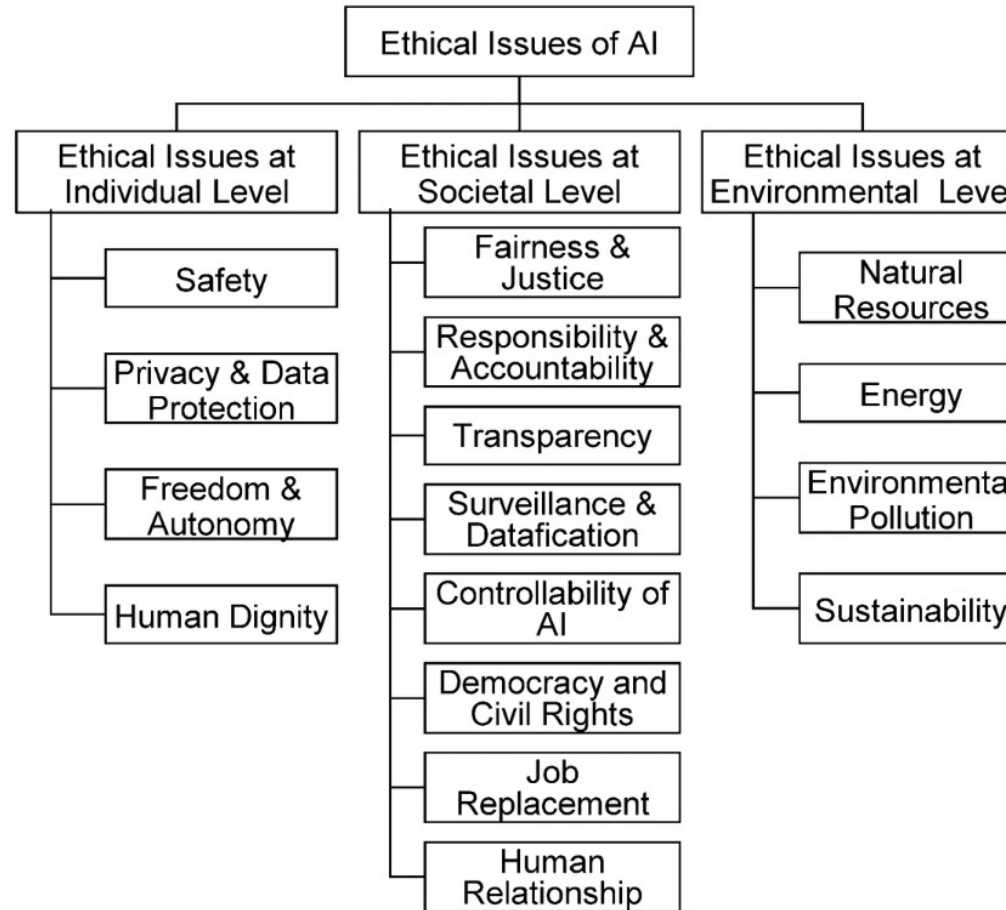
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**The most influential theorists in education**

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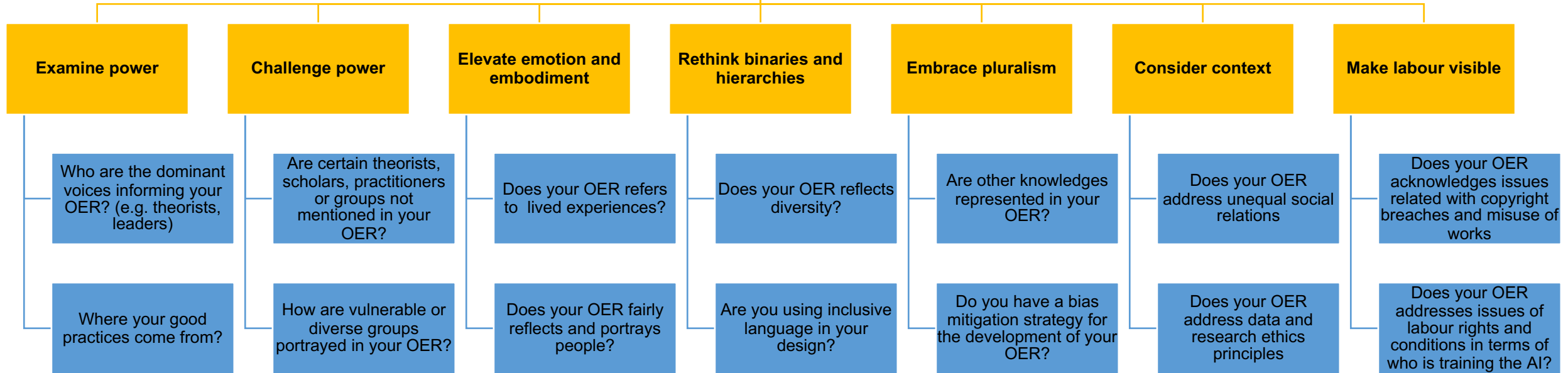
# Ethical issues of AI

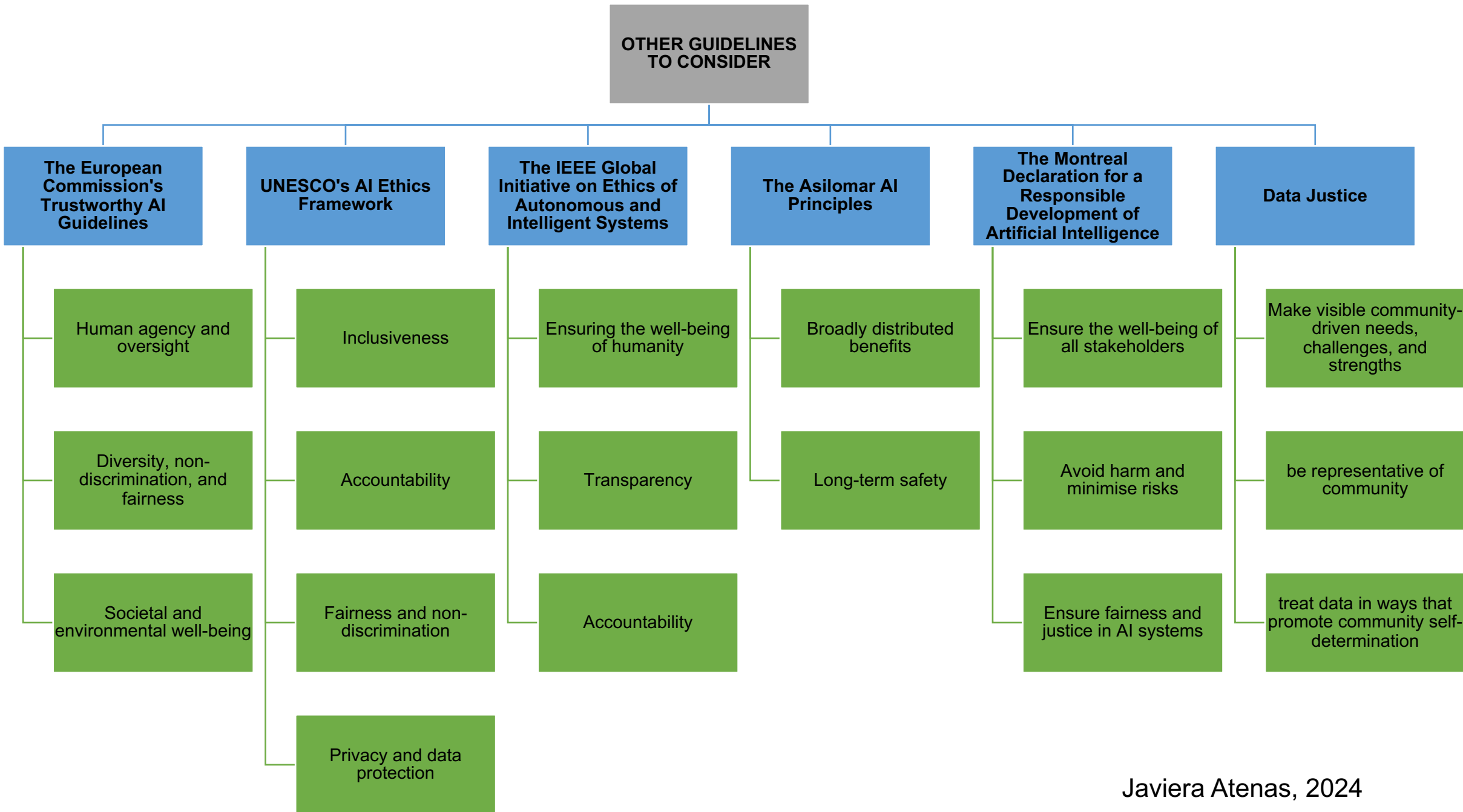


# One approach: Data feminism as a framework for AI enabled OER development

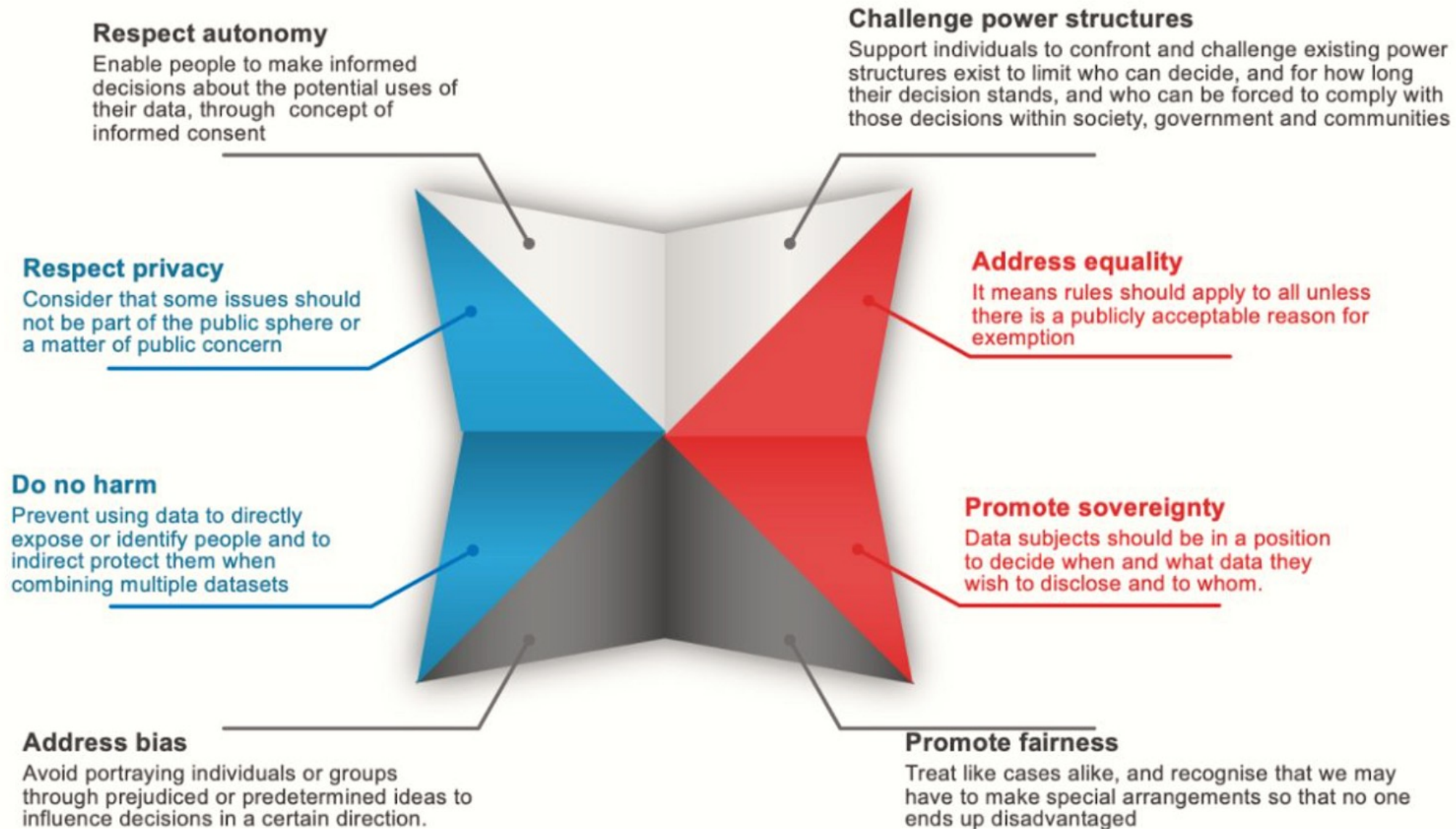
- **Examine power.** Data feminism begins by analysing how power operates in the world.
- **Challenge power.** Data feminism commits to challenging unequal power structures and working toward justice.
- **Elevate emotion and embodiment.** Data feminism teaches us to value multiple forms of knowledge, including the knowledge that comes from people as living, feeling bodies in the world.
- **Rethink binaries and hierarchies.** Data feminism requires us to challenge the gender binary, along with other systems of counting and classification that perpetuate oppression.
- **Embrace pluralism.** Data feminism insists that the most complete knowledge comes from synthesising multiple perspectives, with priority given to local, Indigenous, and experiential ways of knowing.
- **Consider context.** Data feminism asserts that data is not neutral or objective. It is the product of unequal social relations, and this context is essential for conducting accurate, ethical analysis.
- **Make labour visible.** The work of data science, like all work in the world, is the work of many hands. Data feminism makes this labour visible so that it can be recognised and valued.

# DATA FEMINISM PRINCIPLES FOR AI- ENABLED OER DEVELOPMENT









**A data ethics approach for openness – Atenas, Havemann and Timmermann**

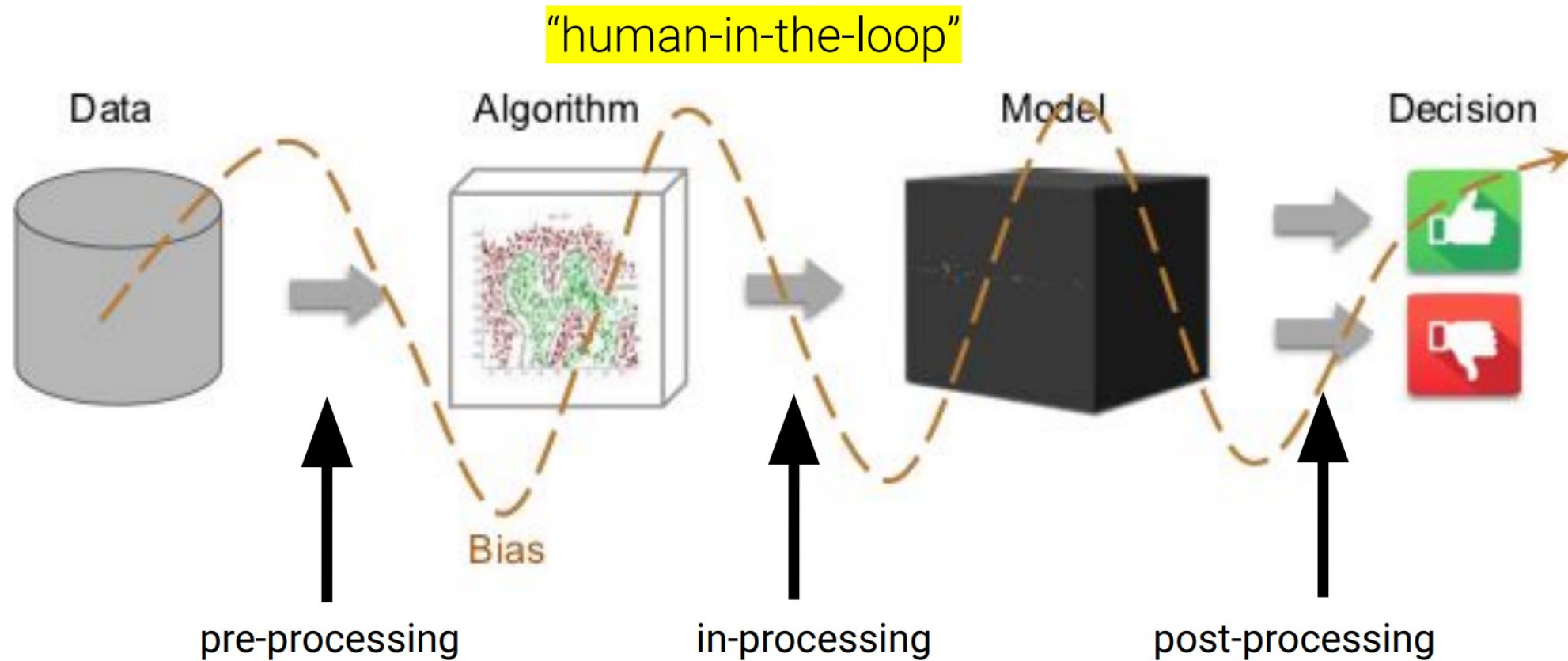


# How to ethically develop AI enabled OER?

Here are some questions we may like to answer before developing an AI enabled OER

- Am I familiar with the platform(s) I will be using?
- Have I thought about how others may be portrayed in my OER?
- Is there any other open resources I could be manually remixing to mitigate the environmental impact?
- Am I enabling critical thinking and critical literacies through my OER?
- Am I acknowledging – attributing others in my OER considering that the information I have collected does not come spontaneous generation?

# Rationalising our decision-making processes on AI enabled OER development



# Learning Resources Design Guidance – Prototype V1

Dr Javiera Atenas  
Professor Nicholas Caldwell  
University of Suffolk



# How to ethically develop AI enabled OER?

This decision making tool aims at supporting educators to make effective and ethical decisions in the development of learning resources (copyrighted or open) ensuring they understand the challenges of legally using 3<sup>rd</sup> party content and also, ethically and effectively use AI to generate resources that are inclusive, contextual, accurate and reflect the diversity of knowledge.



You can access the Learning Resources Design Guidance tool here

[UOS LO-OER decision tool](#)

# Making labour visible.

For this presentation I like to acknowledge the work and ideas of fellow OER folks and critical educators

- Anne-Marie Scott
- Leo Havemann
- Chrissi Nerantzi
- Lorna Campbell
- Frances Bell
- Davor Orlic
- Wayne Holmes

- Priscila Gonzales
- Ben Williamson
- Catherine Cronin
- Rob Farrow
- Daniel Villar

And also, I have sought inspiration in the work of

Catherine D'Ignazio  
The data justice lab

# Some resources you may find interesting

- Atenas, J., Havemann, L., & Timmermann, C. (2023). Reframing data ethics in research methods education: A pathway to critical data literacy. *International Journal of Educational Technology in Higher Education*, 20(1), 11. <https://doi.org/10.1186/s41239-023-00380-y>
- Ball, S. J. (2015). Education, governance and the tyranny of numbers. *Journal of Education Policy*, 30(3), 299–301. <https://doi.org/10.1080/02680939.2015.1013271>
- Barocas, S., & Selbst, A. D. (2018). Big Data's Disparate Impact. *SSRN Electronic Journal*, 671, 671–732. <https://doi.org/10.2139/ssrn.2477899>
- Es, K. V., & Schäfer, M. T. (Eds.). (2017). *The Datafied Society: Studying Culture through Data*. Amsterdam University Press. <http://www.oapen.org/search?identifier=624771>