

# (Some) Social impacts of Artificial Intelligence

**Alberto Lumbreras**  
**AI Researcher**

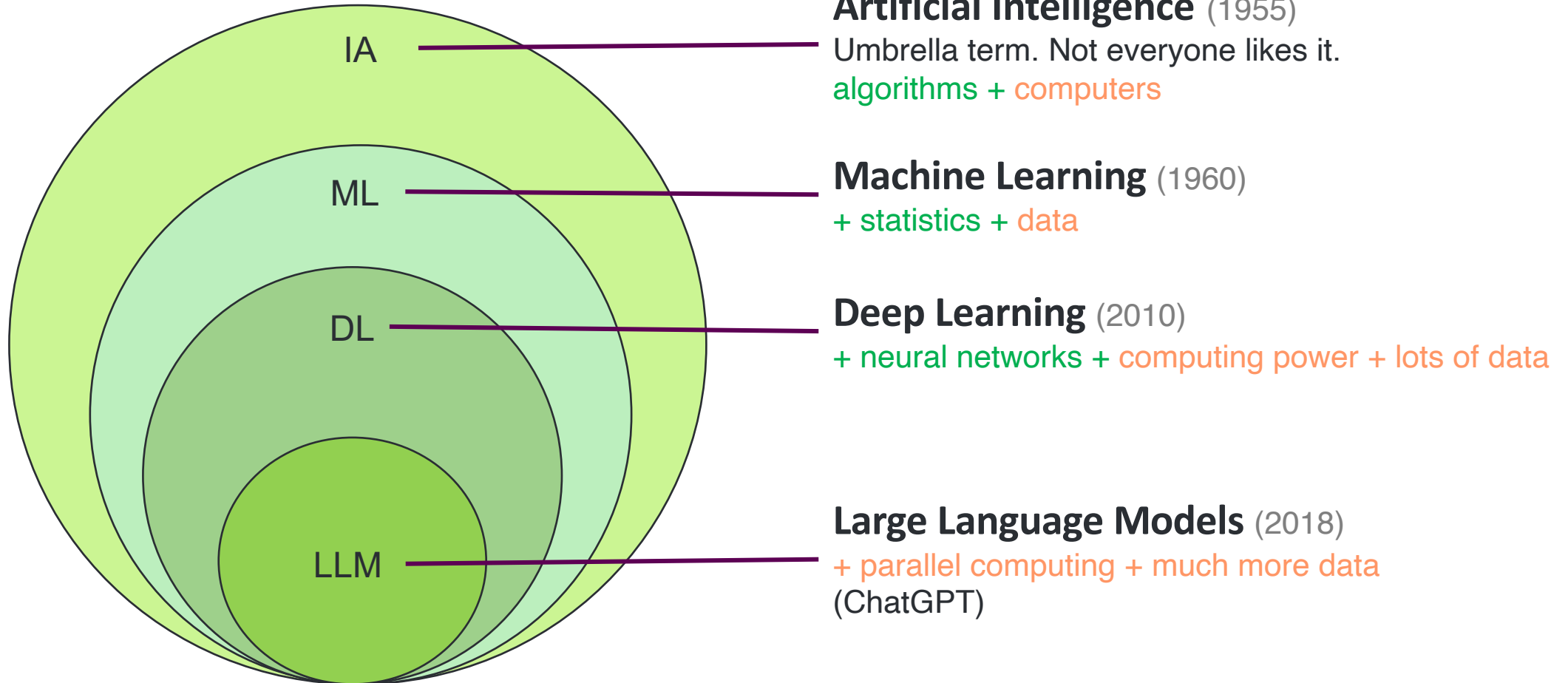
[www.albertolumbreras.net](http://www.albertolumbreras.net)  
[alberto.lumbreras@gmail.com](mailto:alberto.lumbreras@gmail.com)



**Summer University**  
**11 to 14 july**  
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# What is AI?

AI has moved forward with **Science** and **Resources**



# What is a language model

A model that learns the probability of each possible sentence



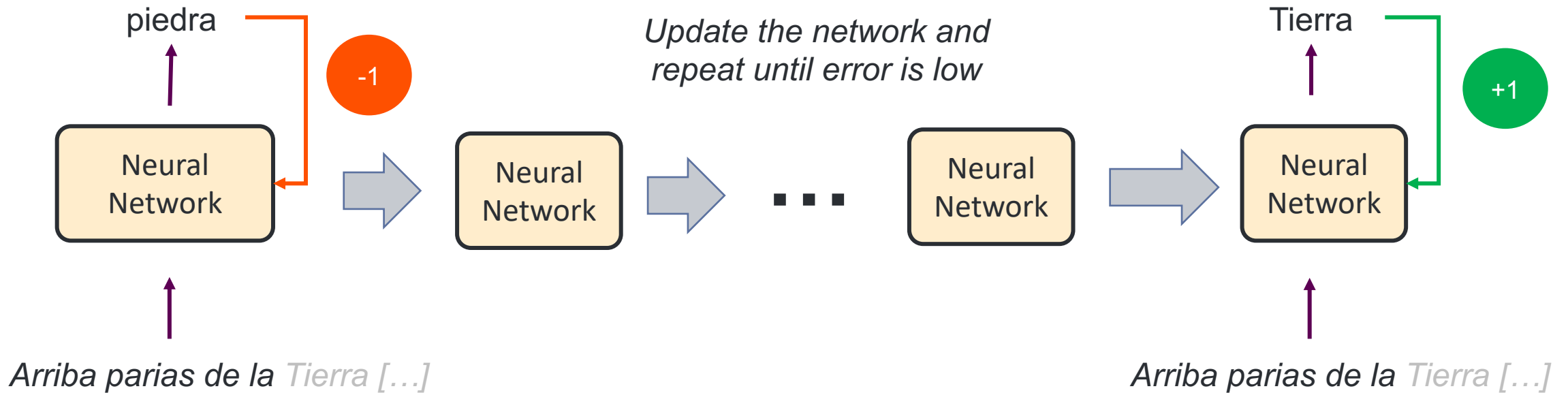
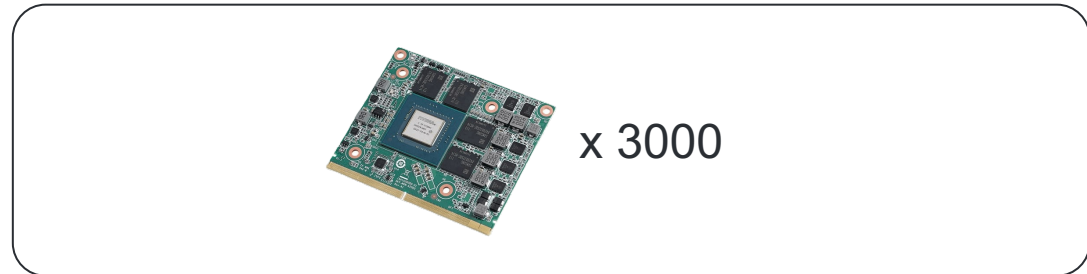
# How are language models *trained*

A stunningly simple method

Huge corpus of *user-generated* data:

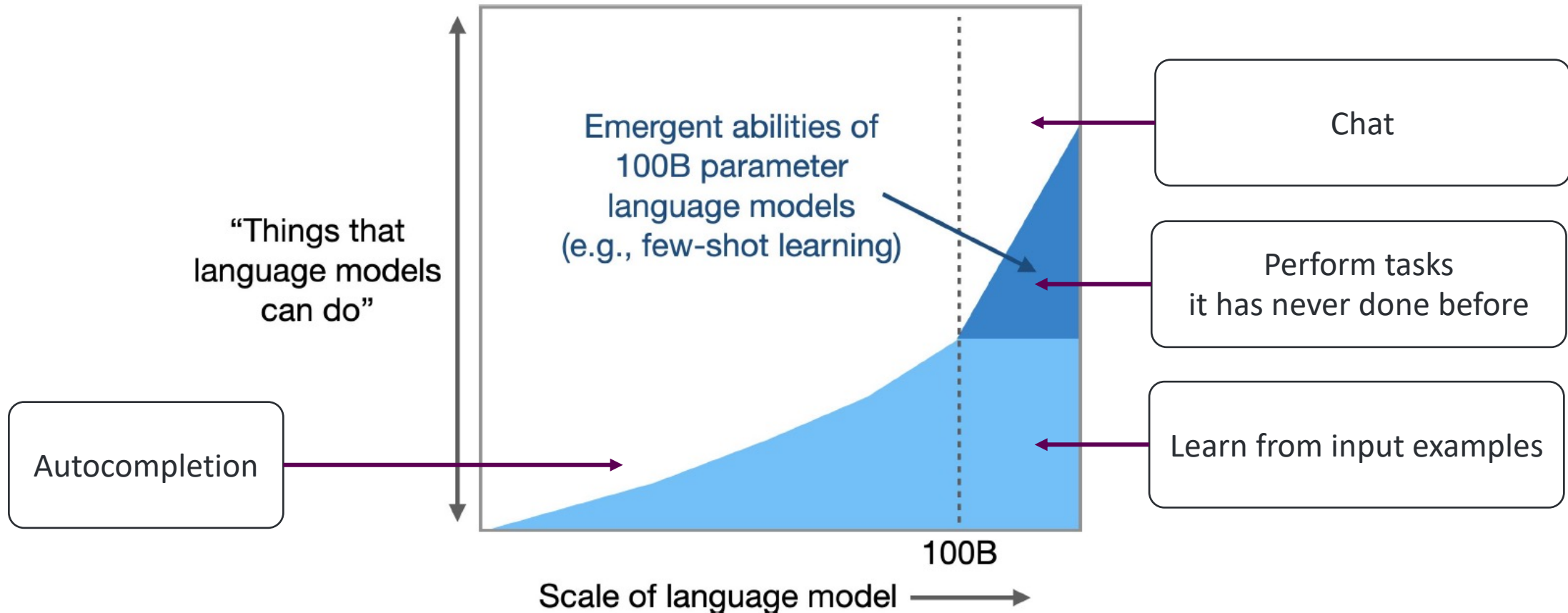


Huge computing power (for big and fast networks):



# At a given scale, LLMs show emerging properties

And this was a surprise



# It doesn't mean AI systems will take over the world



AI systems are not that smart  
(they just outperform humans in some specialized tasks)



But even if they were *smarter*, **they are not social species.**  
**Dominance** is a strategy of (some) social species.



# But it can get out of control



# Challenges and tasks



**Democratic AI**



**Sustainable AI**



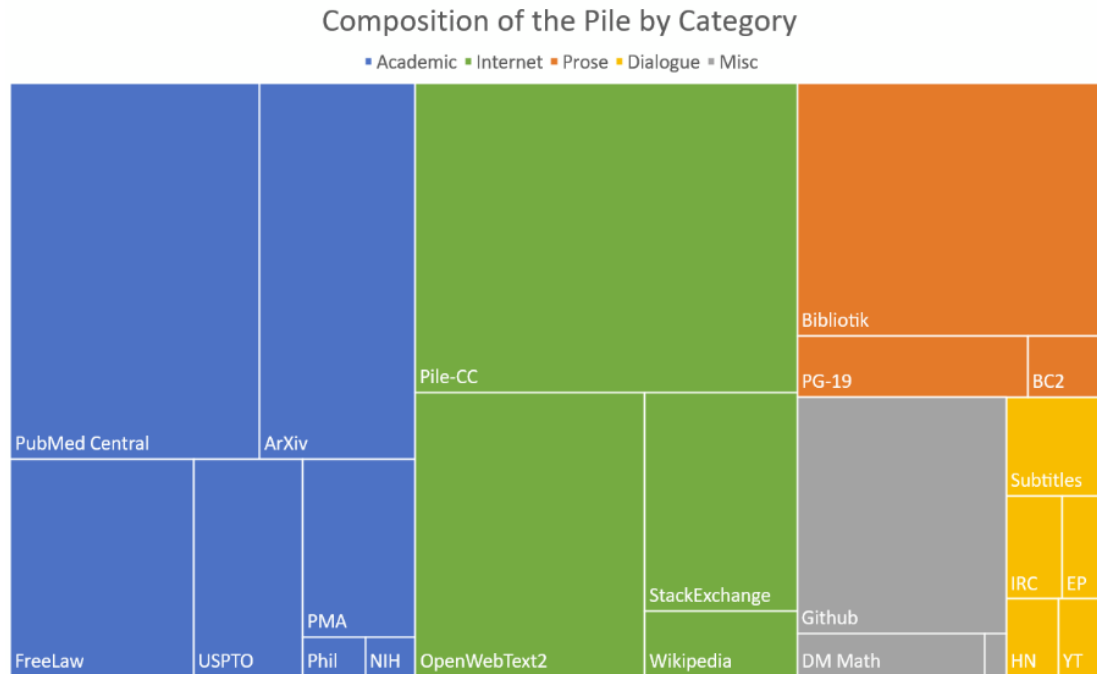
**Redistributive AI**



# Democratic AI

Why (1): To reduce and control bias and discrimination

The **composition of the training dataset** has a huge effect in the model outputs



The COMPAS software was used to guide judges in the US

Two Petty Theft Arrests

<b>VERNON PRATER</b>	<b>BRISHA BORDEN</b>
<b>LOW RISK 3</b>	<b>HIGH RISK 8</b>
<b>VERNON PRATER</b>	<b>BRISHA BORDEN</b>
<b>Prior Offenses</b> 2 armed robberies, 1 attempted armed robbery	<b>Prior Offenses</b> 4 juvenile misdemeanors
<b>Subsequent Offenses</b> 1 grand theft	<b>Subsequent Offenses</b> None
<b>LOW RISK 3</b>	<b>HIGH RISK 8</b>

*Borden was rated high risk for future crime after she and a friend took a kid's bike and scooter that were sitting outside. She did not reoffend.*

# Democratic AI

Why (2): To prevent augmenting the global north-south divide



Source: <https://oxfordinsights.com/ai-readiness/ai-readiness-index/>

# Democratic AI

Why (3): To avoid dependencies on GAFAM

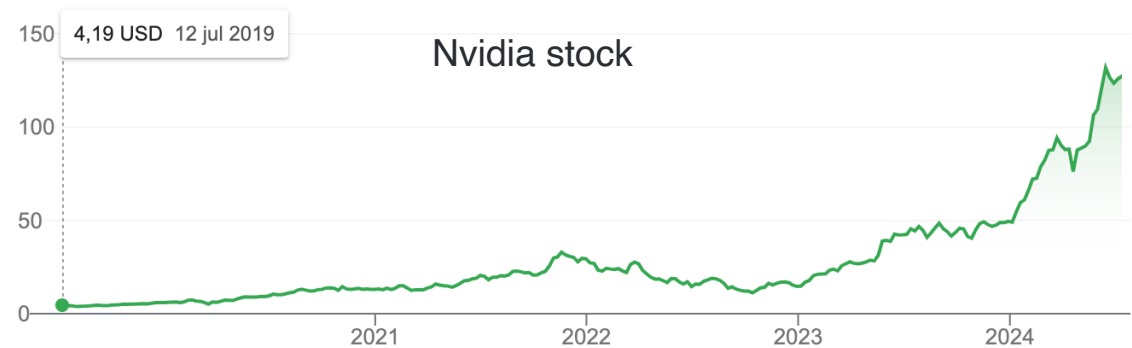
Meta has **x500 GPUs** than the biggest French computing cluster Jean Zay

GPU shortage.

**NVIDIA denies orders** from smaller companies since it privileges GAFAM

## Meta Invests \$30 Billion in NVIDIA GPUs for AI Training

At the AI Summit, Yann LeCun hinted at future versions of Llama-3, and Meta acquired 500,000 GPUs, doubling their count to a million, with a total investment of \$30 billion. This significant investment was made by Meta, the American information technology company, in NVIDIA GPUs for AI training.



# Democratic AI

How (1): A public cloud service



European actors either **rent** American cloud services or **buy** GPUs (no stock)



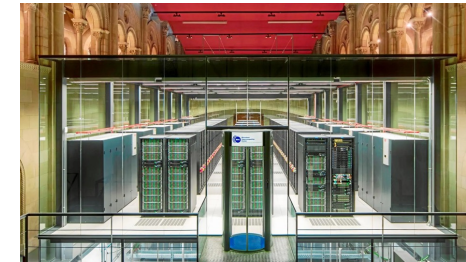
Google Cloud



Jean Zay



Mare Nostrum



What about a **public European cloud computing** service?



# Democratic AI

How (2): Open-source models that we can reproduce and understand their biases



## Open data

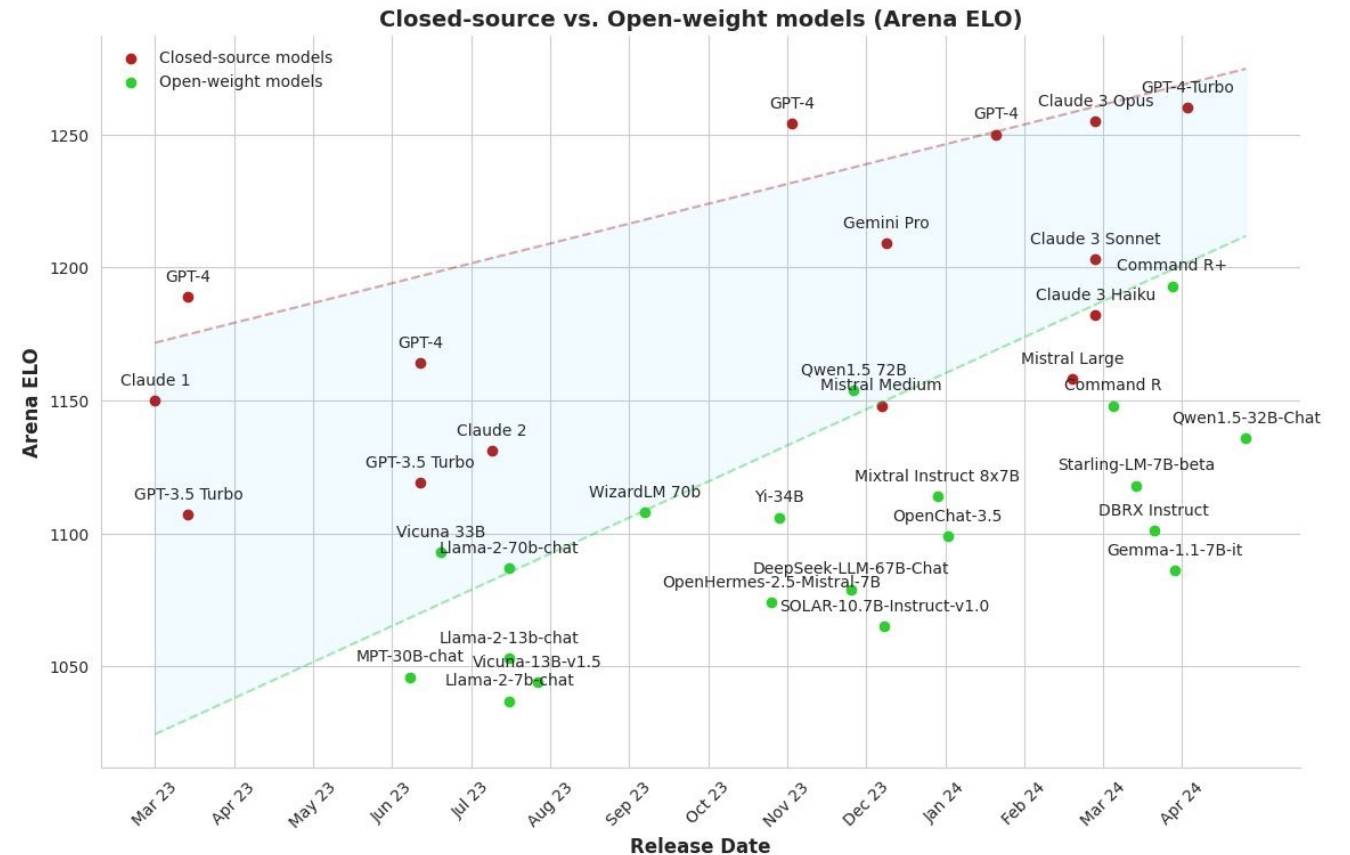
To understand and detect biases

## Open model

So that everyone can use it

## Open training method

So that everyone can reproduce it



# Sustainable AI

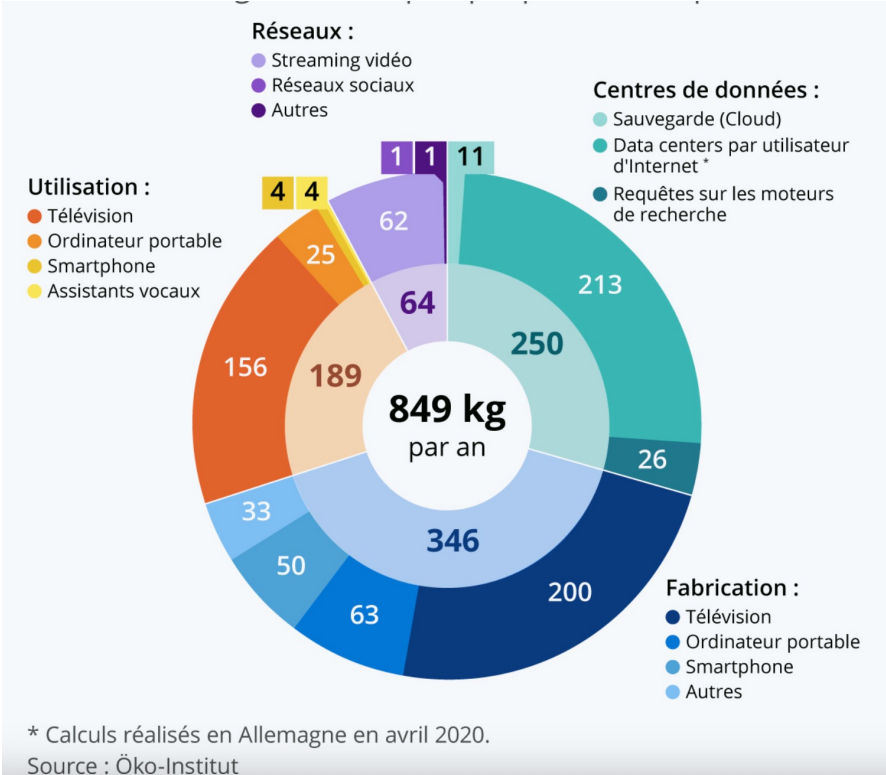
Why (1): To avoid more CO2 emissions

Digital technologies consume **4% of the global carbon footprint (2023).**\*

Generative AI is very energy consuming:  
Training ChatGPT emitted 3000 tEqCO2 and each question consumes **x10 more energy than a search query**

\* Guillaume Pitron. *L'enfer numérique. Voyage au bout d'un like.* Ed. Les Livres qui Libèrent (2023)

## CO2 emissions from digital technologies (1 person)



# Sustainable AI

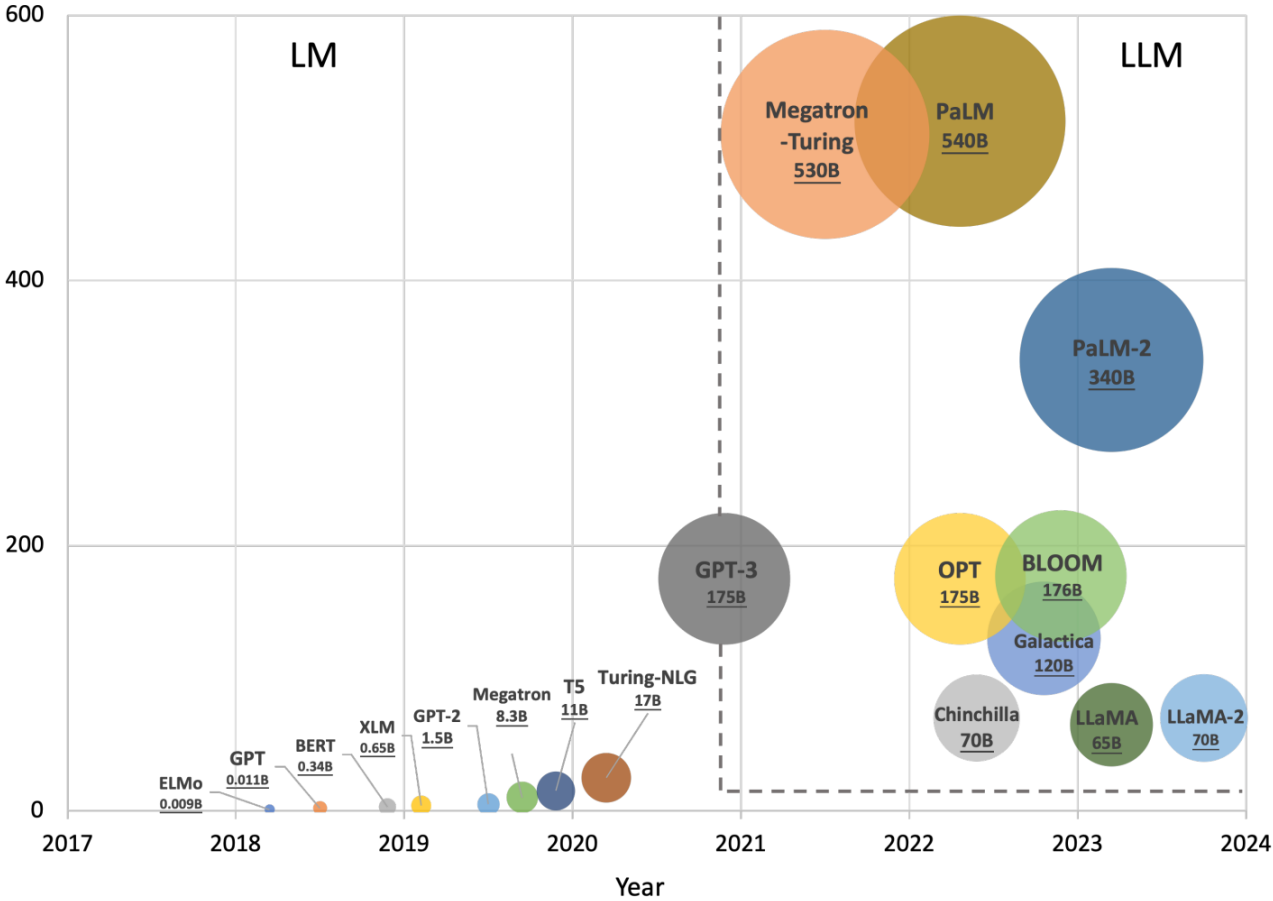
Why (2): Models are getting bigger

**OpenAI CEO Altman says at Davos future AI depends on energy breakthrough**

By Reuters

January 16, 2024 6:39 PM GMT+1 · Updated 6 months ago

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# Sustainable AI

How: Regulate, federate, reduce



Regulation for energetic sobriety



Federate resources

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Smaller models (already happening)\*

\* But mind the **Jevon's paradox**: more efficiency leading to more consumption



# Redistributive AI

Why: To prevent the rich from becoming richer

**Productivity will increase**

(from personal experience, coding x3 – x5\*)

Either **it goes to the workers**

or

it becomes **new surplus for the capital.**

If it goes to the capital, it will lead to unemployment and more inequality

\* But coding is just a tiny part of my job. Overall productivity increase will be diluted by time in other areas such as meetings, planning, reading...



# Redistributive AI

How: AI as an emancipation tool

## In the short term



- Robot taxes
- No replacement by machine if quality of service deteriorates (e.g., hospital)

## In the mid-long term

AI lowers the barrier to build services and products.

We should **explore AI as an emancipation** tool: better coordination, circular economy, open non-profit platforms, information, open education...



[www.albertolumbreras.net](http://www.albertolumbreras.net)  
[alberto.lumbreras@gmail.com](mailto:alberto.lumbreras@gmail.com)



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