

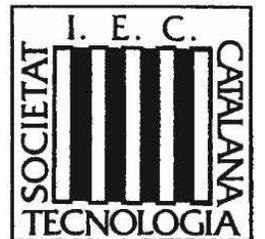
Citation: Hernández-Fernández, A. (2023). Artificial Intelligence in education and research: ethical reflections, INTE Conference «*AI in teaching, reasearch and service: pros and cons*», 3 November 2023.

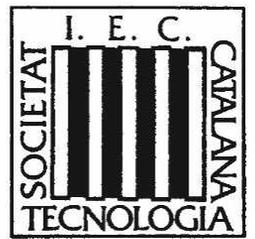
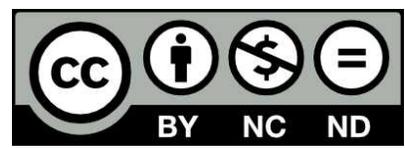
Artificial Intelligence in education and research: ethical reflections

Antoni Hernández-Fernández
Institut de Ciències de l'Educació
Universitat Politècnica de Catalunya
antonio.hernandez@upc.edu
@therfer



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AI in education and Research: ethical reflections

- 1.- Artificial Intelligence.
- 2.- AI Ethics.
- 3.- AI and Education.
- 4.- AI and Research.

Preamble: against **false myths** about technology

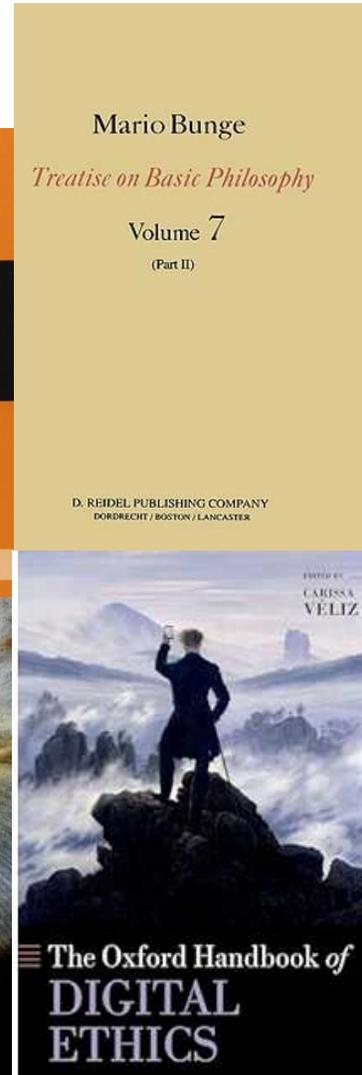
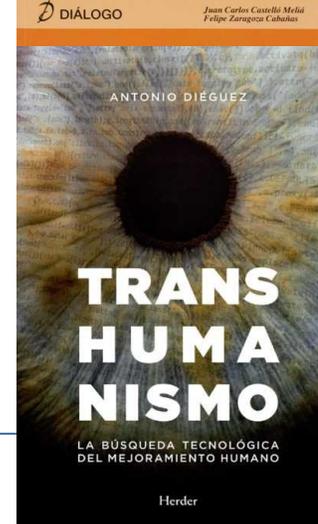
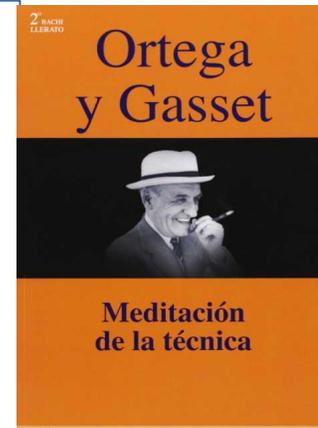
i) **Dehumanization**: "Technology must be humanized"...
(or "Technology dehumanizes us")

ii) **Ethical and moral neutrality**. Technology is neither good nor bad, the uses we make of it are...

→ But what about evil tech? Cluster bombs?

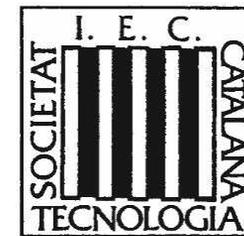
iii) **Technological determinism**. If a technological advance is possible, it will happen sooner or later (or the 'autonomy' of technology, 'another will do it').

<https://unfollow.es/2020/06/15/tres-topicos-sobre-la-tecnologia-que-conviene-revisar/>

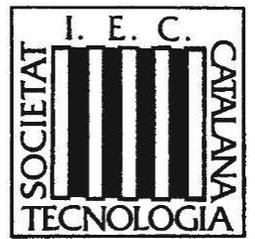




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1. Artificial Intelligence



AI and society? Will I go unemployed?

Diari de Girona

SECCIONS SOCIETAT > CATALUNYA EDUCACIÓ ENERGIA FUTUR

PUBLICITAT

La Intel·ligència Artificial et traurà la feina? Aquests són els llocs de treball que es veuran més amenaçats

Un estudi d'OpenAI, no validat científicament, apunta que el seu model conversacional afectarà fins a un 80% de la població activa als Estats Units, particularment en les professions més ben pagades

Carles Planas Bou

24·03·23 | 13:29 | Actualitzat a les 20:48



elPeriódico | Sábado, 20 de mayo de 2023

Mercado laboral

La selección de personal se sube al carro de la IA

▶ El 16% de las empresas españolas ya usan estas herramientas en sus procesos

GABRIEL UBIETO
Barcelona

La irrupción de los modelos de lenguaje interactivos promete disparar el uso de inteligencia artificial (IA) en procesos de reclutamiento. Un uso que ya lleva tiempo al alza y que en el caso de las grandes consultoras y ETTs rige en la mitad de las contrataciones que gestionan. Los programas como ChatGPT ya sirven para ayudar a las empresas a buscar al mejor candidato y filtrar miles de currículos definidos, así como al trabajador, a la hora de entrenarse para la entrevista o reformular su currículo para adaptarlo al lenguaje de los algoritmos y que así lo acaben priorizando.

Según una encuesta de Infojobs, el 16% de las empresas españolas utilizan herramientas de IA en sus procesos de selección o tienen previsto usarlas en el próximo año. No obstante, empresas especializadas en reclutamiento como Adecco ya la usan en la mitad de sus procesos.

Cribado

«Un consultor trabaja 40 horas a la semana, la inteligencia artificial está operativa 24 horas los siete días de la semana», afirma la directora de atracción de talento de Adecco, Sara Álvarez. ¿En qué se usa la inteligencia artificial? Principalmente en el cribado de candidatos, es decir, separar el grano de la paja cuando en una oferta de trabajo hay muchos candidatos.



Andreu Dalmay / Efe

Un hombre pasa delante de un 'stand' de IA en el pasado Mobile.

Aunque también se emplea, cada vez más, cuando las empresas buscan perfiles específicos y no los encuentran. Ahí los algoritmos intervienen para localizar, tanto vía bases de datos internas como redes sociales como LinkedIn, a personas que no están activamente buscando empleo pero sí encajan con lo que busca la corporación. Aunque en ese aspecto «todavía está un poco verde», según matiza el consejero delegado de Ceinsa, Josep Ca-

pell. El máximo responsable de esta consultora con 30 años de experiencia augura que la sofisticación de dichos procesos irá a más. También apunta al nicho de negocio que se abrirá para aquellas firmas que creen programas que lean con precisión las palabras clave que usarán otros programas para buscar candidatos. Y por un módico precio ofrecen a las personas que quieren ese empleo una ventaja táctica respecto al resto de candidatos. ■

AI and research?

nature electronics

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Comment | [Published: 25 January 2021](#)

Privacy and digital ethics after the pandemic

[Carissa Véliz](#) ✉

[Nature Electronics](#) 4, 10–11 (2021) | [Cite this article](#)

16k Accesses | 12 Citations | 88 Altmetric | [Metrics](#)

The increasingly prominent – and inescapable – role of digital technologies during the coronavirus pandemic has been accompanied by concerning trends in privacy and digital ethics. But more robust protection of our rights in the digital realm is possible in the future.



NEWS FEATURE | 27 September 2023

AI and science: what 1,600 researchers think

A *Nature* survey finds that scientists are concerned, as well as excited, by the increasing use of artificial-intelligence tools in research.

[Richard Van Noorden](#) & [Jeffrey M. Perkel](#)



AI and art?

CULTURA/S

Narrativas y estética de la IA

• En seis meses hemos pasado del GPT-3 al ChatGPT-3 y al GPT-4, que permiten escribir tanto textos como código de programación, y al Auto-GPT, que puede llevar a cabo diversas tareas creativas. Analizamos la aceleración vertiginosa de la gran revolución tecnológica y artística de nuestra época



'Glacier Dreams', instalación inmersiva de Refik Anadol, en la feria Art Dubai el pasado marzo (Cedric Ribeiro / Getty)



Jorge Carrión

20/05/2023 06:00



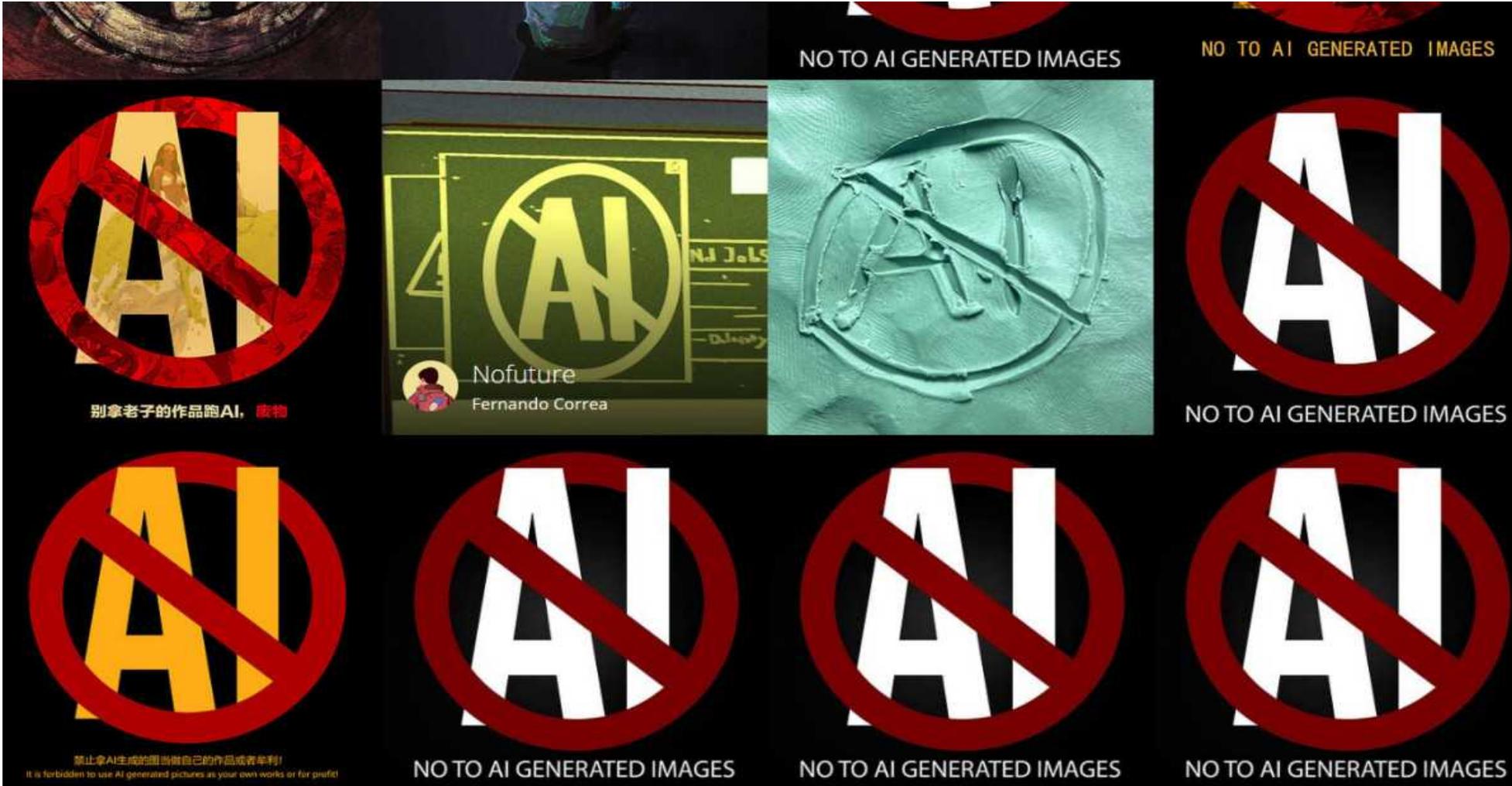
LA MUERTE DEL AUTOR



Boris Eldagsen won in 'Creativity' section the Sony World Photography Awards.

Artists Are Revolting Against AI Art on ArtStation

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But, what are we talking about?

What is AI?

*Oxford English Dictionary: "AI is the ability of computers or other machines to display or **simulate** intelligent behavior"*

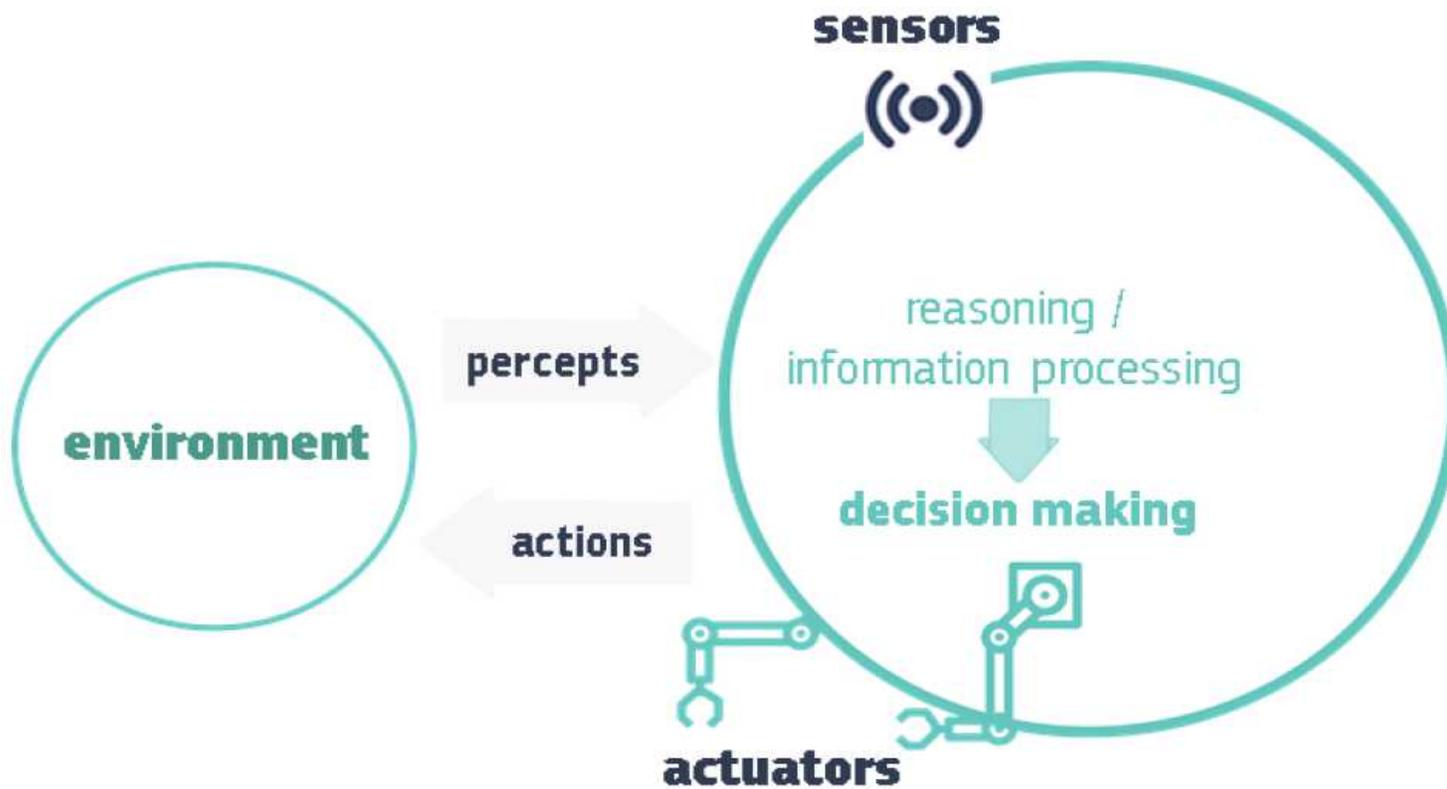
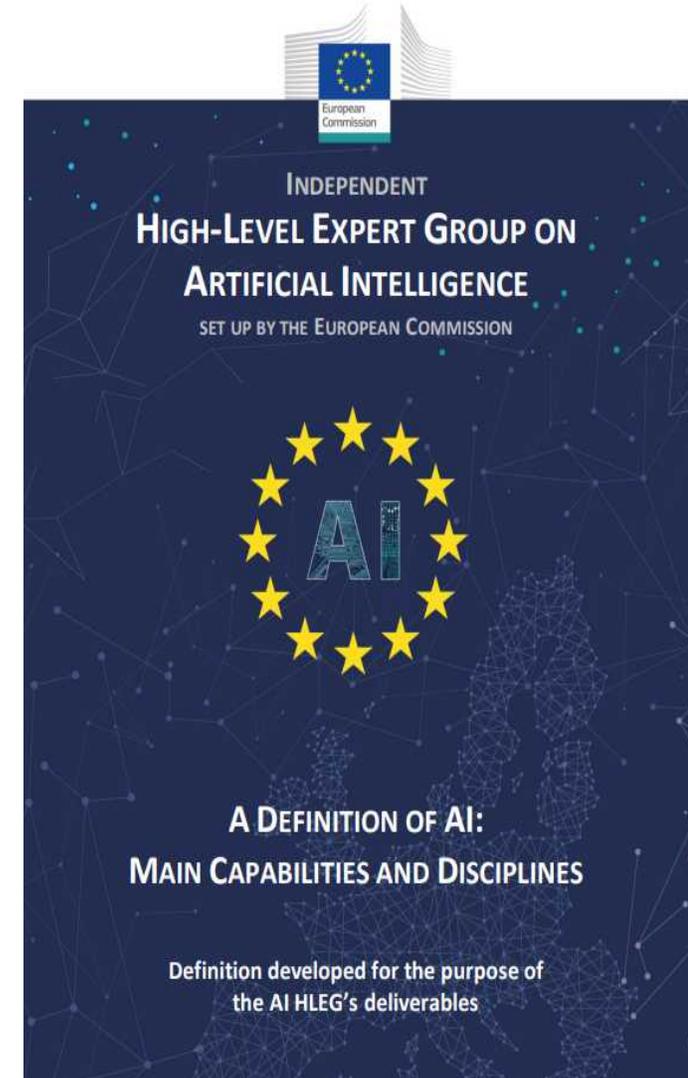


Figure 1: A schematic depiction of an AI system.



Definition developed for the purpose of the AI HLEG's deliverables

(European Commission, 2019)

AI definition...

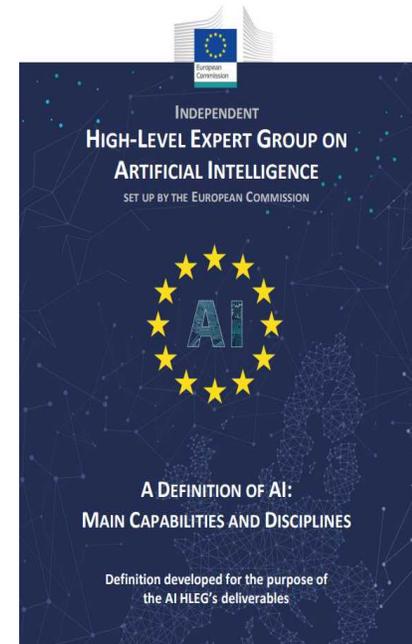
“AI systems are software and hardware systems designed by humans that, given a complex goal, act in the physical or digital dimension by:

1. The **perception** of your environment through the acquisition of data,
2. The **interpretation** of the structured or unstructured data collected
3. **Reasoning about the knowledge** at hand, or the **processing of information** derived from the data
4. To, finally, decide what are the best actions to take, **to achieve the given objective**.

AI systems can use symbolic rules or learn models and can also adapt their behavior.

<https://digital-strategy.ec.europa.eu/en/node/1950/printable/pdf>

<https://digital-strategy.ec.europa.eu/en/policies/expert-group-ai>



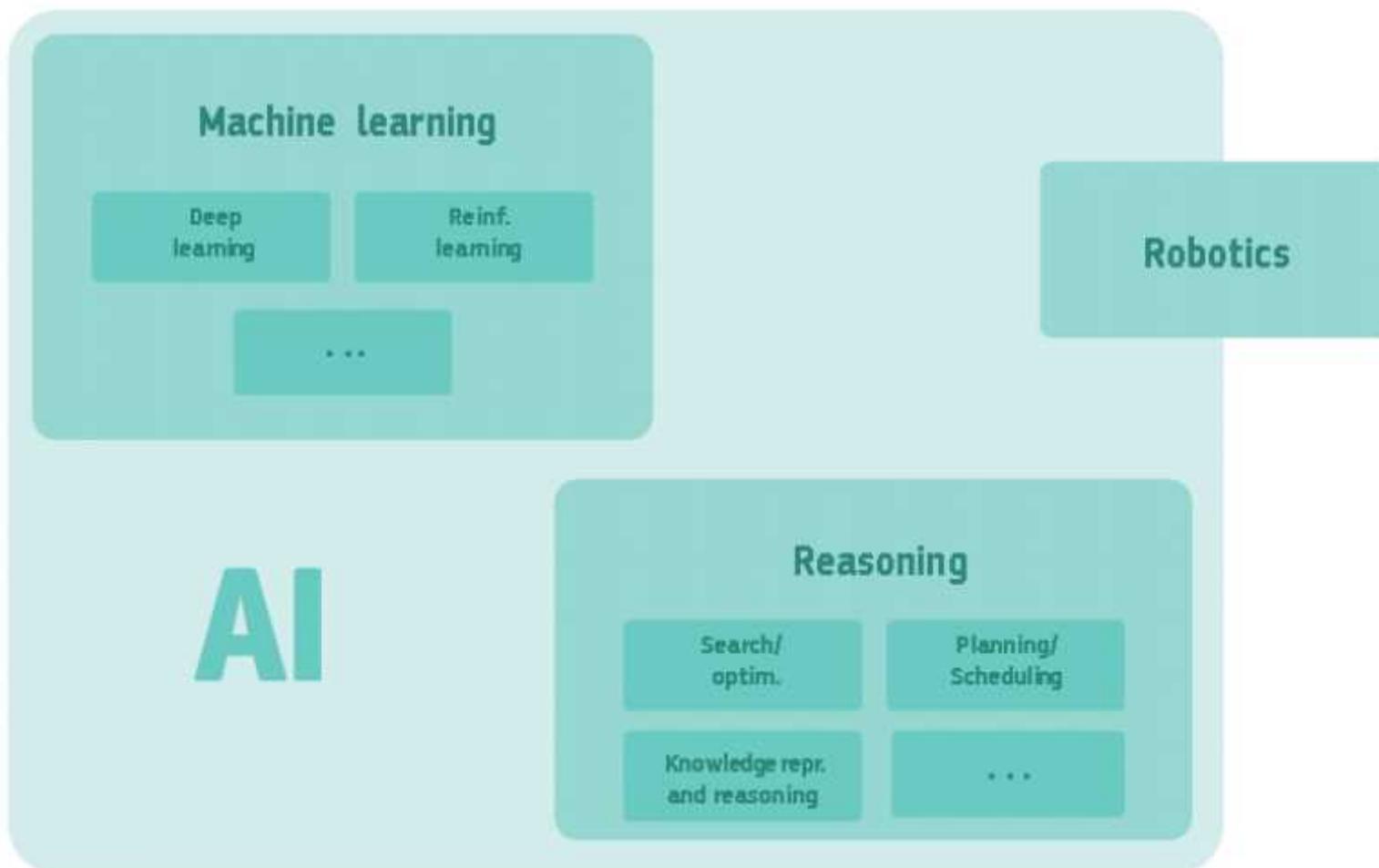
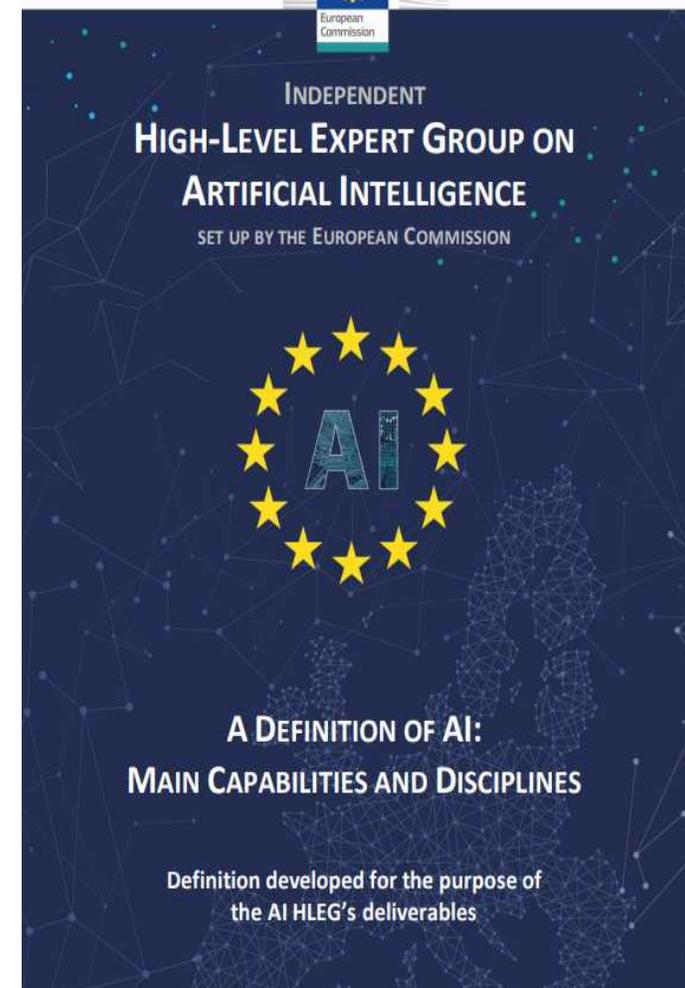
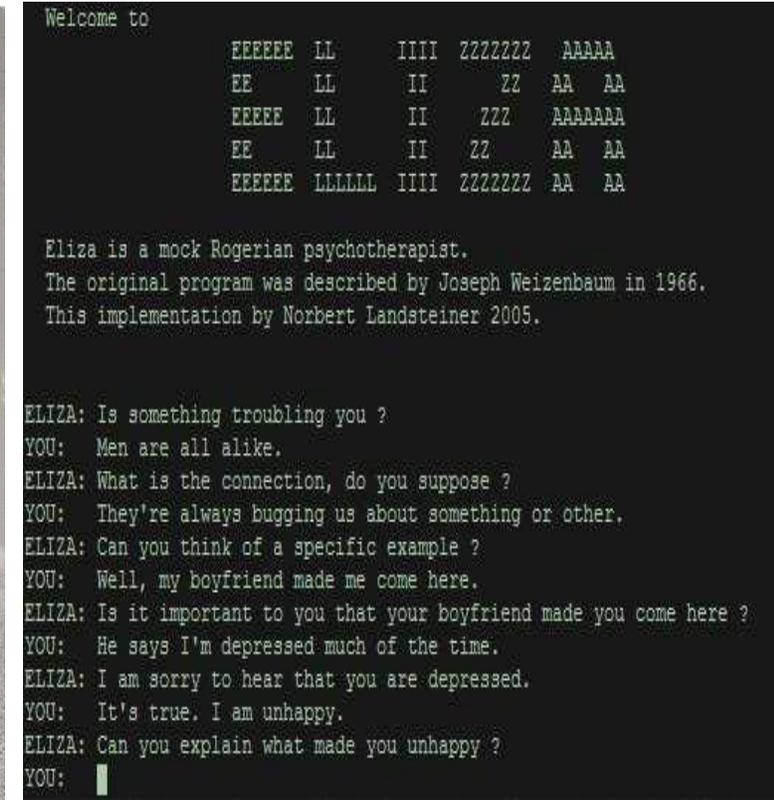
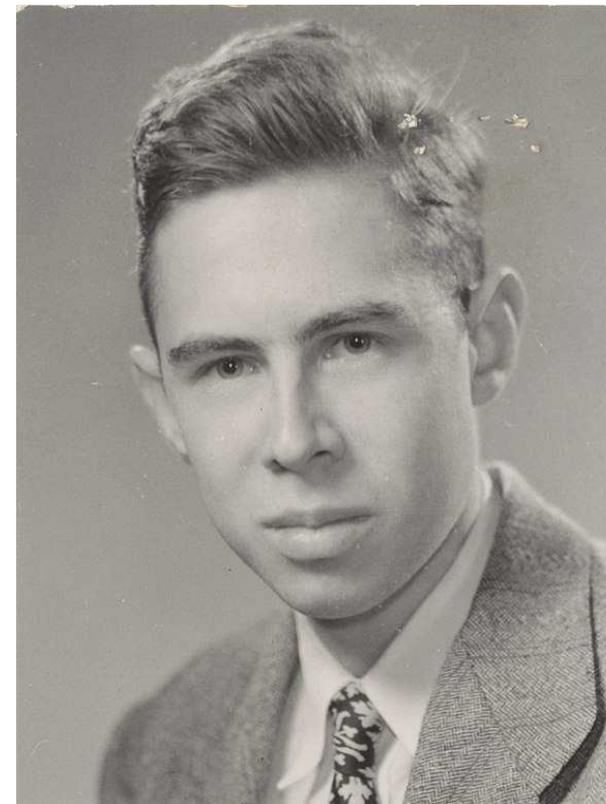
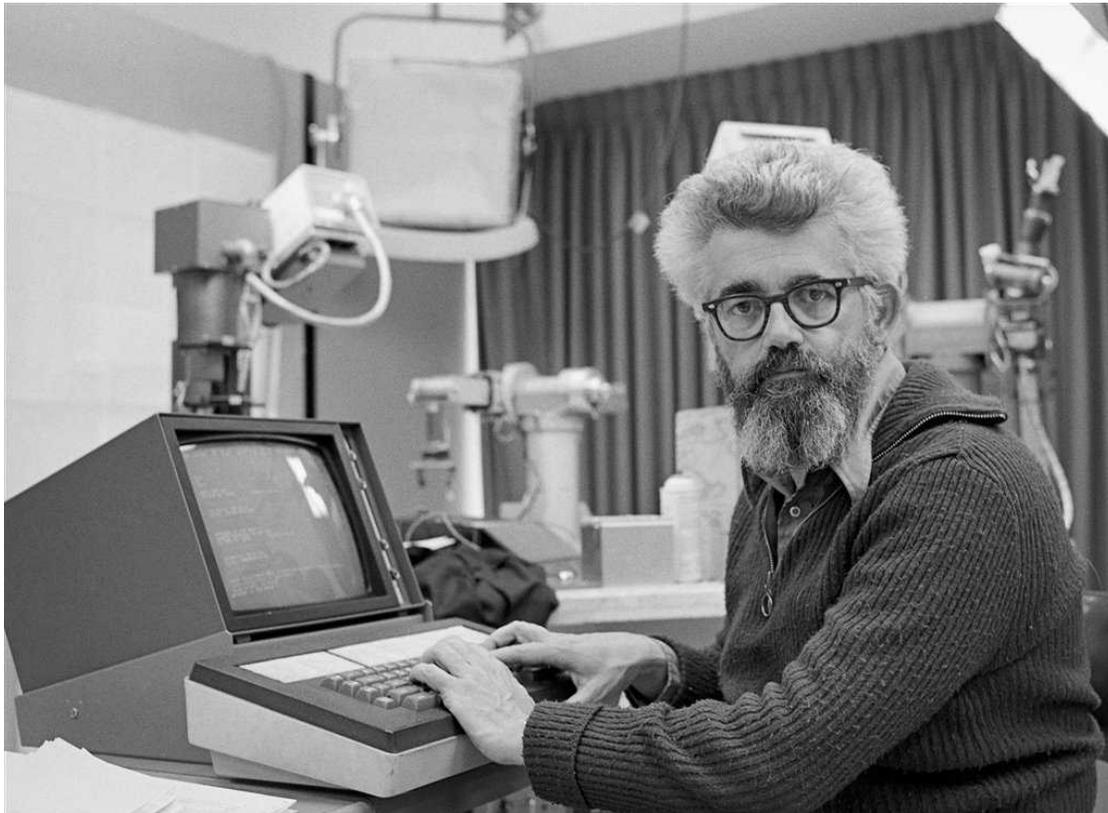


Figure 2: A simplified overview of AI's sub-disciplines and their relationship.

Both machine learning and reasoning include many other techniques, and robotics includes techniques that are outside AI. The whole of AI falls within the computer science discipline.



Definition developed for the purpose of the AI HLEG's deliverables



1956. The term Artificial Intelligence is born John McCarthy minted for the first time the term Artificial Intelligence in the Darmouth Conference

1957. Frank Rosenblat designs the first artificial neural network

1966 – ELIZA is the first ever chatbot, developed by Joseph Weizenbaum (MIT), includes NLP...



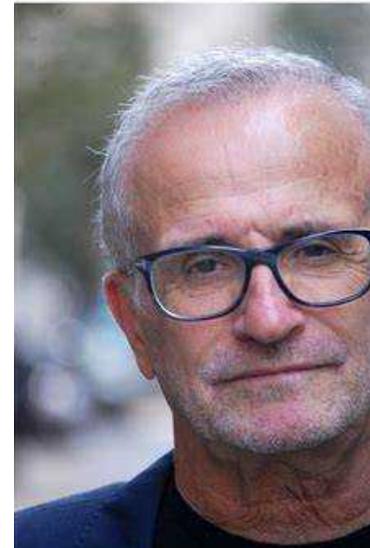
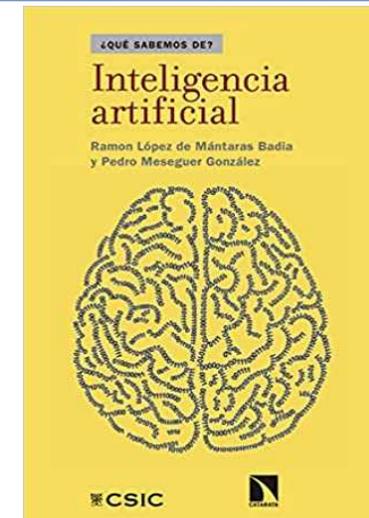
Mario Bunge (1985, 2019)

The philosophy of technology is an underdeveloped discipline.



Ramon López de Mántaras (2020)

IA is still naked* (...)
Current AI is very far from reaching the goal of general AI.



*Metaphor from «The Emperor's New Clothes» by Hans C. Andersen

AI advances, challenges and risks

(UPC Terrassa, January 2022)

«An intelligence without a body and that is not general will be difficult to approach human intelligence».

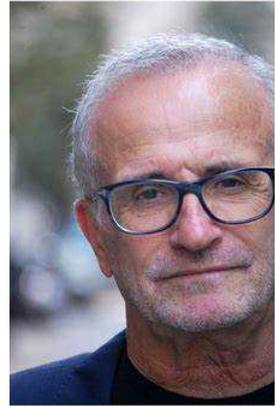
Ex: DeepBlue, AlphaGo, GPT-3, Open AI, The Next Rembrandt...

«To tackle complex problems you need to combine and master various techniques».

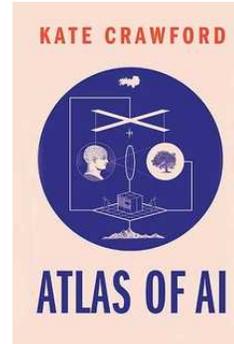
Ex: AI applied to oncology/melanoma → Best **doctor + AI assistant**

«**Challenge:** general AI»

«**Risks:** privacy, autonomy, bias, economic transition (unemployment)»



Kate Crawford (2021)



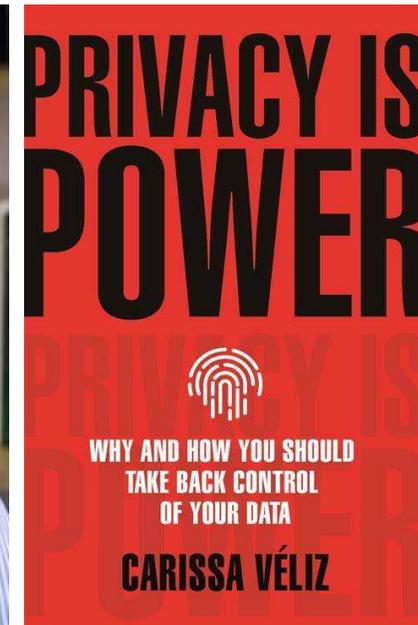
Kate Crawford Atlas of AI



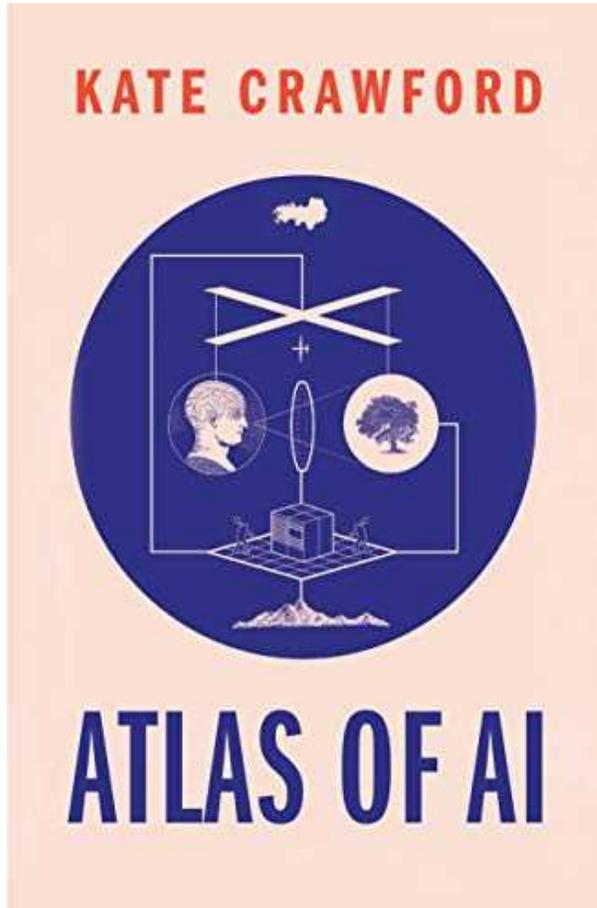
«AI is neither artificial nor intelligent»

Carissa Véliz (2020)

«Widespread surveillance is incompatible with free and democratic societies where Human Rights are respected.»

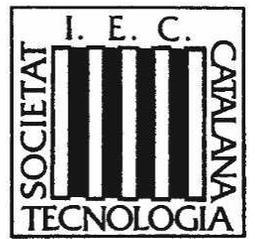
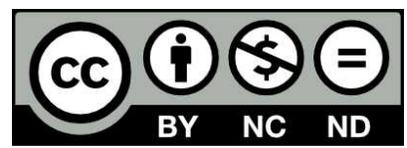


AI: neither artificial nor intelligent?



In contrast, in this book I argue that AI is neither *artificial* nor *intelligent*. Rather, artificial intelligence is both embodied and material, made from natural resources, fuel, human labor, infrastructures, logistics, histories, and classifications. AI systems are not autonomous, rational, or able to discern anything without extensive, computationally intensive training with large datasets or predefined rules and rewards. In fact, artificial intelligence as we know it depends entirely on a much wider set of political and social structures. And due to the capital required to build AI at scale and the ways of seeing that it optimizes AI systems are ultimately designed to serve existing dominant interests. In this sense, artificial intelligence is a registry of power.





2. Ethics

BARCELONA DECLARATION FOR THE PROPER DEVELOPMENT AND USAGE OF ARTIFICIAL INTELLIGENCE IN EUROPE (2017)

1. PRUDENCE /PRUDÈNCIA
2. RELIABILITY/ FIABILITAT
3. ACCOUNTABILITY/ RENDIMENT DE COMPTES
4. RESPONSIBILITY / RESPONSABILITAT
5. CONSTRAINED AUTONOMY /AUTONOMIA LIMITADA
6. HUMAN ROLE / NO PRESCINDIR DE L'HUMÀ

<https://www.iiia.csic.es/barcelonadeclaration/>

<https://www.iiia.csic.es/~mantaras/>



Francesca Rossi

Artificial Intelligence and technoethics

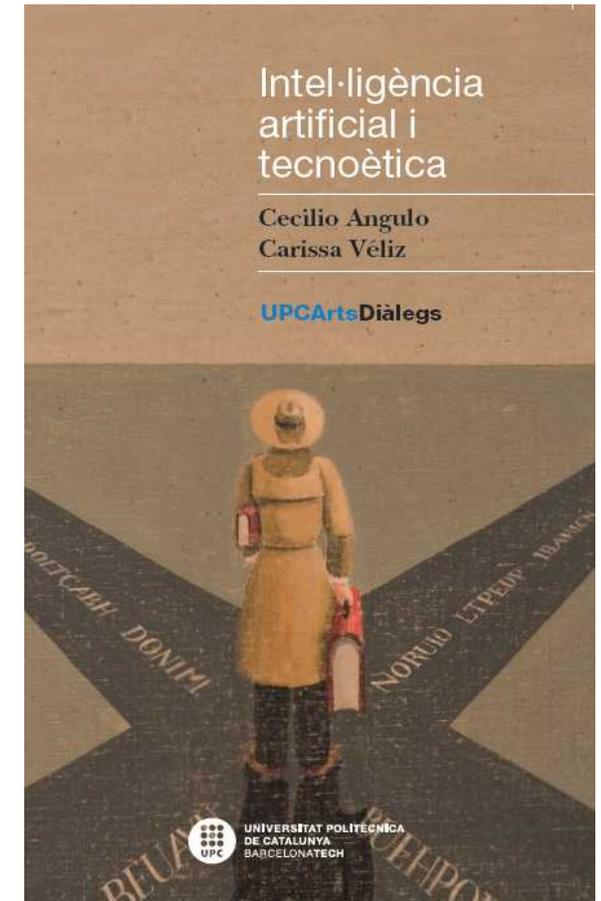
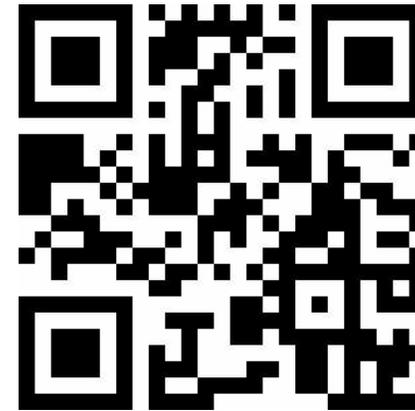
Cecilio Angulo & Carissa Véliz (2022)

Allò veritablement desconcertant per a la societat, fet que succeeix més cops del que voldríem, és que el que es reflecteix en el domini digital no ens agrada.

També es creu que el *big data* té el potencial d'eliminar els biaixos en les decisions humanes; de moment, com hem vist, sembla que està incrementant els biaixos i solidificant l'*statu quo*.

PDF free (Catalan):

<https://upcommons.upc.edu/handle/2117/365627>



Beijing Consensus on Artificial Intelligence and Education

Consider AI:

(UNESCO, 2019)

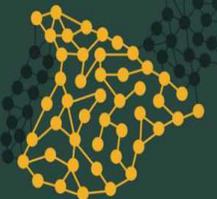
- Artificial intelligence for the management and delivery of education (points 10 and 11).
- Artificial intelligence to support teaching and teachers (points 12 and 13).
- Artificial intelligence for learning and the evaluation of learning (points 14 to 16)
- Development of values and skills for life and work in the age of AI (points 17 to 19)
- Artificial intelligence to offer lifelong learning opportunities, promoting its inclusive use and gender equality (points 20 to 27)
- Ensure the ethical, transparent and verifiable use of educational data and algorithms (28 to 30)
- Monitoring, evaluation and research: bear in mind the lack of systematic studies on the impacts of the applications of artificial intelligence in education. (point 31)

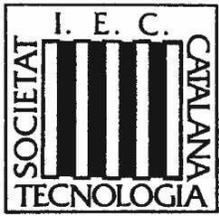


Inteligencia
Artificial en el
Sector Público

España

Perspectivas europeas para 2020 y años siguientes





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Big data, AI and social control in education?

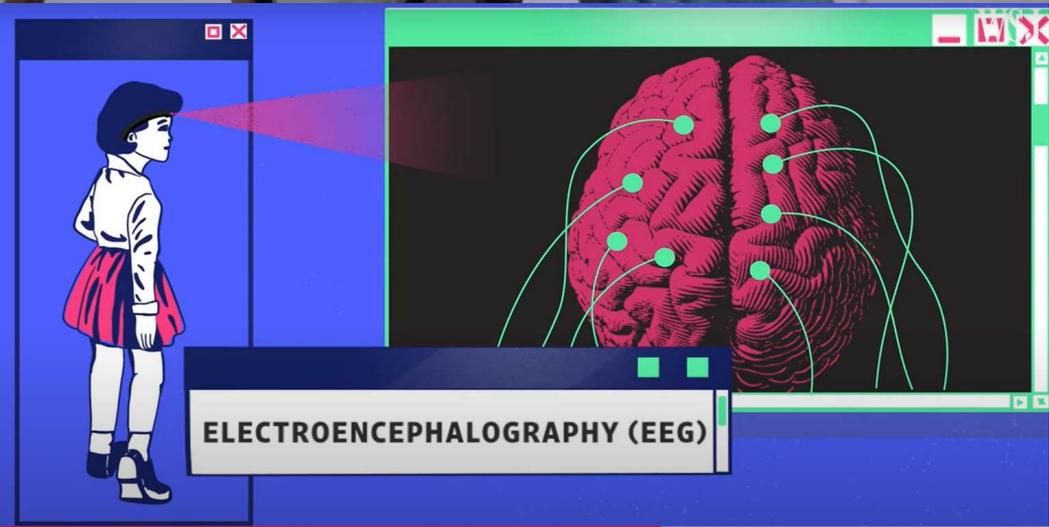
DILEMA
DEIXEM ENTRAR
LA INTEL·LIGÈNCIA ARTIFICIAL
A L'AULA?



Comitè d'Ètica
de la UPC

<https://www.youtube.com/watch?v=uN7UjACdl3I>





<https://www.youtube.com/watch?v=JMLsHI8aV0g>

EEG/Eyetracker

TEACHERS:

Are you interested in using these technologies in the classroom? And does it apply to you?

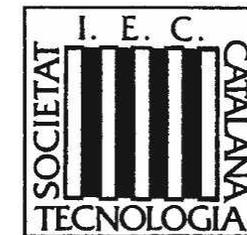
PARENTS:

Are you interested in receiving this information from your children?

DIRECTOR/SUPERVISORS:

Do you also want this information from teachers/ researchers/ staff?





Data training → Bias!

nature communications

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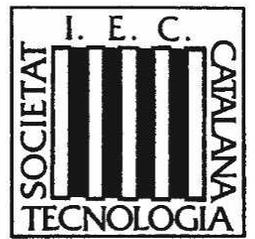
Facet-engineered TiO₂ drives photocatalytic activity and stability of supported noble metal clusters during H₂ evolution

[Yufen Chen](#), [Lluís Soler](#) , [Claudio Cazorla](#), [Jana Oliveras](#), [Neus G. Bastús](#), [Víctor F. Puentes](#) & [Jordi Llorca](#) 

[Nature Communications](#) **14**, Article number: 6165 (2023) | [Cite this article](#)

<https://www.nature.com/articles/s41467-023-41976-2>

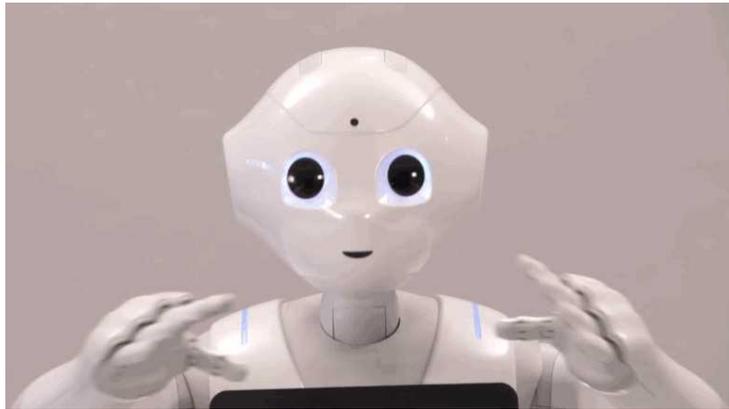




3. Education

New Science of Learning

(Meltzoff et al., 2009)



LEARNING ANALYTICS

Evaluación formativa,
predicción, detección
precoz...

+

ADAPTATIVE LEARNING

Tutor 1-1, tareas
personalizadas,
recomendación...

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2776823/>

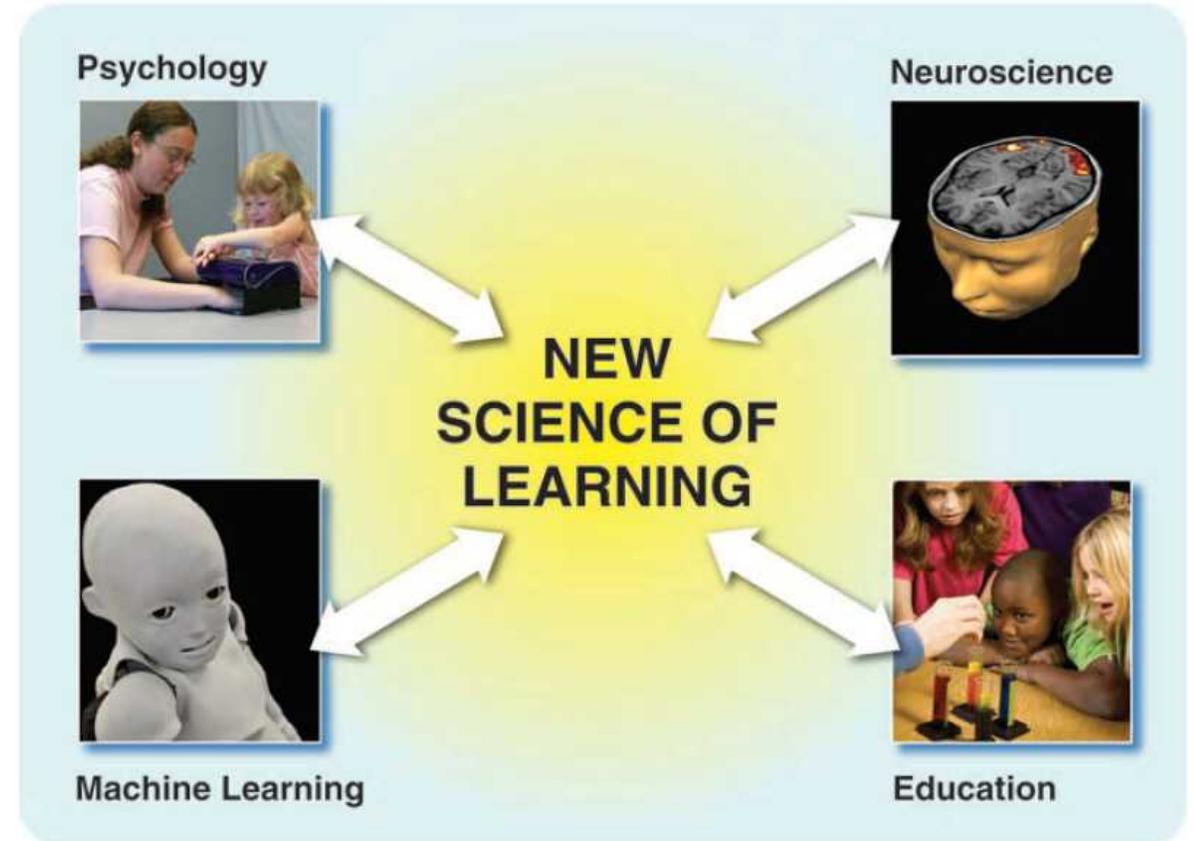
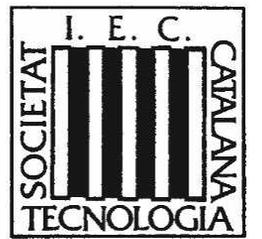


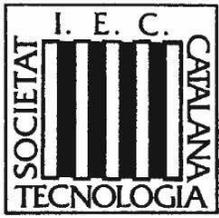
Fig. 1. The new science of learning has arisen from several disciplines. Researchers in developmental psychology have identified social factors that are essential for learning. Powerful learning algorithms from machine learning have demonstrated that contingencies in the environment are a rich source of information about social cues. Neuroscientists have found brain systems involved in social interactions and mechanisms for synaptic plasticity that contribute to learning. Classrooms are laboratories for discovering effective teaching practices. [Photo credits: R. Goebel (neuroscience), iStockphoto.com/]. Bryson (education), Y. Tsuno/AFP/Getty Images (machine learning)]



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Technology in the classroom?



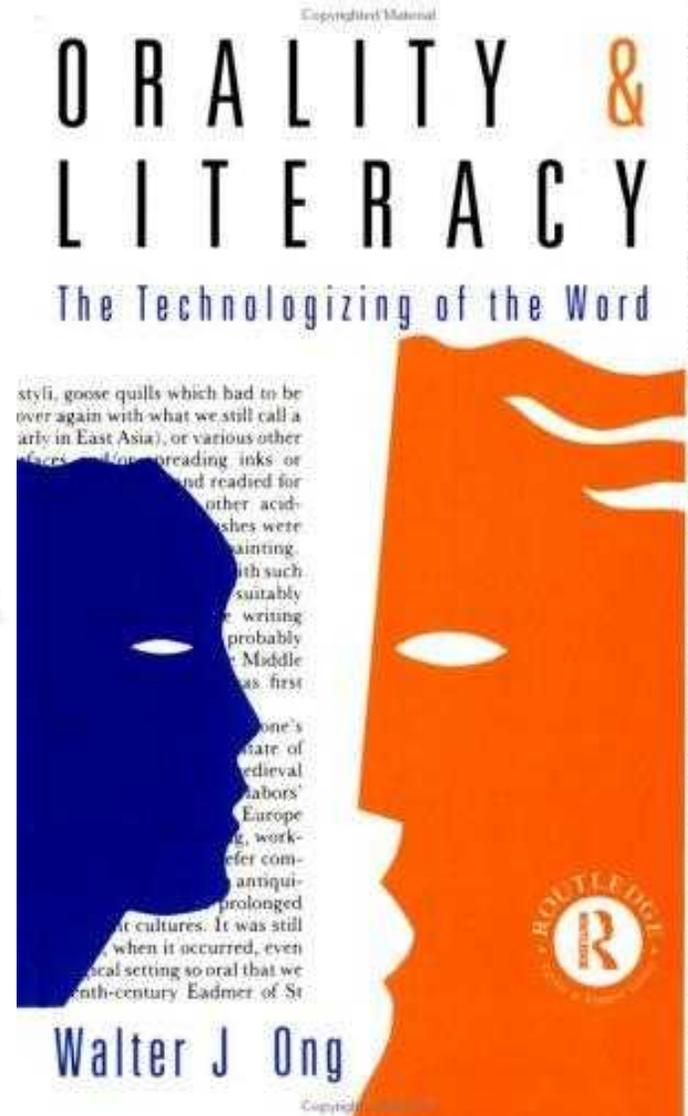
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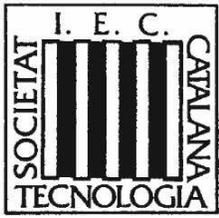
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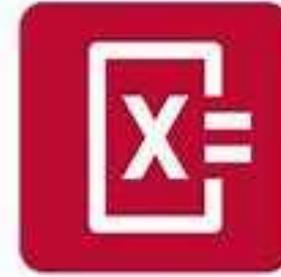




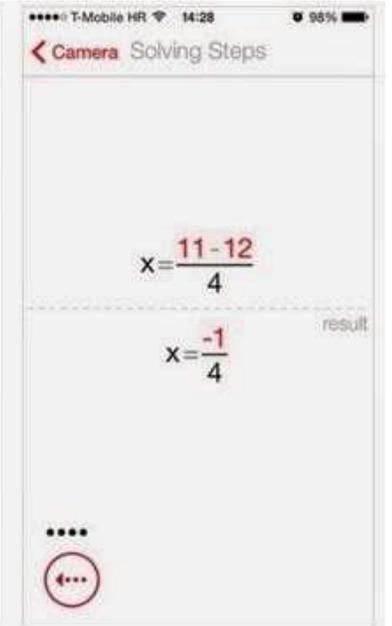
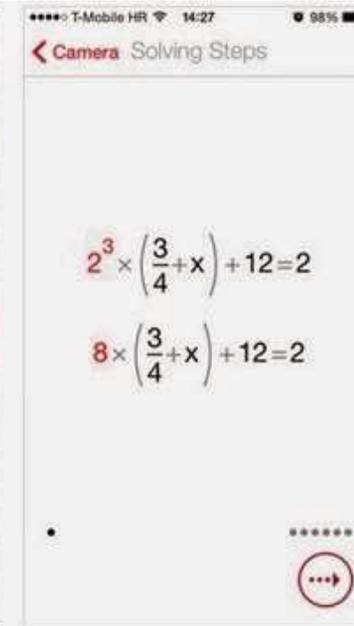
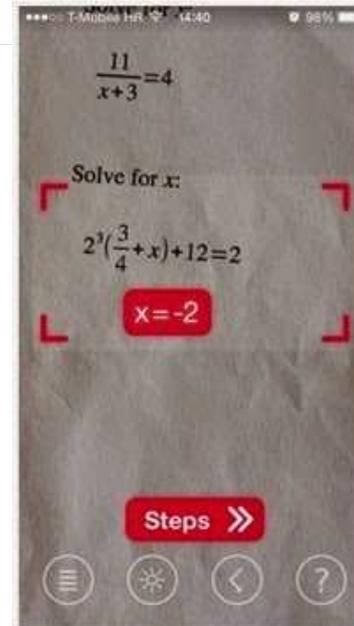
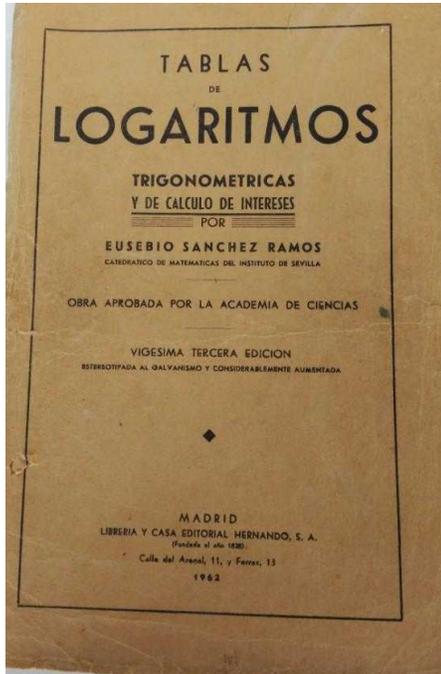
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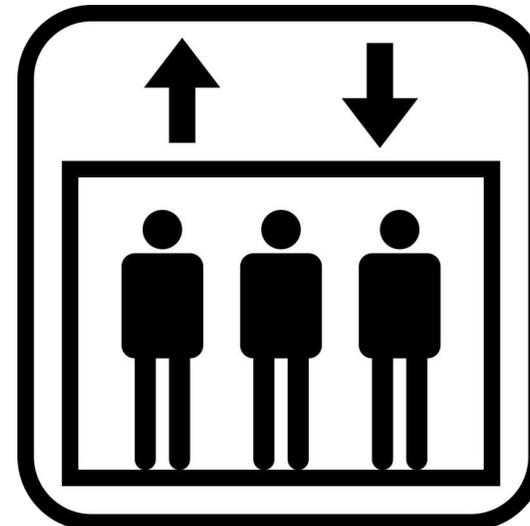
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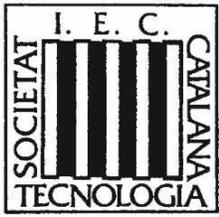


photomath



The fact that there is an elevator does not imply eliminating the stairs...

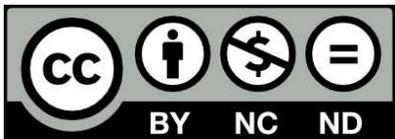




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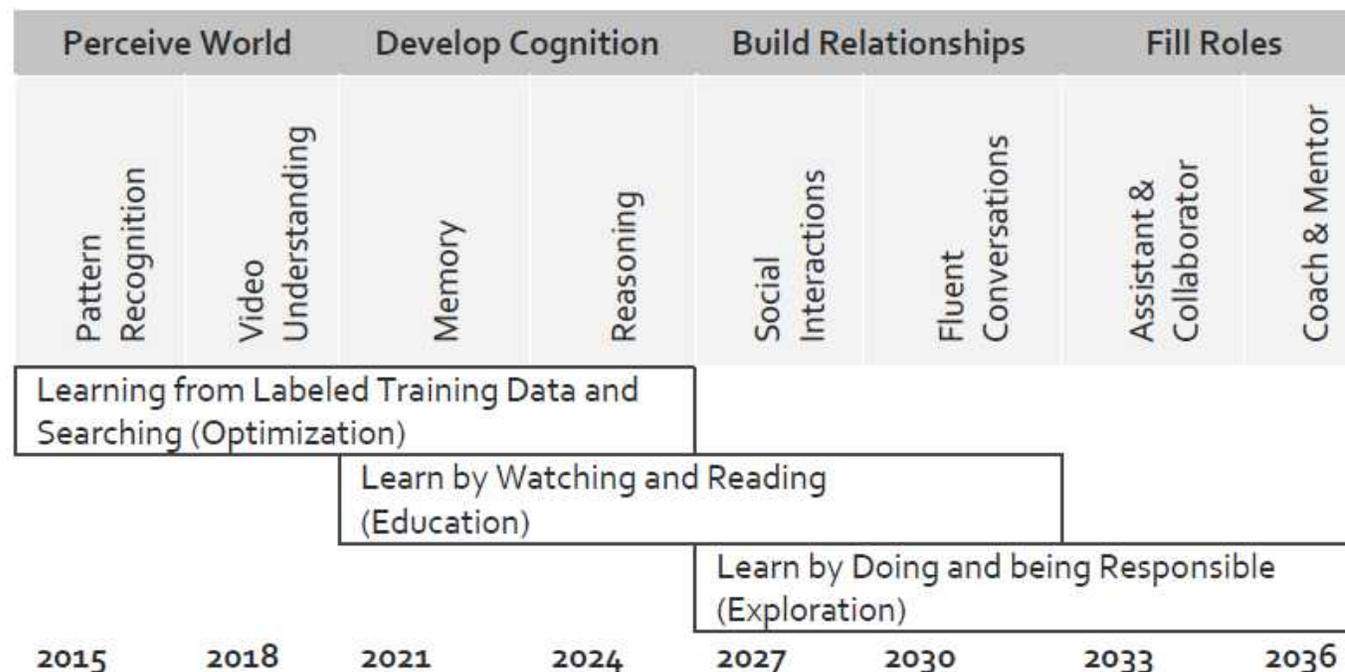
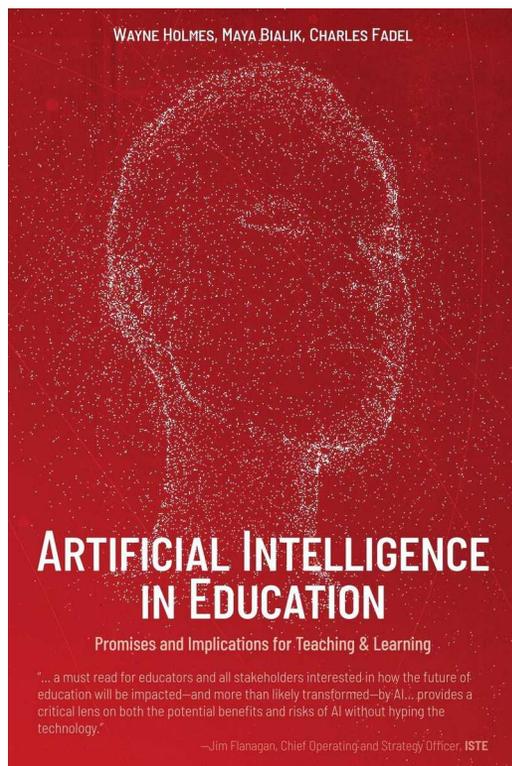
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Challenges and opportunities



AIED: Holmes, Bialik & Fadel (2019)

The What: What should students learn in the age of AI?
The How: How can AI enhance and transform education?



Source: Jim Spohrer, IBM⁷

The What? Holmes, Bialik & Fadel (2019, p.4)

WAYNE HOLMES, MAYA BIALIK, CHARLES FADEL

ARTIFICIAL INTELLIGENCE IN EDUCATION

Promises and Implications for Teaching & Learning

"... a must read for educators and all stakeholders interested in how the future of education will be impacted—and more than likely transformed—by AI... provides a critical lens on both the potential benefits and risks of AI without hyping the technology."

—Jim Flanagan, Chief Operating and Strategy Officer, ISTE

- Versatility, for robustness to face life and work.
- Relevance, for applicability, and student motivation.
- Transfer, for broad future actionability.

All of which are to be developed via:

- Selective emphasis on important areas of traditional knowledge.
- The addition of modern knowledge.
- A focus on essential content and core concepts.
- Interdisciplinarity, using real-world applications.
- Embedded skills, character, and meta learning *into* the knowledge domains.

AI in education: creative or destructive golem?

a) Am I unaware that it exists?
Do I use it in class?

b) Do you need to change the way you teach? How?



<https://aihub.csic.es/inteligencia-artificial-en-educacion-golem-creativo-o-destructor/>



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Some tools...

TOOLS AI.. Homework! :-)



EL MAYOR DIRECTORIO DE HERRAMIENTAS DE
INTELIGENCIA ARTIFICIAL
WWW.AIFINDY.COM

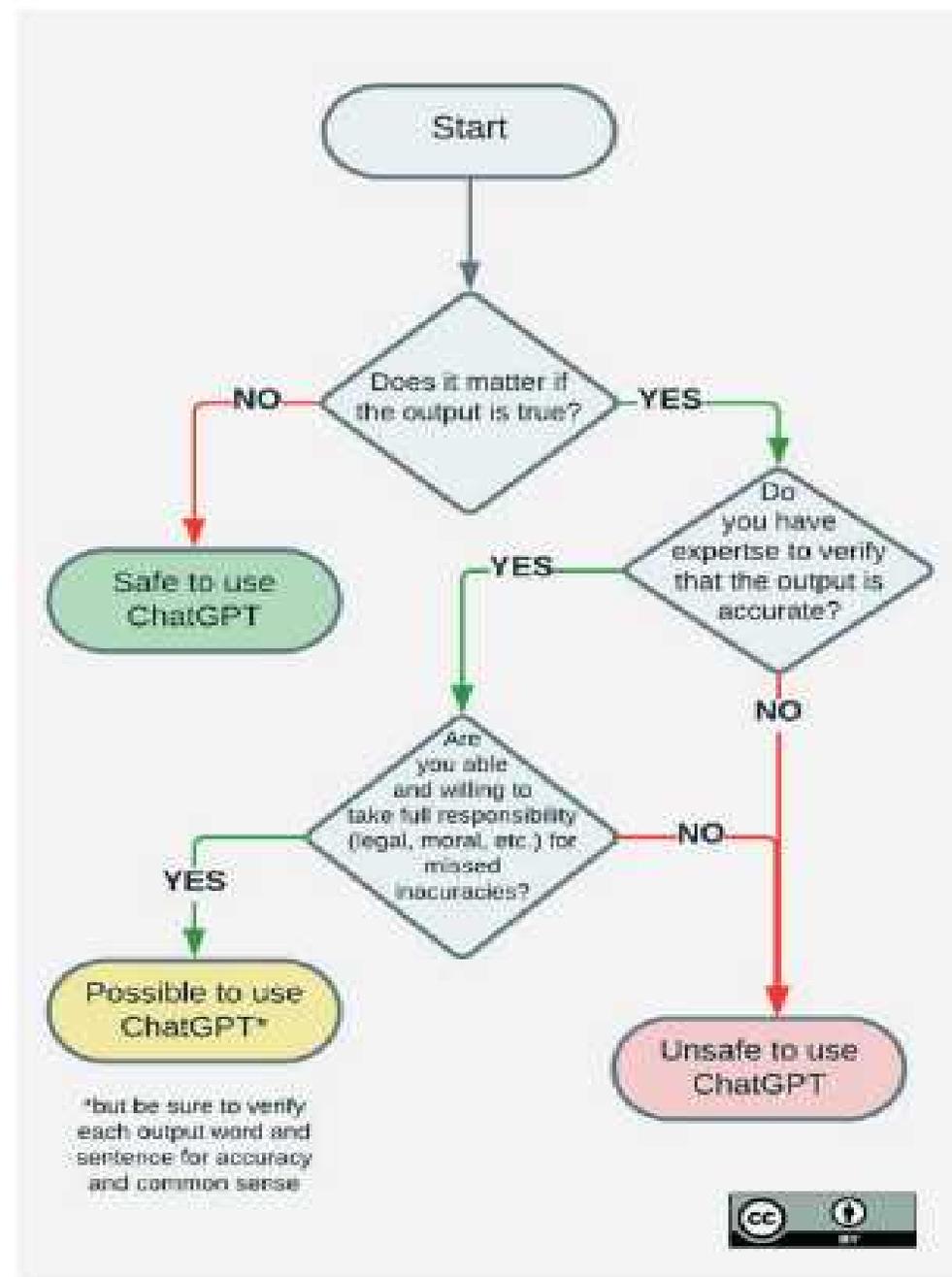
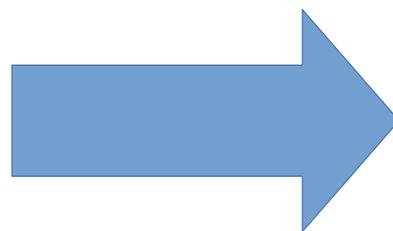


AIFINDY

<https://aifindy.com/>

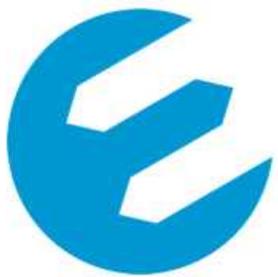


Educación
2030



https://unesdoc.unesco.org/ark:/48223/pf0000385146_spa

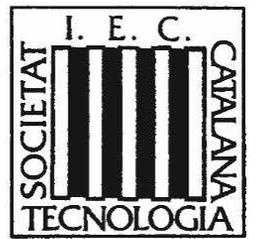
BY: Aleksander Tiulkanov (2023)



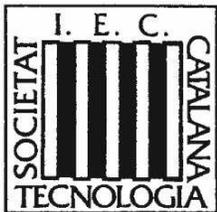
Comitè d'Ètica
de la UPC



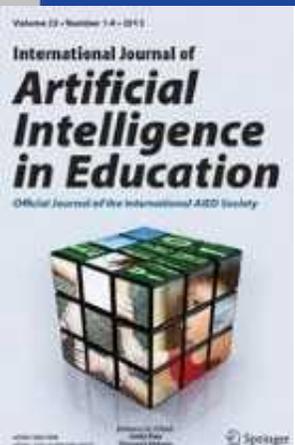
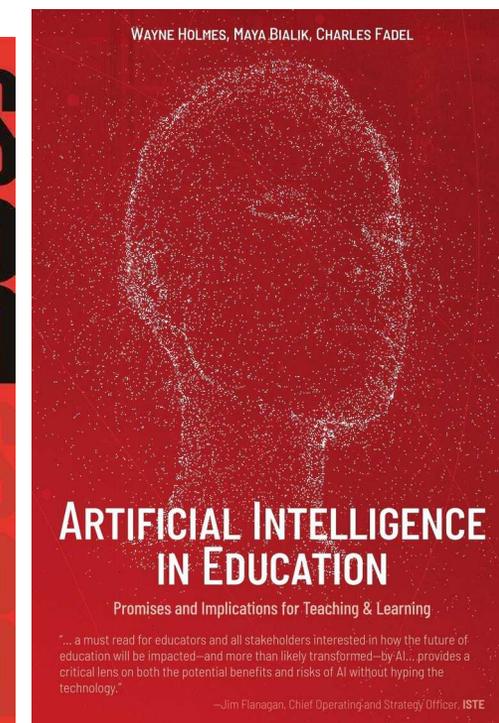
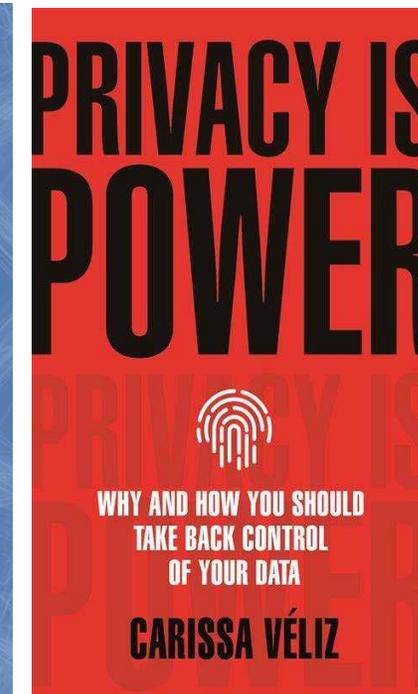
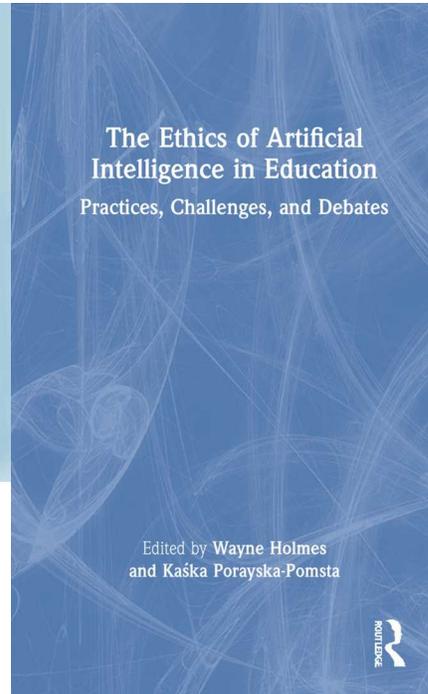
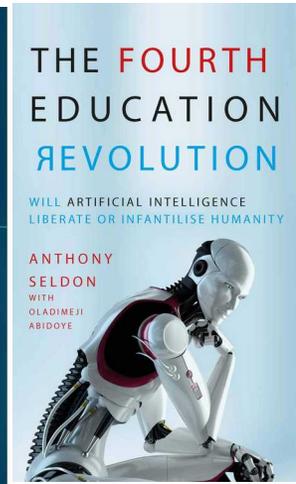
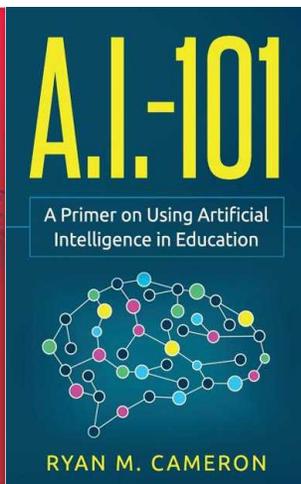
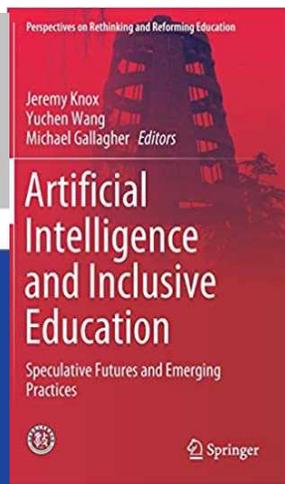
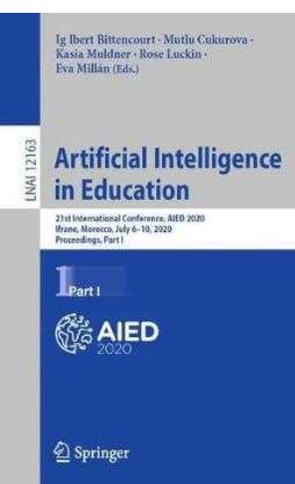
(...) Taking into account the considerations indicated, the APDCAT RECOMMENDS to the public administrations and entities subject to its scope of control, **that they do not incorporate the tool in the exercise of public functions and the provision of public services when personal data is processed**, until the European Data Protection Committee pronounces or issues recommendations, guidelines or best practices to ensure respect for data protection regulations.



4. Research



AI Research and education: books and journals



Springer Journal of
AIED Society
<https://iaied.org/>

<https://link.springer.com/journal/40593/volumes-and-issues>

<https://iaied.org/showcase>

How ChatGPT and other AI tools could disrupt scientific publishing

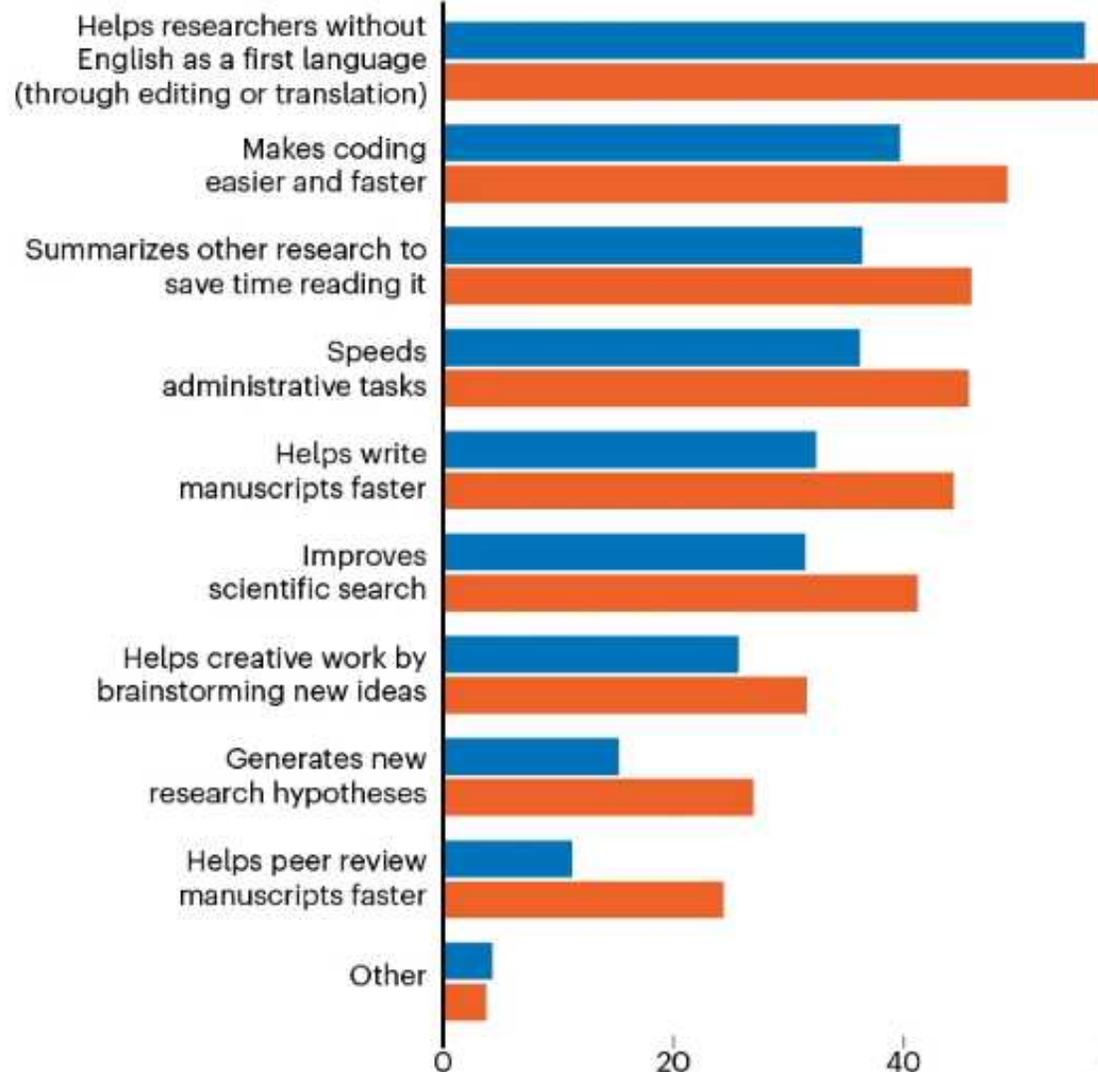
A world of AI-assisted writing and reviewing might transform the nature of the scientific paper.

Gemma Conroy



Q: What do you think are currently the biggest benefits of generative AI for research? In the future, where do you think generative AI will have the biggest beneficial impacts for research?

■ Now ■ Future



*1,659 respondents. For more on Nature's survey, see go.nature.com/45232vd



Fes me una proposta de tipografia que utilitzaries a un poster retro sobre una fira de steampunk. Dona'm dues referències en APA style i justifica'm la proposta sota aquestes teories del disseny gràfic.



Per a un poster retro sobre una fira de steampunk, jo recomanaria utilitzar la tipografia "Steampunk" o "Gears of Peace".

La tipografia "Steampunk" és una font de lletra inspirada en la estètica del moviment steampunk, amb elements mecànics i industrials que s'adapten bé a l'ambient retro del poster. A més, la seva forma circular i els detalls decoratius li donen un aire lúdic i divertit que encaixa amb l'esperit de la fira.

La tipografia "Gears of Peace" també és una bona opció, ja que combina elements mecànics amb formes arrodonides i elegantes que li donen un estil únic i distintiu. A més, la seva forma circular i els detalls decoratius li aporten un toc de fantasiositat i misteri que es pot adaptar a l'ambient steampunk del poster.

Per justificar aquesta proposta, es podria fer referència a la teoria del disseny gràfic que defensa la importància de la coherència visual en qualsevol projecte. Això vol dir que és important escollir tipografies que es complementin entre si i que siguin coherents amb l'estil i la temàtica del projecte. En aquest cas, la tipografia "Steampunk" o "Gears of Peace" són fonts que s'adapten bé a l'ambient retro i steampunk del poster, ja que incorporen elements mecànics i industrials que es relacionen amb aquest estil.

Altres teories del disseny gràfic que es poden utilitzar per justificar aquesta proposta són la de la jerarquia visual, que defensa la importància de destacar determinades informacions sobre d'altres, i la de l'equilibri, que defensa la importància de crear composicions visuals harmonioses i equilibrades. En aquest cas, la tipografia "Steampunk" o "Gears of Peace" permeten crear jerarquies visuals clares i equilibris visuals atractius gràcies a la seva forma circular i als detalls decoratius que incorporen.

Referències en APA style:

- Steampunk. (n.d.). Retrieved from <https://www.dafont.com/es/steampunk.font>
- Gears of Peace. (n.d.). Retrieved from <https://www.dafont.com/es/gears-of-peace.font>

**Abstracts, improve
English/Catalan, topic
proposal, **bureaucracy**,
References (APA style!)...
ChatGPT /BARD, but
remember **REVIEW!****

Coding with ChatGPT...

How to Learn Python FAST with ChatGPT?

<https://www.youtube.com/watch?v=tEn5BjRY8Uw>

Cómo programar más rápido con ChatGPT

https://www.youtube.com/watch?v=nzLHwhJ_R1A



Escriu me el codi d'un programa en R per a la generació de textos aleatoris partint d'un corpus conegut.



Per generar textos aleatoris a partir d'un corpus en R, podríem fer servir la funció `sample()` per seleccionar de manera aleatòria paraules del corpus i després utilitzar la funció `paste()` per combinar-les en frases.

Així, un exemple de programa en R per generar textos aleatoris podria ser el següent:

```
Copy code

# Definim el nostre corpus com una llista de paraules
corpus <- c("hola", "com", "estàs", "avui", "?")

# Definim la funció que genera textos aleatoris
generate_random_text <- function() {
  # Seleccionem un nombre aleatori de paraules del corpus
  n <- sample(1:length(corpus), 1)

  # Seleccionem les paraules aleatòriament del corpus
  words <- sample(corpus, n)

  # Utilitzem la funció paste() per combinar les paraules en una frase
  sentence <- paste(words, collapse = " ")

  # Retornem la frase generada
  return(sentence)
}

# Generem una frase aleatòria
generate_random_text()
#> "avui estàs"

# Generem una altra frase aleatòria
generate_random_text()
#> "hola com estàs ?"
```

Aquest programa selecciona de manera aleatòria un nombre de paraules del corpus i després combina aquestes paraules en una frase utilitzant la funció `paste()`. Cada vegada que cridem a la funció `generate_random_text()` s'obté una frase aleatòria diferent.

AI Research/Education: teamwork formation



<https://eduteams.iiia.csic.es/>



TEST EDUTEAMS IN YOUR CLASS!

Comparing:

- Eduteams vs randomised teams (list order, random number...)
- Eduteams vs teams formed by the teacher

AI and Work **TEAMS: EDUTEAMS**



EDUTEAMS

Heuristic Search: Synergistic Team Composition Problem (STCP) in the domain of student team composition.

<https://eduteams.iiia.csic.es/>



Knowledge-Based Systems

Volume 182, 15 October 2019, 104799



Synergistic team composition: A computational approach to foster diversity in teams ☆

Ewa Andrejczuk^{a, b}✉, Filippo Bistaffa^a✉, Christian Blum^a✉, Juan A. Rodríguez-Aguilar^a✉, Carles Sierra^a✉

BIG PROBLEM!

Based on psychological theories without solid scientific evidence!

- Multiple intelligences
- Jung personality models

<https://www.sciencedirect.com/science/article/abs/pii/S0950705119302746>

AI in visual recognition: Emotions?

Reflecting the ethical implications of artificial intelligence and algorithmic decision-making.

BIG PROBLEM!

Based on disputed theories of facial expressions without clear evidence!

- Ethnic/Cultural Bias?
...but AI is training...

The screenshot shows a software interface titled "Biometric Mirror". On the left, a "Camera" window displays a grayscale image of a man with glasses, his hands covering his mouth in a surprised expression. On the right, an "Information Display" window shows a table of attributes for "Session ab4de".

Attribute	Value	Conf
Gender	MALE	-
Age	28	-
Ethnicity	CAUCASIAN	82%
Emotion	SURPRISED	91%
Kindness	LOW	7%
Happiness	HIGH	87%
Commonness	HIGH	99%
Responsibility	LOW	73%
Attractiveness	AVERAGE	92%
Sociability	HIGH	64%
Introversion	HIGH	88%
Aggressiveness	LOW	17%
Weirdness	HIGH	63%
Emotional Stability	LOW	95%

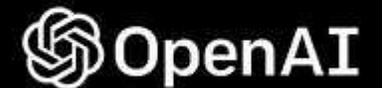
At the bottom of the interface, there is a button labeled "COVER FACE-Exit" and a URL: "more information via <http://go.unimelb.edu.au/vi56>".

Can AI (ChatGPT, Midjourney, Bard...) do our students' homework?

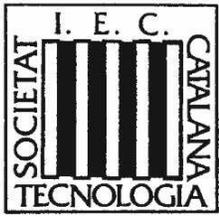
Ahem, can AI do your job for you?

Bureaucracy?

Can it help you as a professional?



<https://openai.com/>



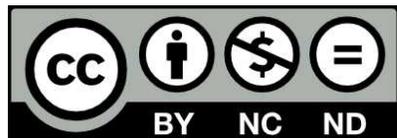
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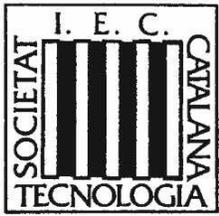
Conclusion

In short, to deal with artificial intelligence...you need to ask it good questions, supervise, ethics and...

Cultivate your biological intelligence!



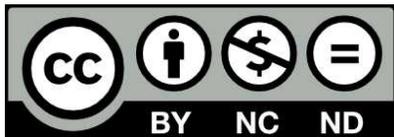
Com citar: Hernández-Fernández, A. (2023). Artificial Intelligence in education and research: ethical reflections, INTE Conference «*AI in teaching, reasearch and service: pros and cons*», 3 November 2023.



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Thank you!



Com citar: Hernández-Fernández, A. (2023). Artificial Intelligence in education and research: ethical reflections, INTE Conference «*AI in teaching, reasearch and service: pros and cons*», 3 November 2023.