

A data ethics and data justice approach for AI-Enabled OER

Dr Javiera Atenas
University of Suffolk

Leo Havemann
UCL & OU

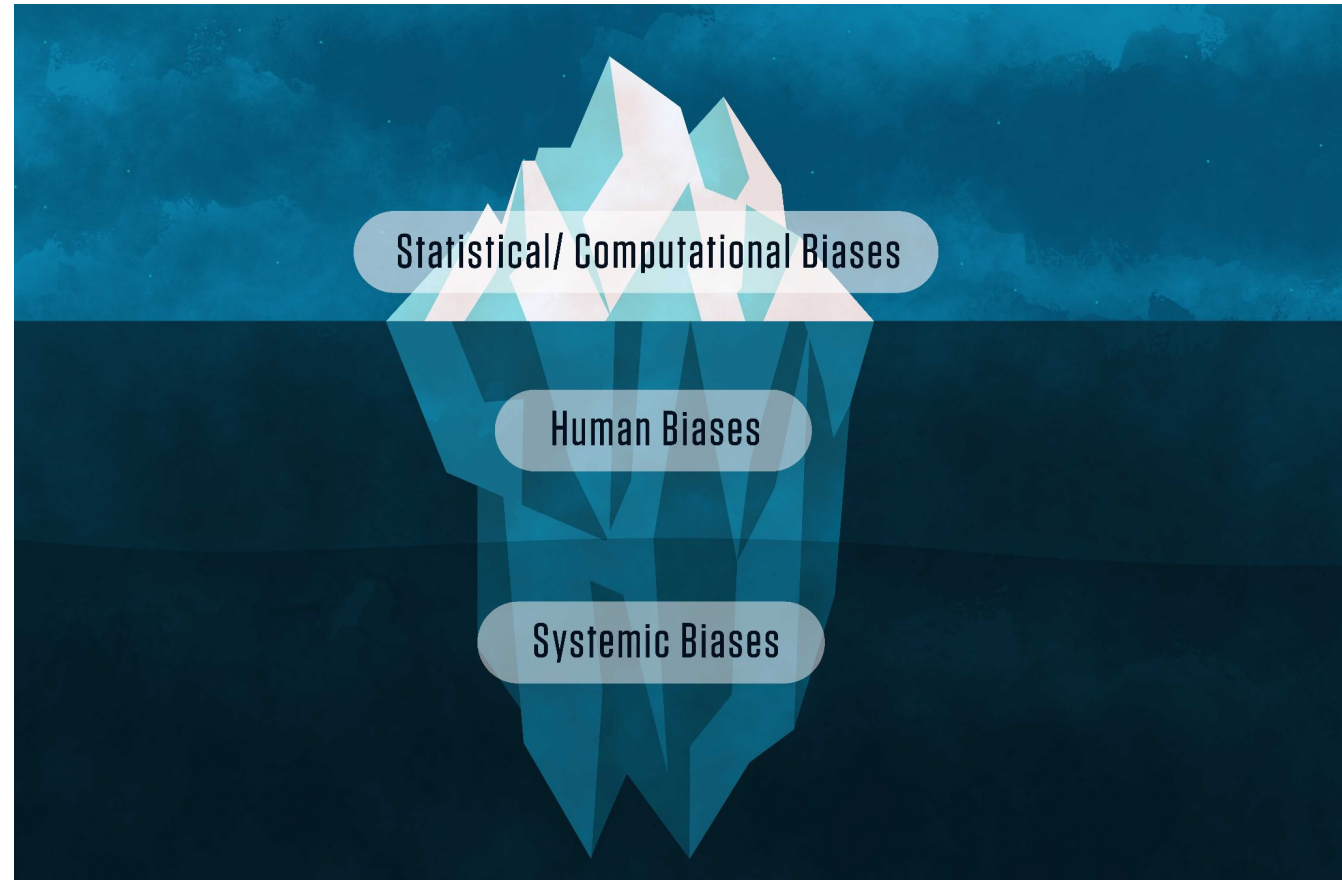
#OER24

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Context

This exploratory research focuses on the need to equip educators with a critical understanding of ethical issues in the AI space such as algorithmic discrimination so they can 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 democratising education.
- This involves OEP which promotes collaboration and sharing good, effective, creative and innovative practices, and the use and creation of OER, which are currently defined as “*teaching and learning materials that are freely available to use, adapt, and share*”.

Open Education and AI

- This definition does not address the possibilities of AI-enabled OER.
- AI services now present opportunities to create, adapt, personalise and contextualise resources in all shapes and forms.
- It's even been suggested that OER could consist just of prompts - AI can generate the rest.
- We must considering that the risks implied in this process, due to the biases encrusted into data- and algorithm-driven systems.

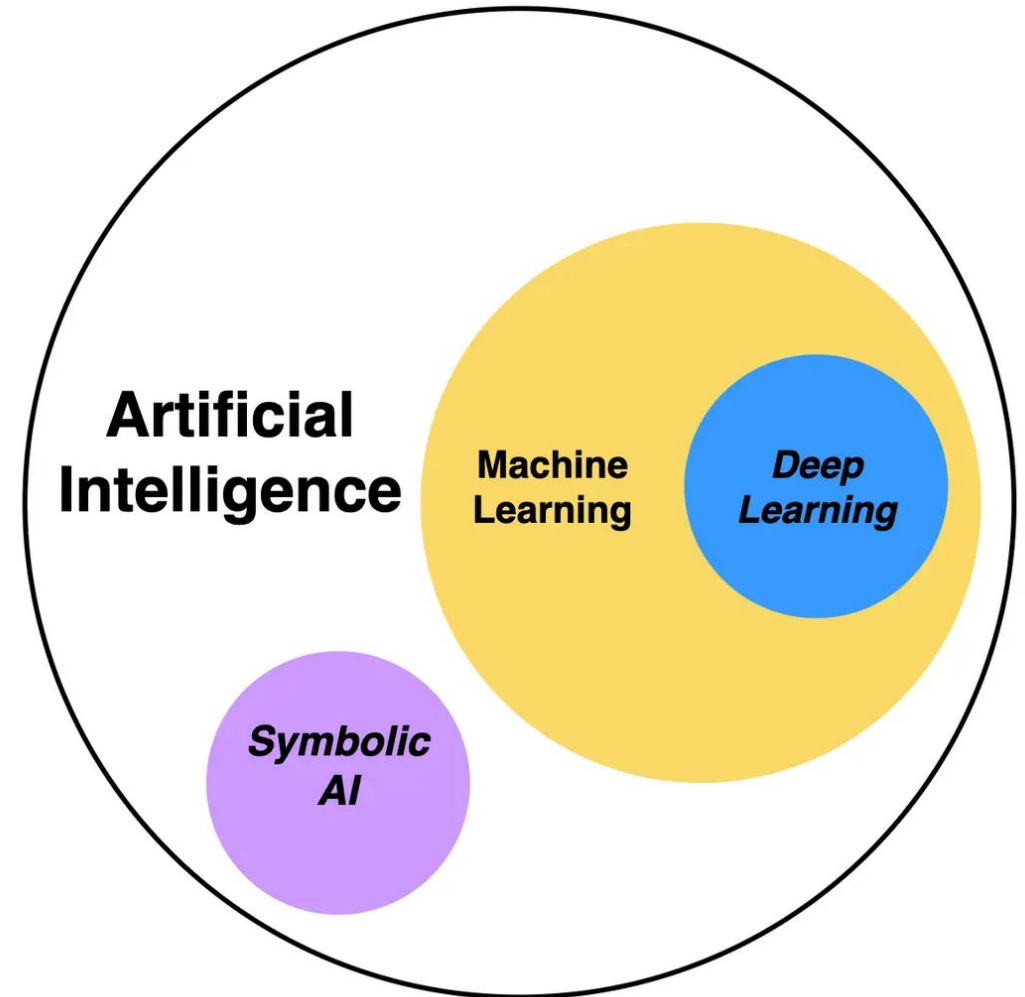
Ethical considerations

- The development of AI-enabled OER must address issues related to bias and discrimination: the datasets used to inform generative AI platforms ('training data') can amplify social inequalities and reinforce discriminatory practices, leading to biased and unfair treatment or portrayal of marginalised 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.

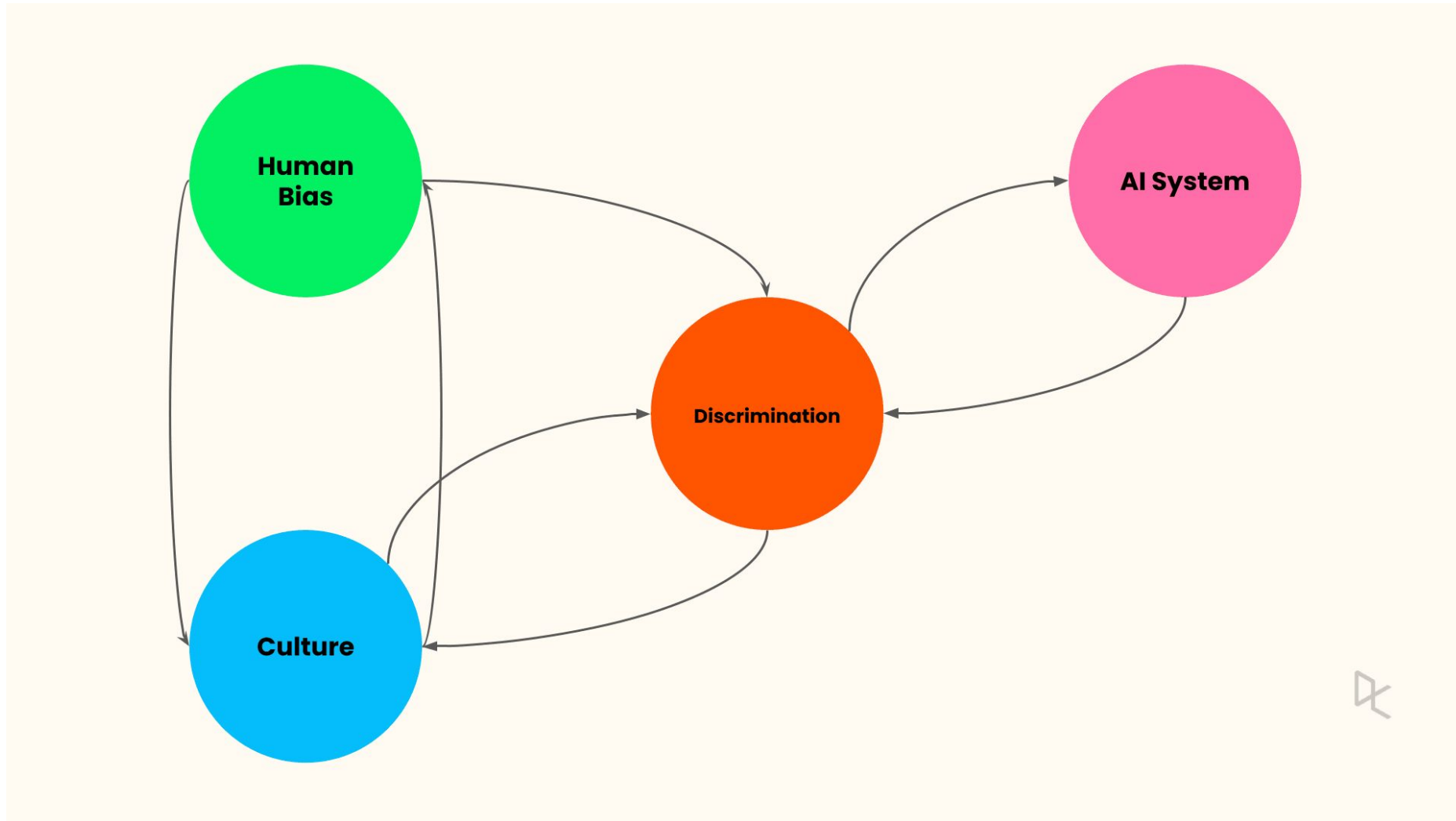
AI and Machine Learning

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.

We also need to consider that the much of the human work of training generative AI systems is powered by underpaid workers globally, performing repetitive tasks under precarious labour conditions, often recruited from impoverished populations.



Bias in AI

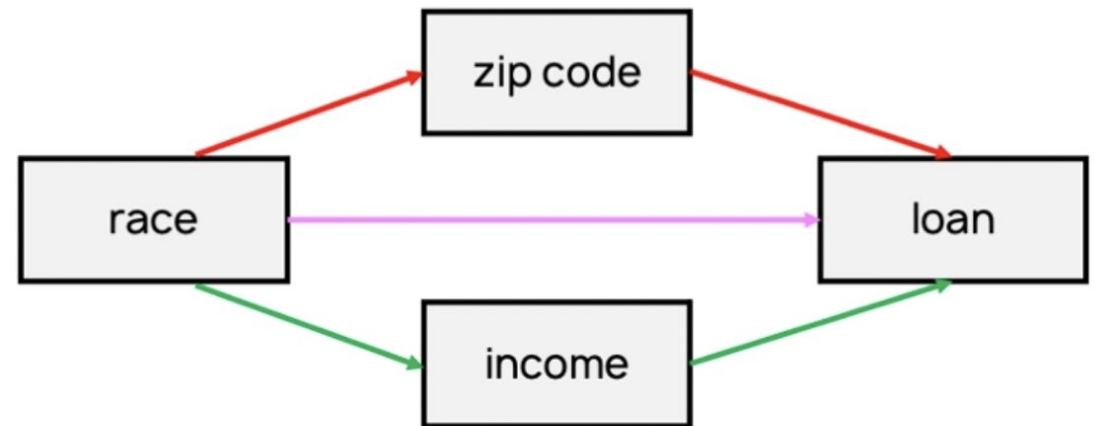
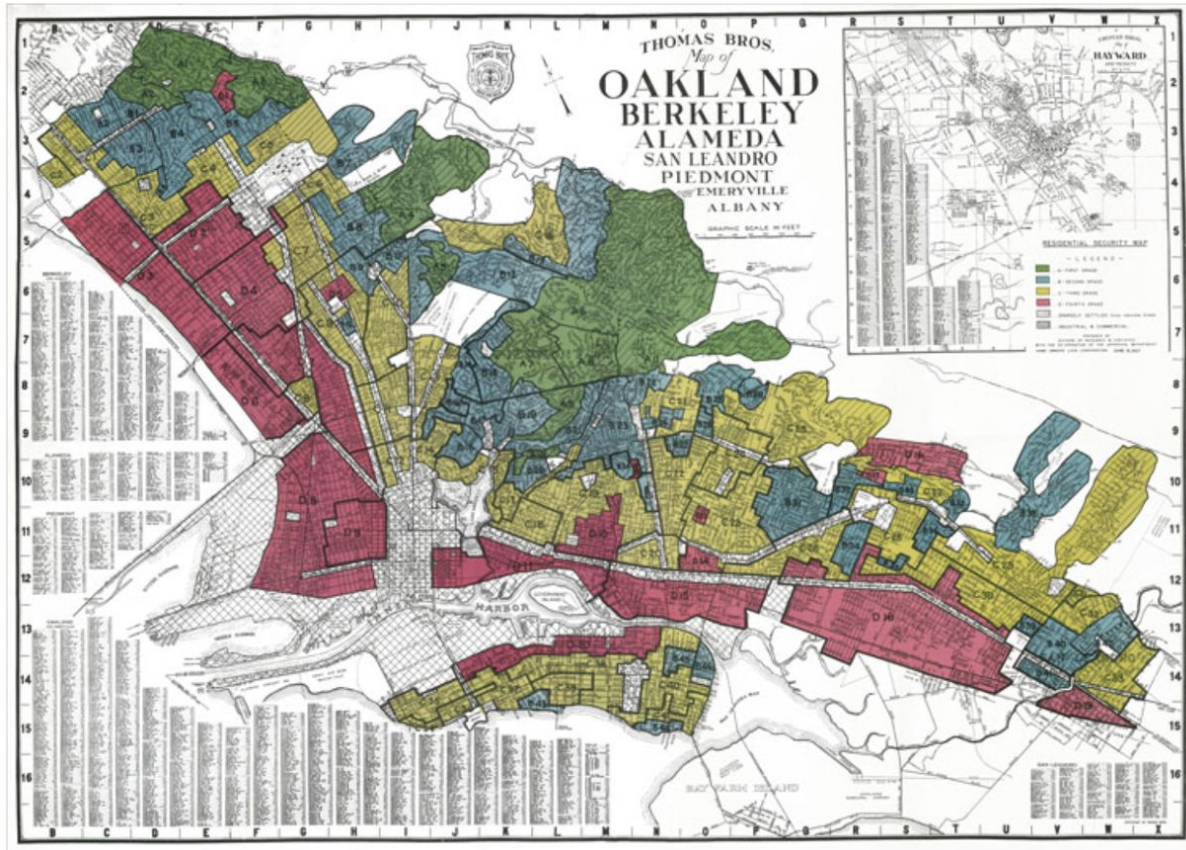


Fuente: Datacamp [Data Literacy](#) Richie Cotton

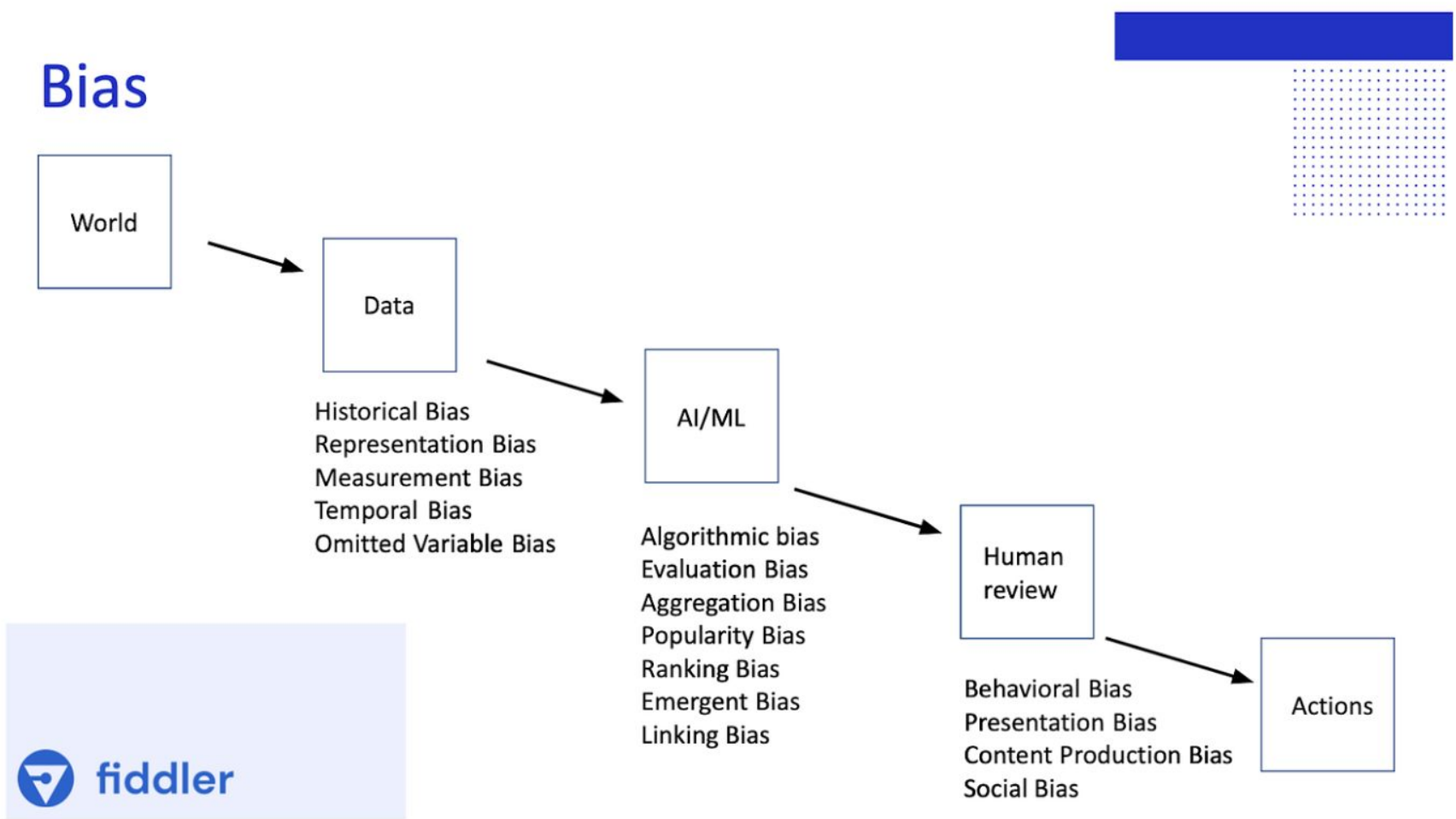
Data Demystified: The Different Types of AI Bias

<https://www.datacamp.com/blog/data-demystified-the-different-types-of-ai-bias>

Bias in AI – an historical example



Bias in AI



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

A very simple example



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:

Learning Theories and Theorists in Childhood Education

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

1. **Jean Piaget:** Known for his theory of cognitive development, which explains how children actively construct their understanding of the world around them ¹.
2. **Lev Vygotsky:** Known for his sociocultural theory of development, which emphasizes the role of social interaction in cognitive development ¹.
3. **Benjamin Bloom:** Known for his taxonomy of educational objectives, which classifies different types of learning and helps teachers create effective lesson plans ¹.
4. **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 ¹.
5. **B.F. Skinner:** Known for his theory of operant conditioning, which explains how behavior is shaped by the consequences that follow it ¹.



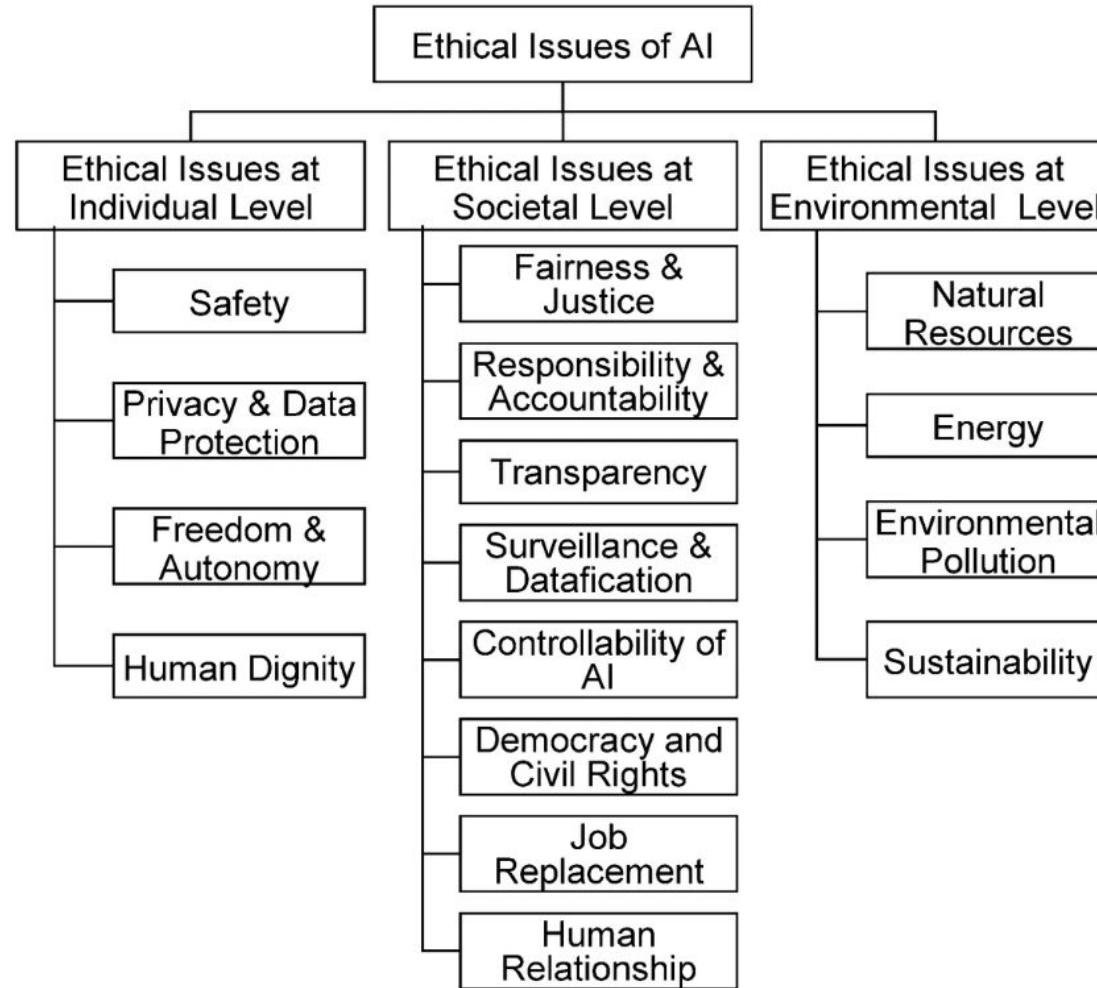


The most influential theorists in education

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A very simple example

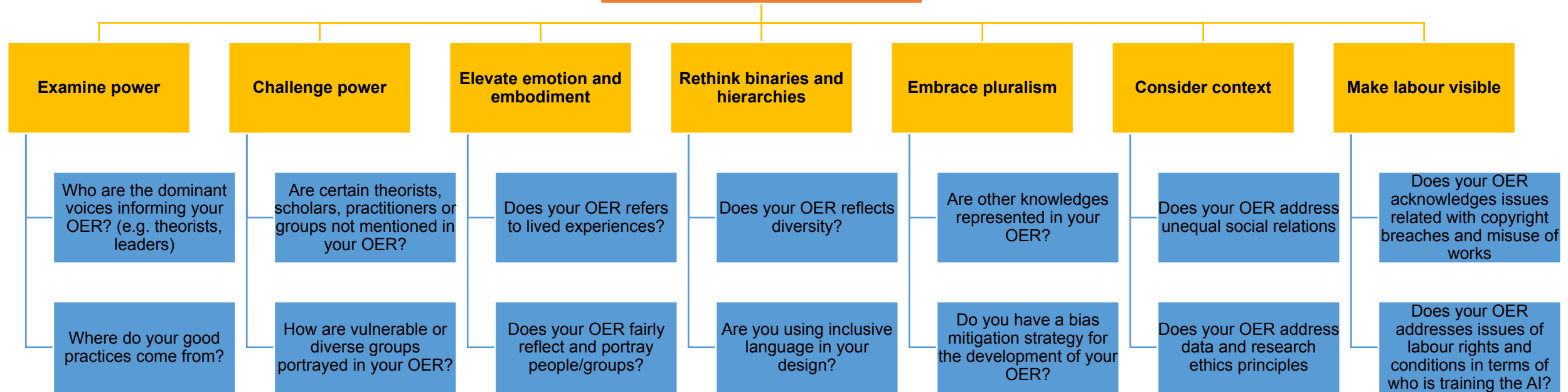
Ethical issues of AI

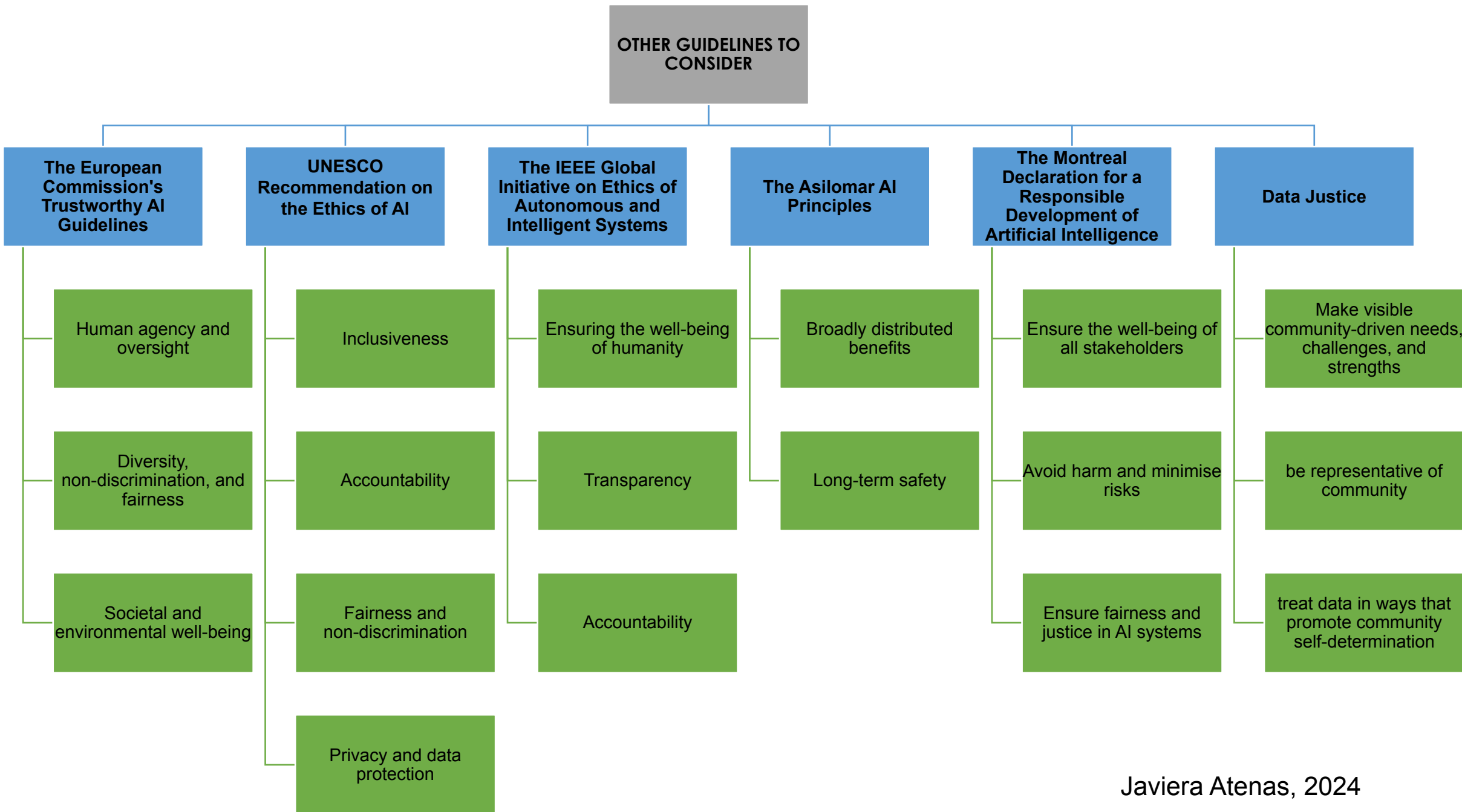


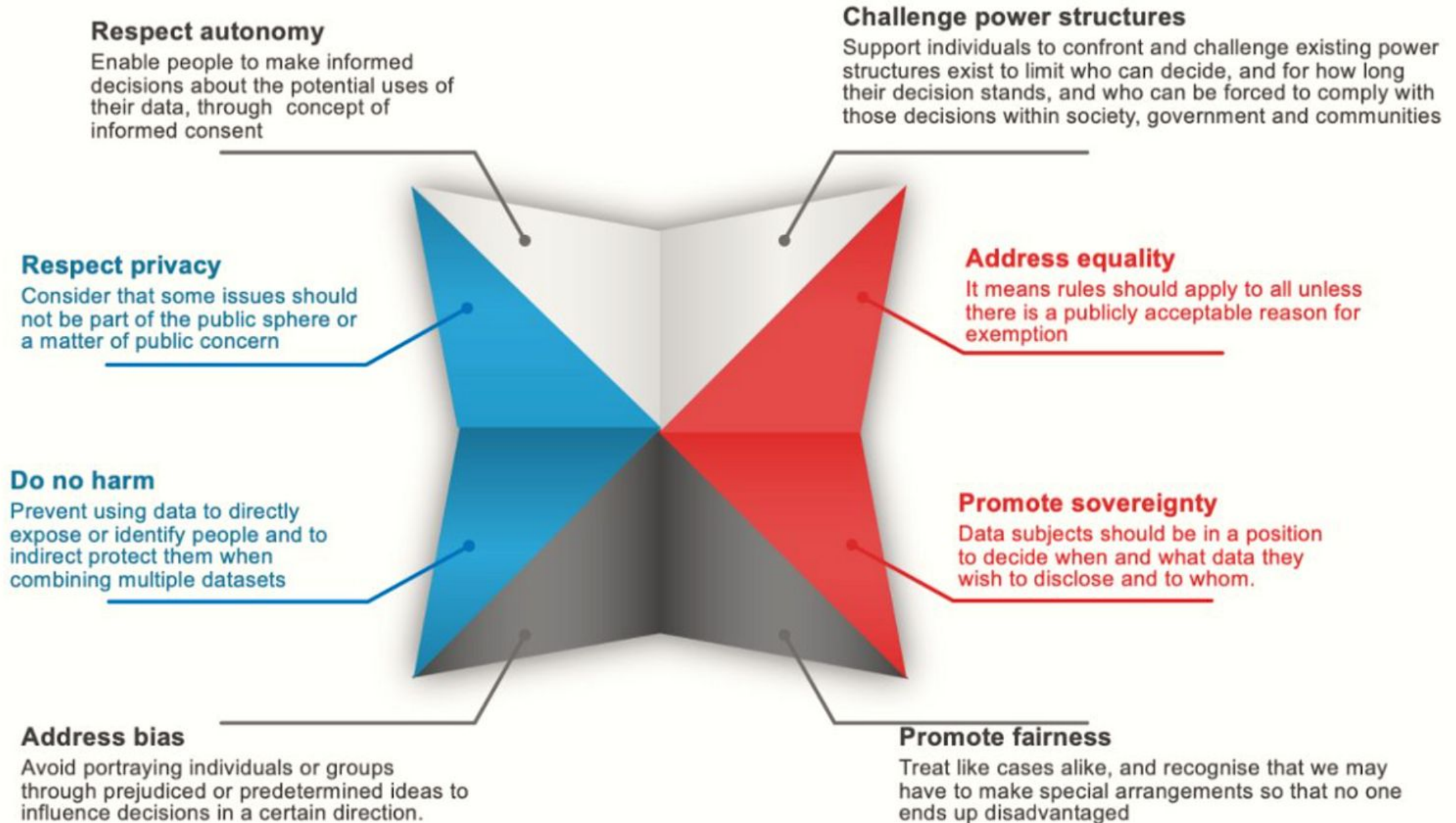
One approach: Data feminism as a framework for AI enabled OER development

- **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, 2023

How to ethically develop AI enabled OER?

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

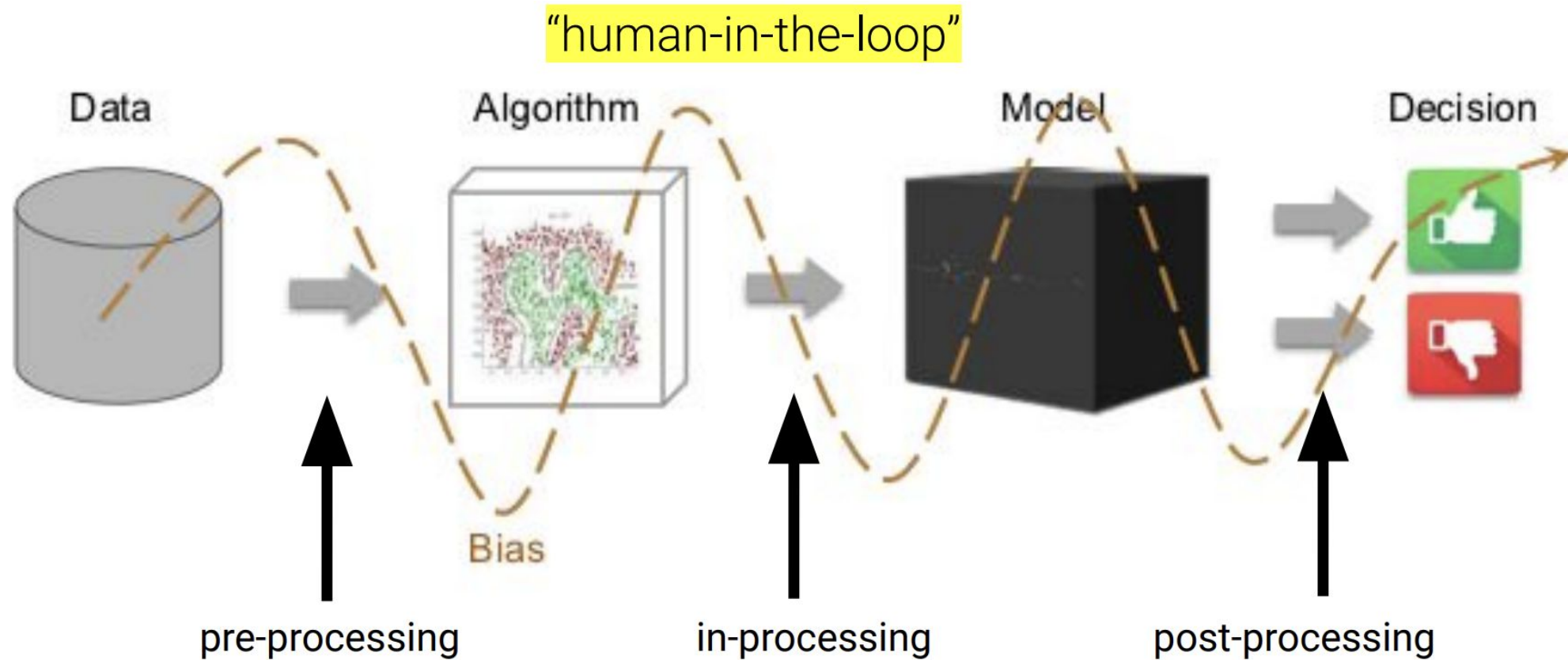
- Do I really need to use AI for this?
- What is outside of my control and what can I do about that?
- Am I familiar with the platform(s) I will be using?
- Have I thought about how others may be portrayed in my OER?
- Are there any other open resources I could be manually remixing to mitigate the environmental impact?

How to ethically develop AI enabled OER?

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

- Am I enabling critical thinking and critical literacies through my OER?
- Am I acknowledging and attributing others in my OER considering that the information I have collected does not come from spontaneous generation?

Rationalising our decision-making processes on AI enabled OER development



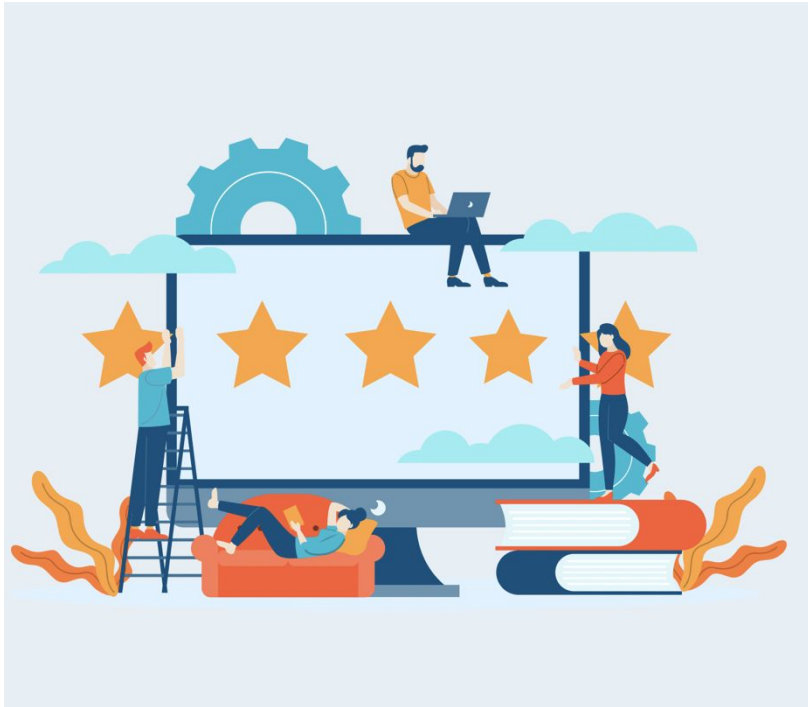
Learning Resources Design Guidance – Prototype V1

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 3rd 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](#)

Advancing our research

Our aim is to understand, in praxis and in the light of the review of academic literature, which are the key competencies needed to scaffold the complex formative design and implementation of teaching, learning and assessment processes in our datafied society, with specific reference to the field of Higher Education.



You can access our survey here

<https://forms.office.com/e/2x4j1KenBy>

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, we 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>