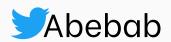
## Al For Good: Let Them Eat LLMs?

Abeba Birhane Senior Advisor, AI Accountability, Mozilla Foundation & Adjunct Assistant Professor, TCD, Ireland



# Warning: this talk contains NSFW content that some viewers may find unpleasant and/or offensive



### **Generative Al**

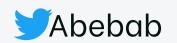
"The first AI technology that has caught fire with regular people" MIT Tech Review (Dec 2022)



### **Generative Al**

"The first AI technology that has caught fire with regular people" MIT Tech Review (Dec 2022)

"estimated to have reached 100 million monthly active users in January, just two months after launch, making it the fastestgrowing consumer application in history" Reuters (Jan 2023)





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Our Work >

Al Risk

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### Contents

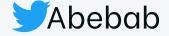
**Statement** 

**Signatories** 

Sign the statement

AI experts, journalists, policymakers, and the public are increasingly discussing a broad spectrum of important and urgent risks from AI. Even so, it can be difficult to voice concerns about some of advanced AI's most severe risks. The succinct statement below aims to overcome this obstacle and open up discussion. It is also meant to create common knowledge of the growing number of experts and public figures who also take some of advanced AI's most severe risks seriously.

Mitigating the risk of extinction from AI should be a global priority alongside other societal-scale risks such as pandemics and nuclear war.





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**Statement** 

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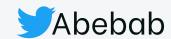
March 31, 2023

concerns about some of advanced A aims to overcome this obstacle and common knowledge of the growing some of advanced AI's most severe 1

FAQs about FLI's Open Letter Calling for a Pause on Giant AI Experiments

Mitigating the AI should be a alongside other such as panden





### **Artificial intelligence** (AI)

### Risk of extinction by AI should be global priority, say experts

Hundreds of tech leaders call for world to treat AI as danger on par with pandemics and nuclear war

### Geneva Abdul

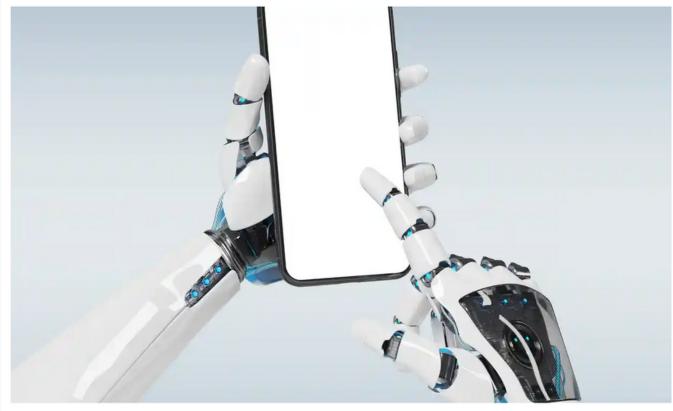
**y**@GenevaAbdul

Tue 30 May 2023 18.10 BST



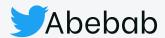






imitigating the risk of extinction from AI should be a global priority alongside other societalscale risks such as pandemics and nuclear war,' the experts said. Photograph: S Decoret/Shutterstock

A group of leading technology experts from across the world have warned that artificial intelligence technology should be considered a societal risk and prioritised in the same class as pandemics and nuclear wars.



### **Artificial intelligence** (AI)

### Risk of extinction by AI should be global priority, say experts

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### Geneva Abdul

**y** @GenevaAbdul

Tue 30 May 2023 18.10 BST







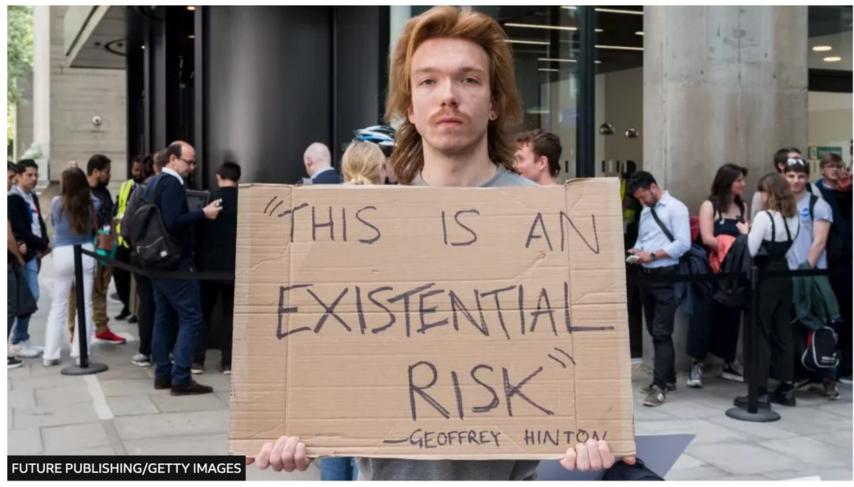


'Mitigating the risk of extinction from AI should be a global priority alongside other societalscale risks such as pandemics and nuclear war,' the experts said. Photograph: S Decoret/Shutterstock

A group of leading technology experts from across the world have warned that artificial intelligence technology should be considered a societal risk and prioritised in the same class as pandemics and nuclear wars.

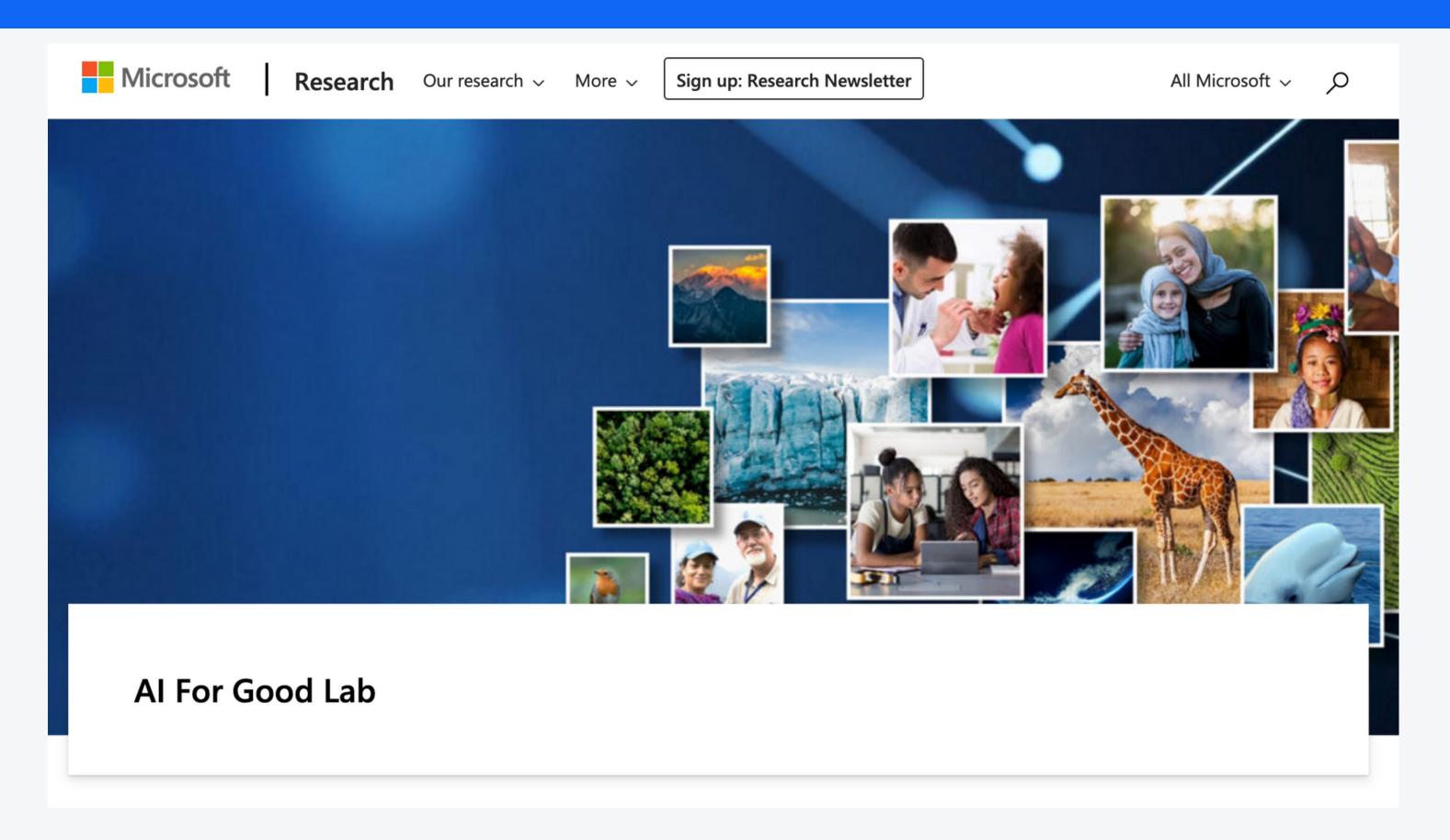
## Artificial intelligence could lead to extinction, experts warn





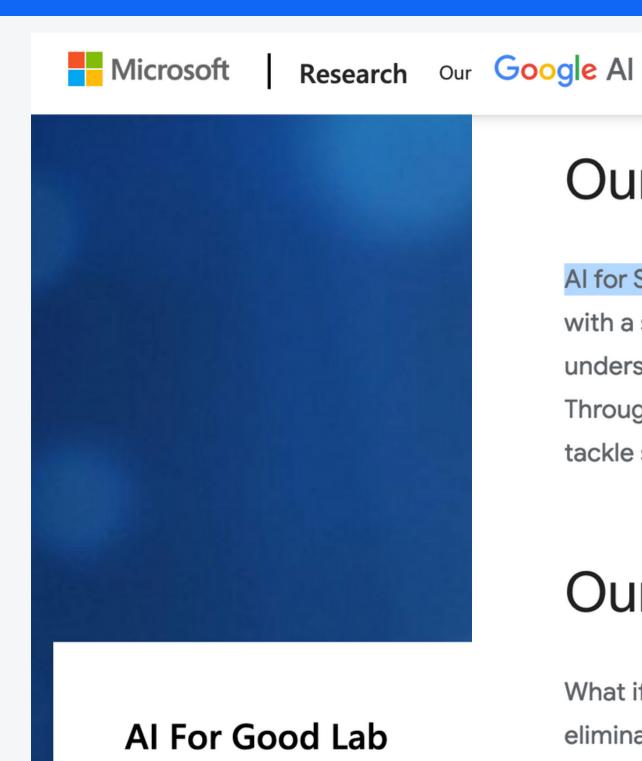








Responsibility



## Our Purpose

Why Al

Al for Social Good is a group of researchers, engineers, volunteers, and other people across Google with a shared focus on positive social impact. We believe that the best way to drive positive change in underserved communities is by partnering with change-makers and the organizations they serve. Through these partnerships, we build and deliver data-driven, user-first tools and technologies that tackle social challenges.

Build

Discover

## Our Approach

What if people could predict natural disasters before they happen? Track disease as it spreads, to eliminate it sooner? Or dramatically improve the lives of people with disabilities? Al can help, but it's not a silver bullet. Tackling these questions requires rooting innovation in research, responsibility, and a concerted, collaborative effort across all sectors of society.





### PERSPECTIVE



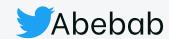
https://doi.org/10.1038/s41467-020-15871-z

OPEN

## Al for social good: unlocking the opportunity for positive impact

Nenad Tomašev<sup>1,23™</sup>, Julien Cornebise<sup>2,23</sup>, Frank Hutter<sup>3,4,23</sup>, Shakir Mohamed<sup>1,23</sup>, Angela Picciariello<sup>5</sup>, Bec Connelly<sup>6</sup>, Danielle C. M. Belgrave<sup>7</sup>, Daphne Ezer ® <sup>8,9</sup>, Fanny Cachat van der Haert<sup>10</sup>, Frank Mugisha<sup>11</sup>, Gerald Abila<sup>12</sup>, Hiromi Arai<sup>13</sup>, Hisham Almiraat<sup>14</sup>, Julia Proskurnia<sup>15</sup>, Kyle Snyder<sup>6</sup>, Mihoko Otake-Matsuura ® <sup>13</sup>, Mustafa Othman<sup>16</sup>, Tobias Glasmachers<sup>17</sup>, Wilfried de Wever<sup>18,19</sup>, Yee Whye Teh ® <sup>1,20</sup>, Mohammad Emtiyaz Khan<sup>13,23</sup>, Ruben De Winne<sup>21,23</sup>, Tom Schaul ® <sup>1,23</sup> & Claudia Clopath ® <sup>22,23</sup>

Advances in machine learning (ML) and artificial intelligence (AI) present an opportunity to build better tools and solutions to help address some of the world's most pressing challenges, and deliver positive social impact in accordance with the priorities outlined in the United Nations' 17 Sustainable Development Goals (SDGs). The AI for Social Good (AI4SG) movement aims to establish interdisciplinary partnerships centred around AI applications towards SDGs. We provide a set of guidelines for establishing successful long-term collaborations between AI researchers and application-domain experts, relate them to existing AI4SG projects and identify key opportunities for future AI applications targeted towards social good.





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https://doi.org/10.1038/s41467-020-15871-z



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## How to Design AI for Social Good: Seven Essential Factors

Luciano Floridi, Josh Cowls <sup>™</sup>, Thomas C. King & Mariarosaria Taddeo

Chapter First Online: 03 November 2021

2657 Accesses 10 Citations

Part of the Philosophical Studies Series book series (PSSP,volume 144)

### Abstract

The idea of Artificial Intelligence for Social Good (henceforth AI4SG) is gaining traction within information societies in general and the AI community in particular. It has the potential to tackle social problems through the development of AI-based solutions. Yet, to date, there is only limited understanding of what makes AI socially good in theory, what counts as AI4SG in practice, and how to reproduce its initial successes in terms of policies. This article addresses this gap by identifying seven ethical factors that are essential for future AI4SG initiatives. The analysis is supported by 27 case examples of AI4SG projects. Some of these factors are almost entirely novel to AI, while the significance of other factors is heightened by the use of AI. From each of these factors, corresponding best practices are formulated which, subject to context and balance, may serve as preliminary guidelines to ensure that well-designed AI is more likely to serve the social good.

### Keywords

Artificial Intelligence

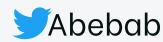
**Ethics** 

Social Good

<u>Transparency</u>

<u>Privacy</u>

<u>Safety</u>



TECHNOLOGY INNOVATION





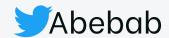
### Foundations Seek to Advance A.I. for Good — and Also Protect the World From Its Threats

By Kay Dervishi | JULY 24, 2023



LINCOLN AGNEW FOR THE CHRONICLE

While technology experts sound the alarm on the pace of artificial intelligence development, philanthropists — from established foundations to tech billionaires — have been responding with an uptick grants, often in the area of "ethical A.I."



TECHNOLOGY INNOVATION









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### 'Tech for good' investors find they can also make good returns

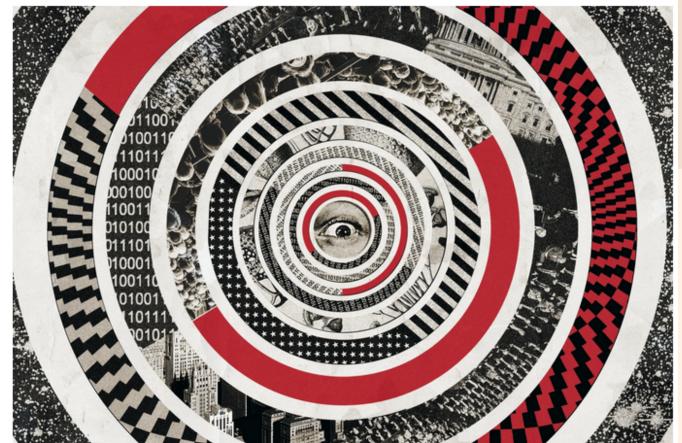
Business accelerators, although run for profit, are also committed to making a positive impact on society





### Foundations Seek to Advance A.I. for Good — and Also Protect the World From Its Threats

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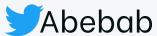


ARTIFICIAL INTELLIGENCE

## Why artificial intelligence is vital in the race to meet the SDGs

May 11, 2022





<u>=</u>Q

SDG KNOWLEDGE HUB
A project by IISD

**NEWS COMMENTARY** ~ **EVENTS** 

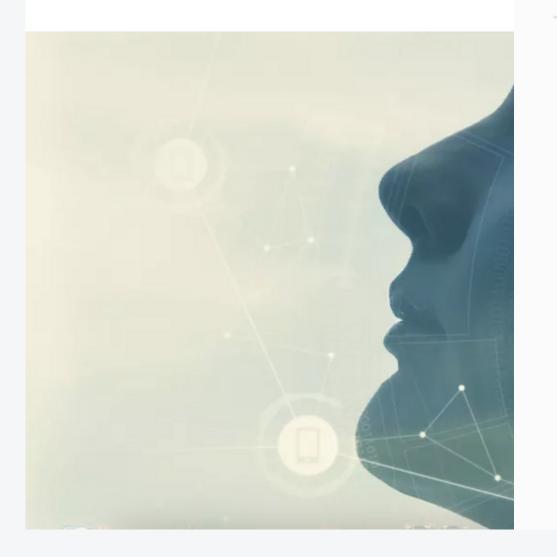
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**REGIONS** 

ARTIFICIAL INTELLIGENCE

## Why artificial i race to meet tl

May 11, 2022



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## Al For Good Global Summit 2023

The 2023 AI For Good Global Summit aims to identify practical applications of artificial intelligence (AI) to accelerate progress towards the SDGs and connect AI innovators with public and private sector decision makers to help scale AI solutions globally.

AI for Good is organized by the International Telecommunication Union (ITU), in partnership with 40 UN sister agencies, and co-convened with the Government of Switzerland. The Summit is designed to generate 'AI for Good' solutions able to be enacted in the near term, guided by its multi-stakeholder and interdisciplinary audience. It also prioritizes networking, experiences, and matchmaking to stimulate collaboration efforts, to ensure trusted, safe, and inclusive development of AI technologies and equitable access to their benefits.



SDGS

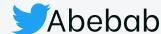
17. PARTNERSHIPS FOR THE GOALS

### **ISSUES**

Sustainable Development, Science, Economics & Investment, Stakeholder Participation

#### **GLOBAL PARTNERSHIPS**

Means of Implementation, Technology / Transfer, Systemic Issues, Multi-stakeholder





GLOBAL SUMMIT 24 V

ABOUT ~

PROGRAMME

SPEAKERS

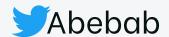
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**ENGAGE** 

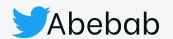
**NEURAL NETWORK** 











### Tools of abstraction

- uncovering patterns from data through optimization processes
- future-making on the basis of past patterns
- assume complex behavior can be simplified, "frozen in time" and captured in data

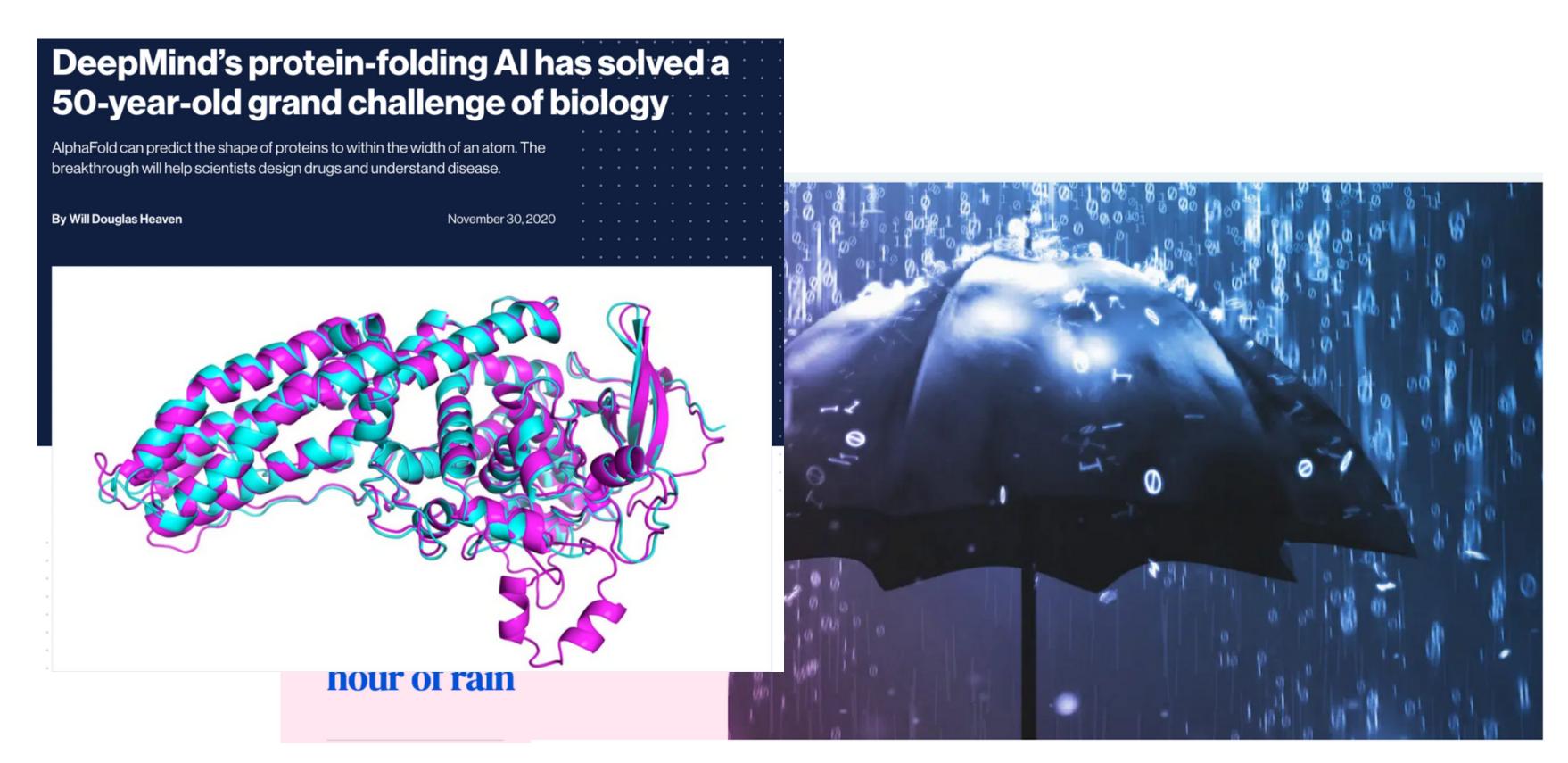


## LOWER-STAKE SYSTEMS



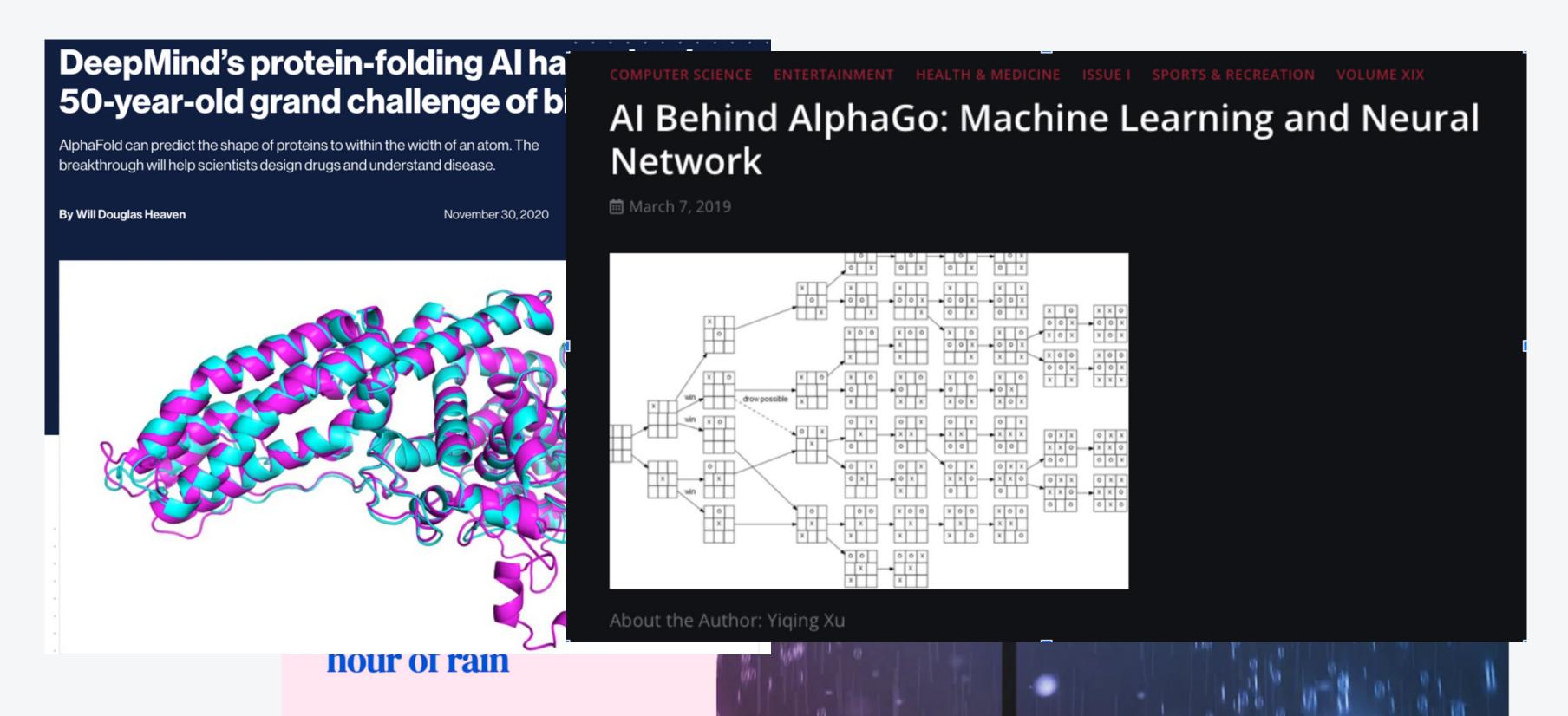


## **LOWER-STAKE SYSTEMS**





## **LOWER-STAKE SYSTEMS**





## **SOCIAL SYSTEMS**

## Dutch scandal serves as a warning for Europe over risks of using algorithms

The Dutch tax authority ruined thousands of lives after using an algorithm to spot suspected benefits fraud – and critics say there is little stopping it from happening again.



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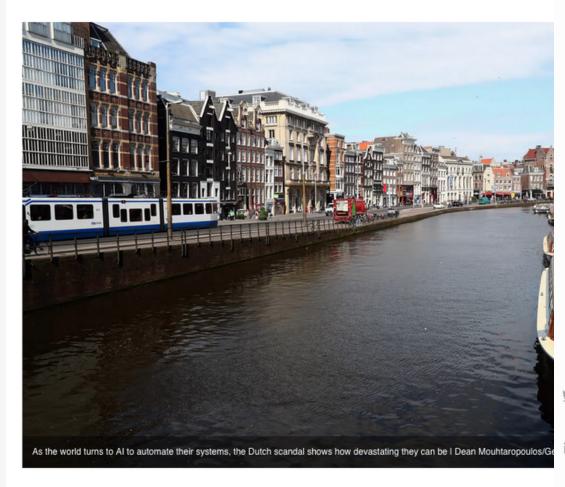
BY MELISSA HEIKKILÄ March 29, 2022 | 6:14 pm



## **SOCIAL SYSTEMS**

Dutch scandal serves as a warning for Europe over risks of using algorithms

The Dutch tax authority ruined thousands of lives after using an algorithm to spot su happening again.



BY MELISSA HEIKKILÄ

March 29, 2022 | 6:14 pm

### **Forbes**

ΑI

### UK Exam Results U-Turn: Algorithms Alone Can't Solve Complex Human Problems

**Charles Towers-Clark** Contributor ①

I write about human skills, digital transformation & education

Aug 25, 2020, 11:38am EDT

U This article is more than 2 years old.



Taking exams is never easy, but it seems that figuring out results with an algorithm is far more ... [+] FREEPIK



## **SOCIAL SYSTEMS**

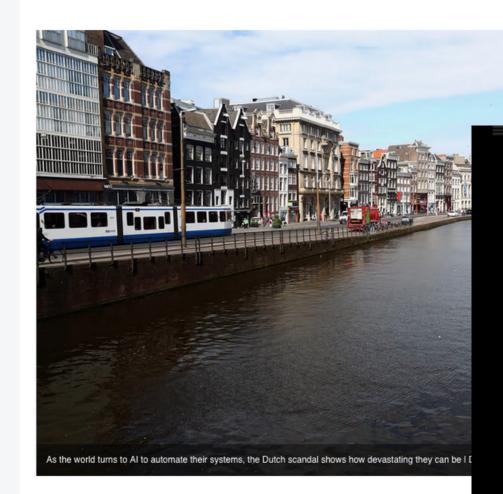
Dutch scandal serves as a warning for Europe over risks of using algorithms

The Dutch tax authority ruined thousands of lives after using an algorithm to spot su happening again.

### **Forbes**

ΑI

UK Exam Results U-Turn: Algorithms Alone Can't Solve



BY MELISSA HEIKKILÄ

March 29, 2022 | 6:14 pm

## Wrongfully Accused by an Algorithm

In what may be the first known case of its kind, a faulty facial recognition match led to a Michigan man's arrest for a crime he did not commit.





The more socially complex a problem is, the less capable machine learning systems are in capturing the phenomena in a model.

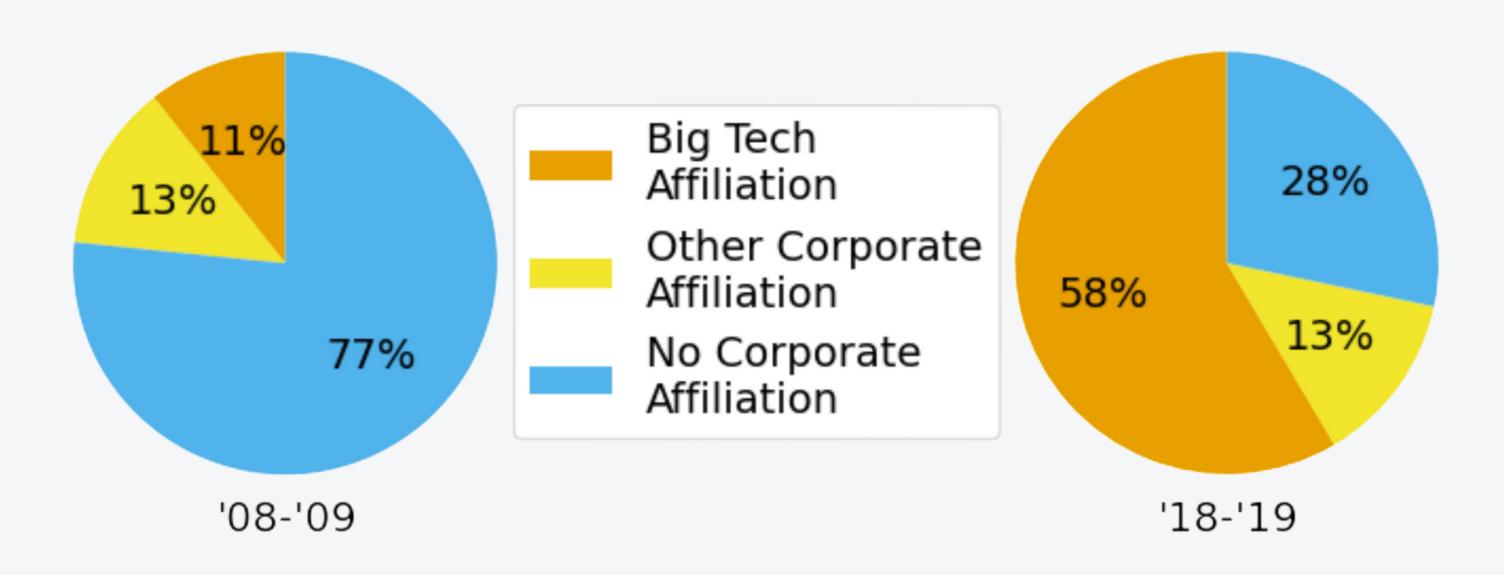


## social infrastructure of ML

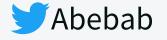
- for-profit
- a handful corps hold outsided influence



## Connect research to real world consequences



The percent of papers with Big Tech author affiliations increased from 11% to 58%.

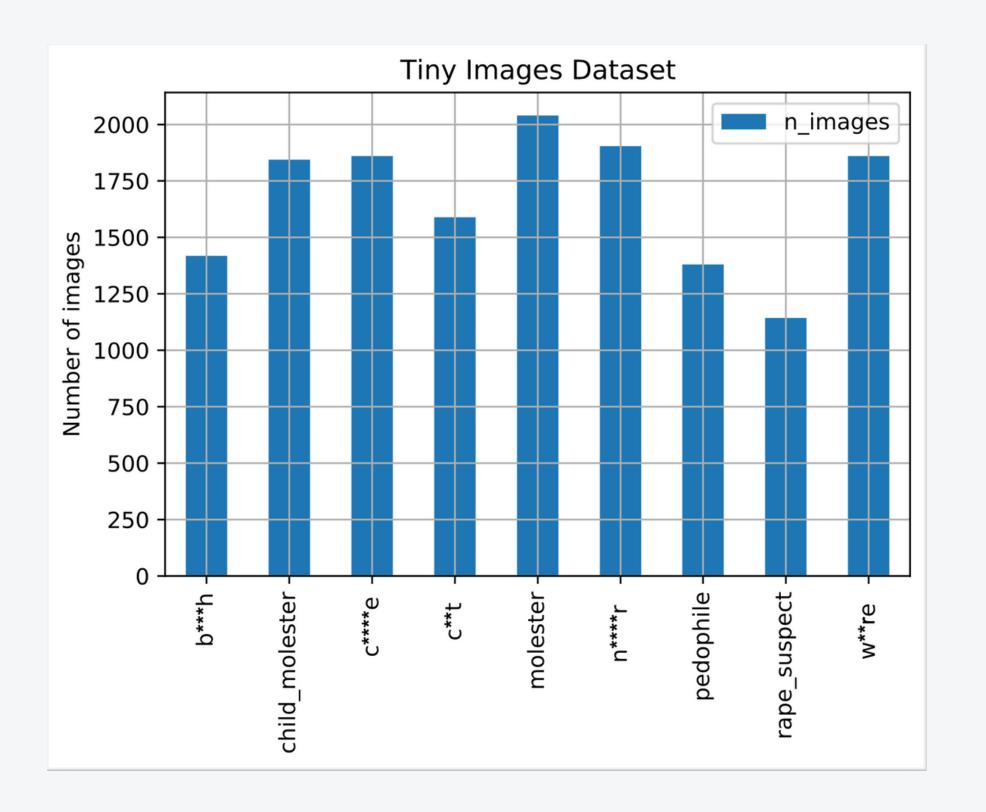


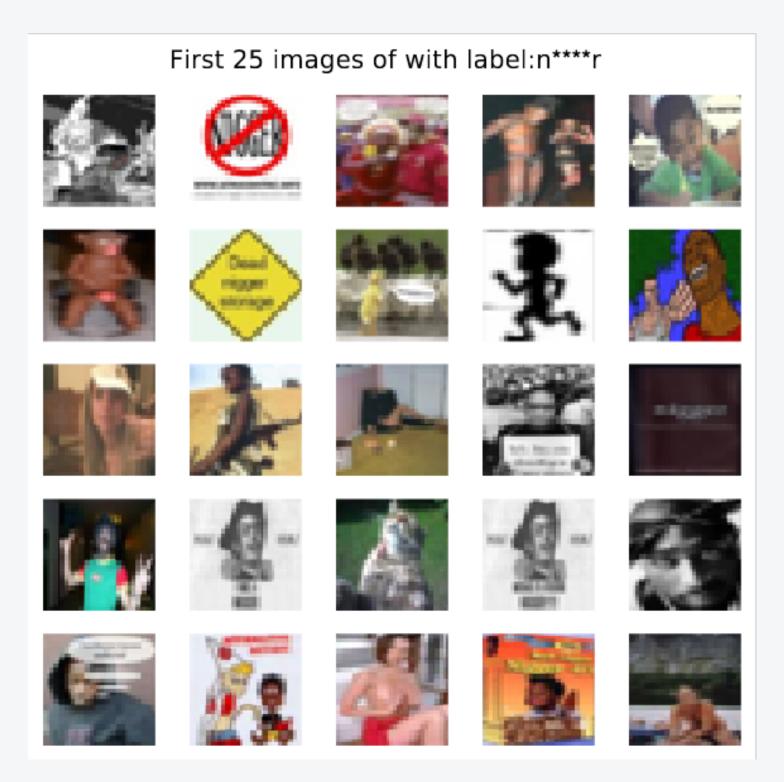
## social infrastructure of ML

- for-profit
- a handful corps hold outsided influence
- exploitation of labour (content moderation)
- borderline illegal and harmful data practices



## LARGE SCALE DATASETS







Birhane & Prabhu (2021)

### Dataset audit

Backend url:
https://clip.roi
Index:
laion\_400m >

Clip retrieval works by converting the text query to a CLIP embedding, then using that embedding to query a knn index of clip image embeddings

Display captions ✓
Display full captions □
Display similarities □
Search over image ✓

This UI may contain results with nudity and is best used by adults. The images are under their own copyright.

Are you seeing near duplicates? KNN search are good at spotting those, especially so in large datasets.

african



Stylish African Print Swimwear Headwrap -Mahalia



Mursi woman / omo va...



Erbore tribe woman in Ethiopia on October 26 2008 ...



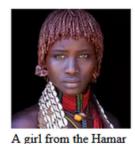
Himba People by Konstantinos Arvanitopoulos



Woman With Stylish African Print
Swimwear Headwrap



Arvanitopoulos



A girl from the Hama tribe, Ethiopia



Wodaabe boy from Niger. Photographed by Steve McCu...



Portrait of a Himba Woman



Turmi, Omo Rive Valley, Ethiopia -January, 2018....



Himba, girl with typical headdress and decoration ...



Stylish African Print Swimwear Headwrap -Mahalia



Himba People by Konstantinos Arvanitopoulos

Know Who You Are «

Steve McCurry's Blog



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Wodaabe tribe--They are traditionally nomadic catt...

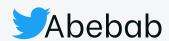


Wodaabe boy from Niger (by Steve McCurry)



Portrait of a Himba Woman

Multimodal datasets: misogyny, pornography, and malignant stereotypes (Birhane et al., 2022b)



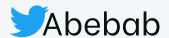
### Dataset audit

Backend url: https://clip.roi Qafrican Index: laion\_400m v Clip retrieval works by converting the text query to a CLIP embedding, then using that embedding to query a knn index of clip image embedddings Display captions Display full captions Display similarities Backend url: https://clip.roi Search over image v Qeuropean Index: This UI may contain results with laion\_400m V nudity and is best used by adults. Stylish A The images are under their own Swimwea copyright. Mahalia Clip retrieval works by converting the text query to a CLIP embedding Are you seeing near duplicates? then using that embedding to KNN search are good at spotting query a knn index of clip image those, especially so in large embedddings Americans were asked datasets. 1300x866 3d Map Of to place european Display captions < Europe Rendering On countries o... White Backg... Display full captions map outline of europe Germanysoviet union Map indicating Map indicating germany 3d model Display similarities Free Interior Design .. relations 19181941 locations of Greece locations of Germany Search over image v wikipedia g... and Latvia and Netherland.. Vector illustration of This UI may contain results with the European Union nudity and is best used by adults. map with... The images are under their own Mursi wo copyright. Are you seeing near duplicates? KNN search are good at spotting those, especially so in large Crusader Kings II: The datasets. Old Gods Youtube Video Ottoman Empire Capital A Map Of germany illustrator Germanynetherlands Location of Timișoara Germanynetherlands Giurtelecu Simleului Map Of Germany And Europe Showing Ter... relations wikipedia map relations wikipedia in Europe.jpg Russia.Germany map indicat... map indicat. Soviet Union Rel.. Crusader Kings II: The Old Gods gets release

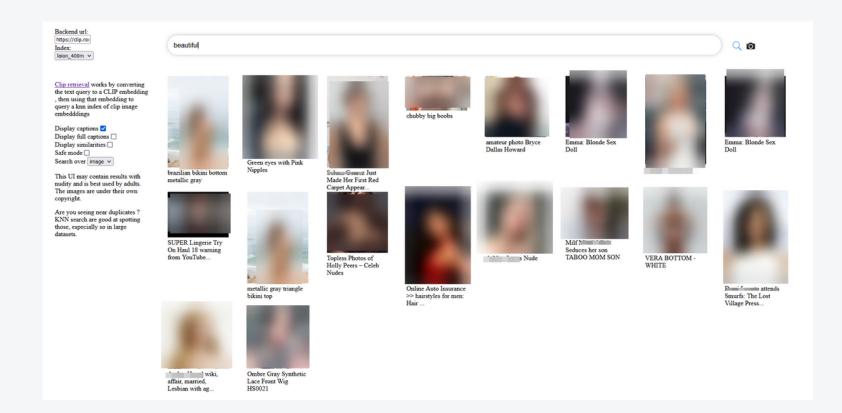
Can you identify this

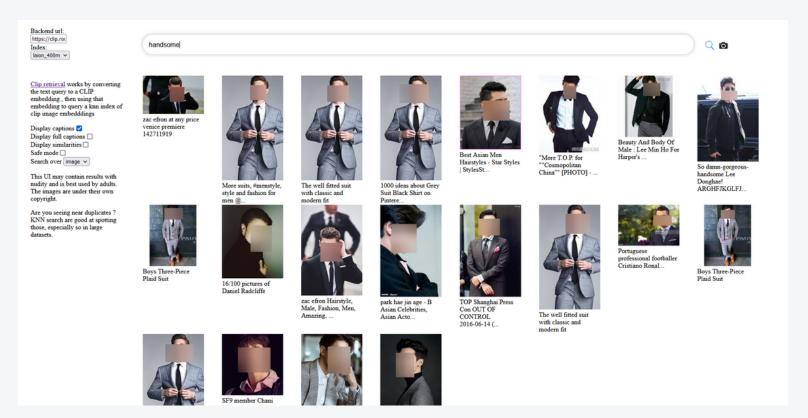
Multimodal datasets: misogyny, pornography, and malignant stereotypes (Birhane et al., 2022b)

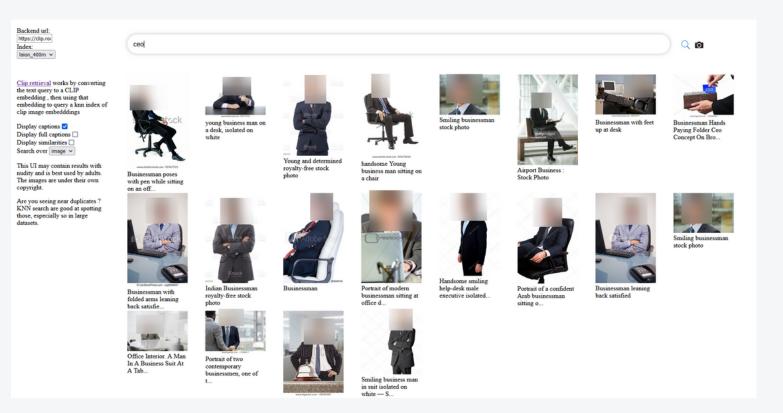
germany location map

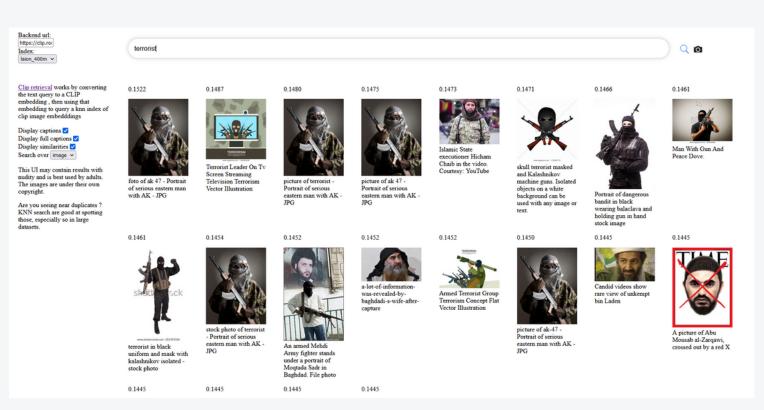


### LARGE SCALE DATASETS



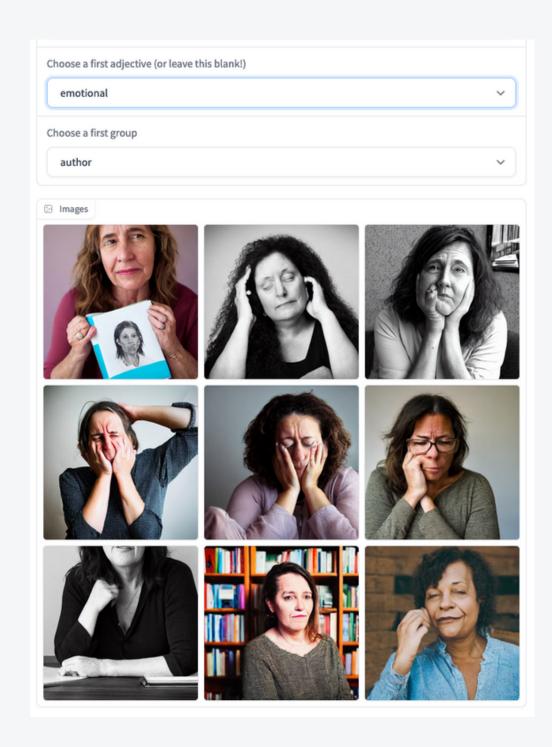


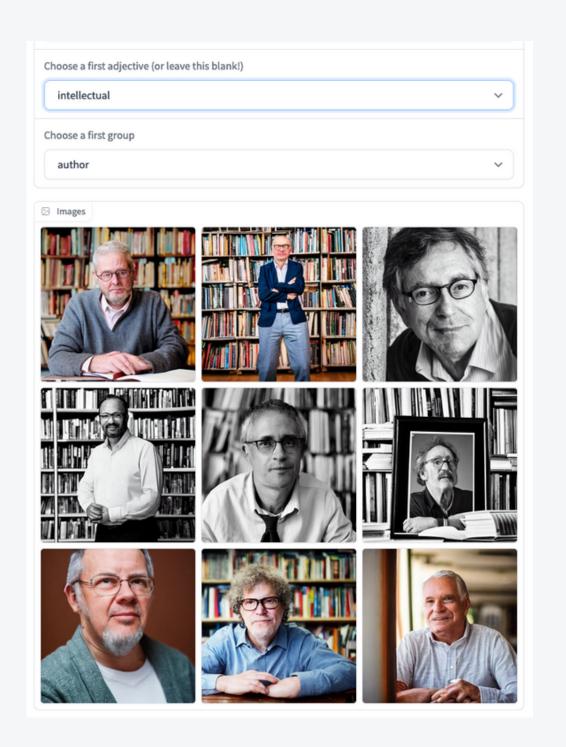


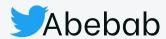




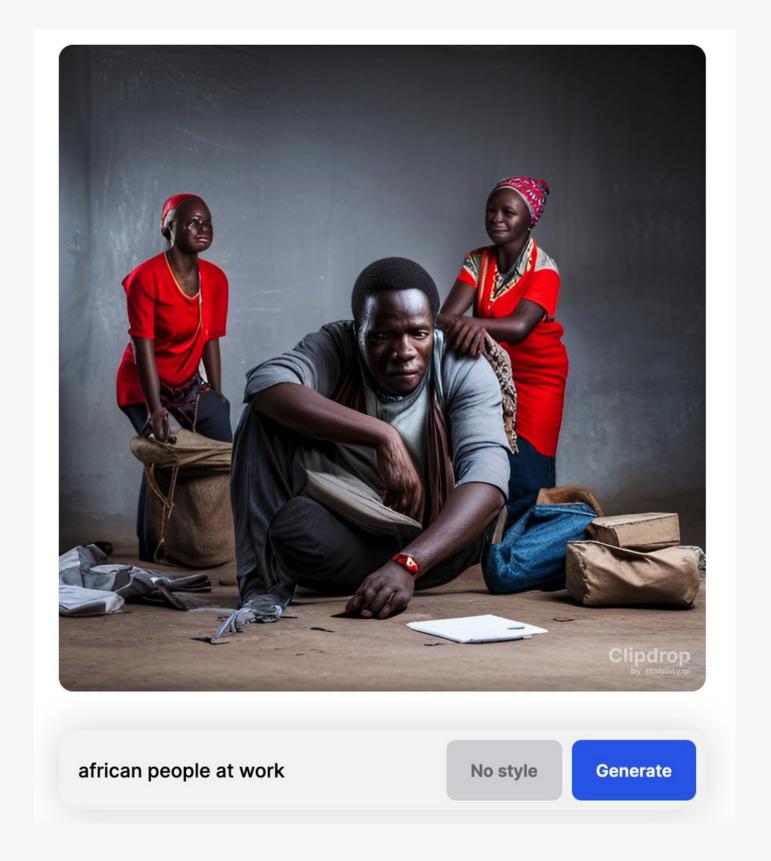
## DALL-E

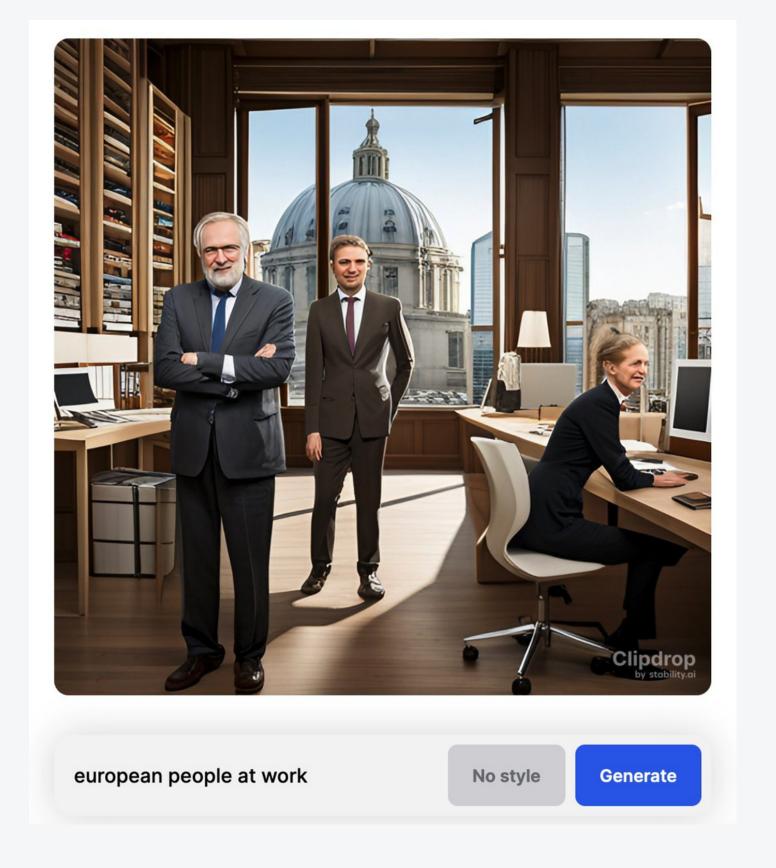


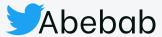




## Stable Diffusion







## Midjourney

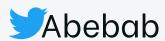
AI was asked to create images of Black African docs treating white kids. How'd it go?

October 6, 2023 · 7:44 AM ET

By Carmen Drahl





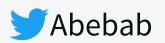


## **Dataset audit**

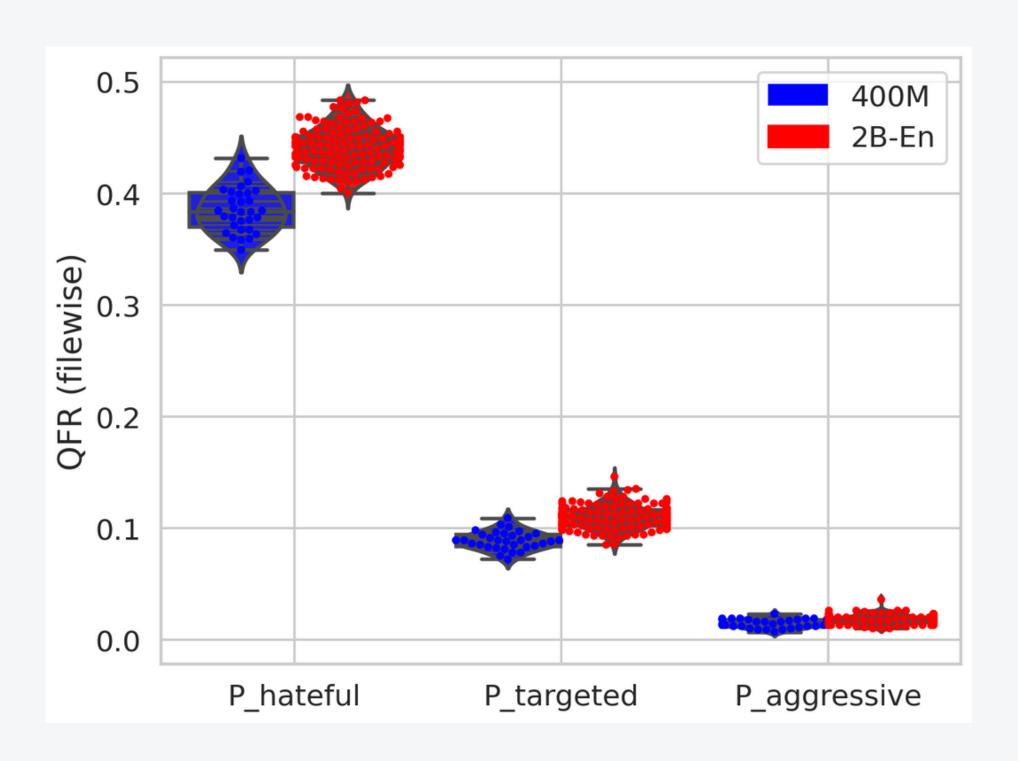
Table 1: Samples of alt text descriptions found in the dataset and the probability scores across the three categories of hateful, targeted and aggressive speech.

Alt text	$P_{hateful}$	$P_{targeted}$	$P_{aggressive}$
'Biden's Spending Will Go To Illegal Immigrants While Tax Hikes Will Destroy American	0.902	0.024	0.449
Jobs'			
'If you know this man, please, for the love of God tell him to BURN these pants!!'	0.401	0.262	0.517
'shut up and be a don like nancy - Personalised Men's Long Sleeve T-Shirt'	0.395	0.559	0.128
'This bored rich blonde shoplifter gets rough f**keds'	0.934	0.895	0.128
'Horny slave tied to tree gets pulled on her beautiful tits and gets hit on her c*nt with a stick	0.983	0.911	0.909
and hands'			

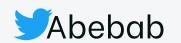
Into the LAIONs Den: Investigating Hate in Multimodal Datasets (Birhane et al., 2023a)



# **Dataset audit**



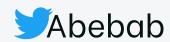
Into the LAIONs Den: Investigating Hate in Multimodal Datasets (Birhane et al.,2023a)



# Misclassification

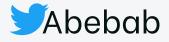
Table 3: Table summarizing the results of the CFD-Vit-L/14 experiments.

dataset—metric	ImageNet-acc	$P_{human}$	$P_{lf \rightarrow af}$	$P_{lm \to am}$	$P_{bm \to criminal}$	$P_{bf \rightarrow criminal}$
openai	0.753	0.134	0.411	0.077	0.204	0.221
$laion400m\_e32$ $laion2b\_s32b\_b82k$	0.739 0.754	0.186	0.125 $0.179$	0.077 $0.115$	0.140	0.212



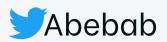
## Misclassification

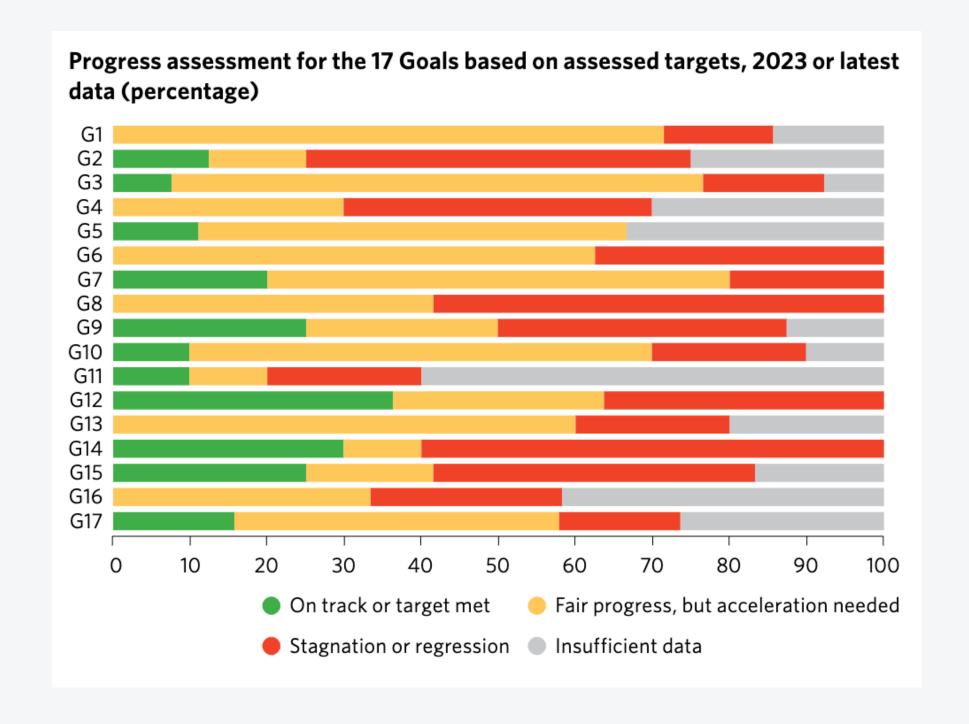




On Hate Scaling Laws For Data-Swamps (Birhane et al., 2023b)

Halfway to the deadline for the 2030 Agenda, the SDG Progress Report;
Special Edition shows we are leaving more than half the world behind.
Progress on more than 50 per cent of targets of the SDGs is weak and insufficient; on 30 per cent, it has stalled or gone into reverse. These include key targets on poverty, hunger and climate.

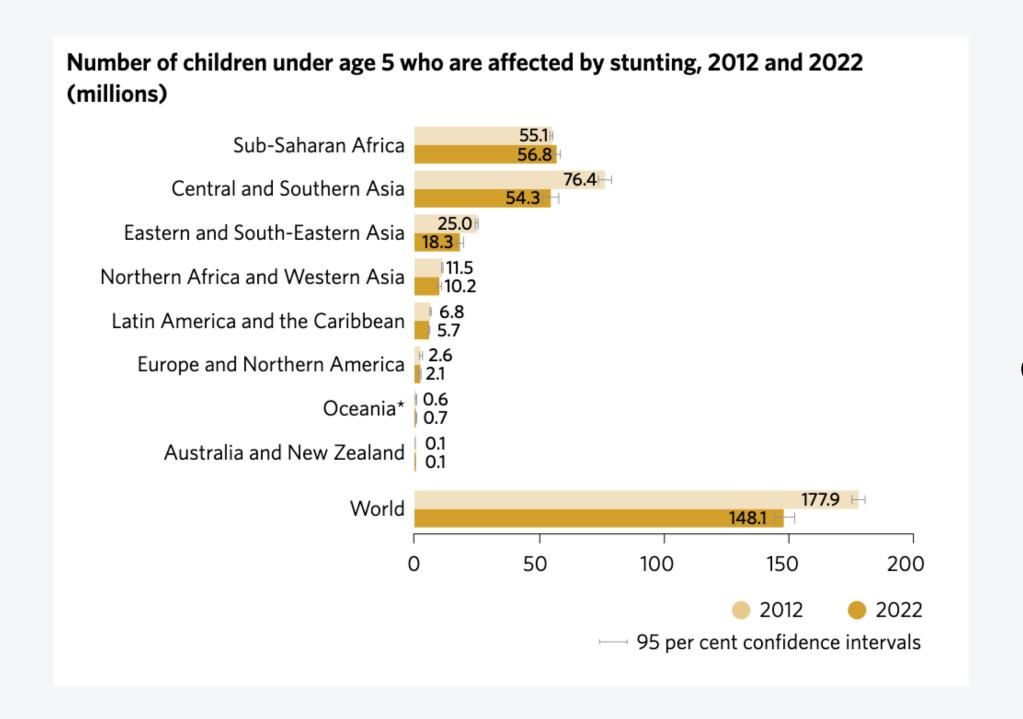




"To address this, governments and stakeholders must **target underlying factors** and develop strategies to alleviate deprivations across multiple dimensions."

"To achieve the Goals, countries will need to implement nationally appropriate universal and **sustainble social protection systems for all**." SDG1, No poverty

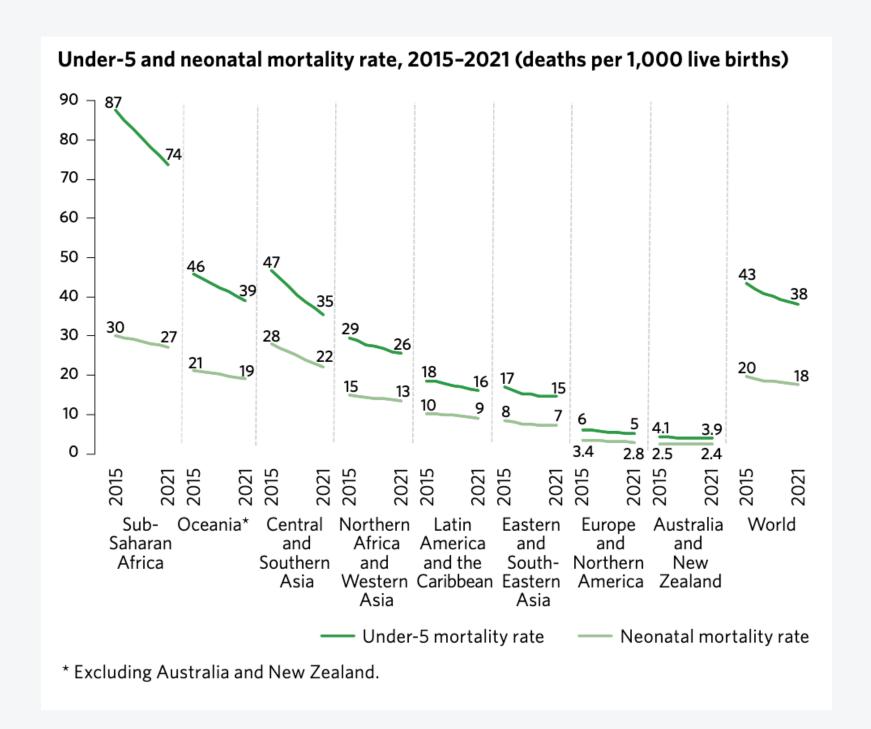




To achieve zero hunger by 2030, urgent coordinated action and policy solutions are imperative to address entrenched inequalities, transform food systems, invest in sustainable agricultural practices, and reduce and mitigate the impact of conflict and the pandemic on global nutrition and food security.

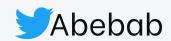
SDG2, Zero hunger

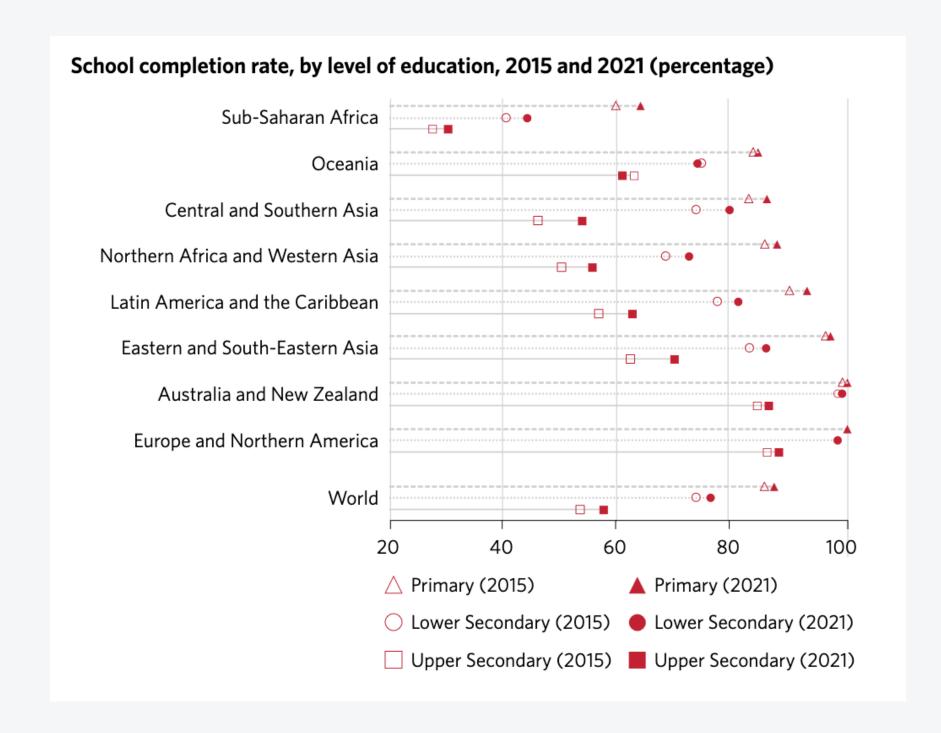




To overcome these setbacks and address long-standing health care shortcomings, increased investment in health systems is needed to support countries in their recovery and build resilience against future health threats.

SDG3, Good health and wellbeing





To deliver on Goal 4, education financing must become a national investment priority. Furthermore, measures such as making education free and compulsory, increasing the number of teachers, improving basic school infrastructure and embracing digital transformation are essential.

SDG4, Quality education



# Discriminatory laws and gaps in legal protection persist in critical aspects, denying women their human rights worldwide

Data collected in 2022 from 119 countries reveal ongoing challenges for women in accessing their full human rights due to discriminatory laws and gaps in legal protection. An astonishing 55 per cent of countries lack laws that explicitly prohibit direct and indirect discrimination against women; 60 per cent lack laws that define rape based on the principle of consent. Another 45 per cent do not mandate equal remuneration for work of equal value, while more than a third of countries fail to provide maternity leave in accordance with International Labour Organization (ILO) standards. In terms of marriage and family, nearly a quarter of countries do not grant equal rights in marriage and divorce and close to three-quarters fail to establish 18 years as the minimum age of marriage for both women and men, without exceptions. Closing gaps in legal protections and removing discriminatory laws could take up to 286 years based on the current rate of change.

Political leadership, investments and comprehensive policy reforms are needed to dismantle systemic barriers to achieving Goal 5. Gender equality is a cross-cutting objective and must be a key focus of national policies, budgets and institutions.

SDG5, Gender equality



### "Good" for who?

**A:**I'll tell you my reaction to that question without answering it directly. There's a Russian joke that goes something like this: Two people are standing in a very large breadline in Moscow, and they're talking about the fact that the harvest failed once more and that's why there's a shortage of bread, and one of them says to the other, "You know, it's all the fault of the Jews and the bicyclists." The other one says, "Why the bicyclists?" and the first one answers, "Why the Jews?"

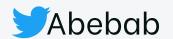
You might have said "What is the role of computers and bicycles in education?" Then I would have said, "Why the bicycles?" and you "Why the computer?"

**A:** Yours is an often-asked question. In a sense, it is upside-down. You start with the instrument; the question makes the assumption that of course the computer is good for *something* in education, that it is the solution to some educational problem. Specifically, [your] question is, what is it good for?

But where does the underlying assumption come from? Why are we talking about computers? I understand [you asked because] I'm a computer scientist, not a bicycle mechanic. But There is something about the computer -- the computer has almost since its beginning been basically a solution looking for a problem.

People come to MIT and to other places, people from all sorts of establishments -- the medical establishment, the legal establishment, the education establishment, and in effect they say, "You have there a very wonderful instrument which solves a lot of problems. Surely there must be problems in my establishment -- in this case, the educational establishment, for which your wonderful instrument is a solution. Please tell me for what problems your wonderful instrument is a solution.

The questioning should start the other way -- it should perhaps start with the question of what education is supposed to accomplish in the first place. Then perhaps [one should] state some priorities -- it should accomplish this, it should do that, it should do the other thing. Then one might ask, in terms of what it's supposed to do, what are the priorities? What are the most urgent problems? And once one has identified the urgent problems, then one can perhaps say, "Here is a problem for which the computer seems to be well-suited." I think that's the way it has to begin.



#### "Good" for who?

MIT certainly gets the cream of the crop of the product of the American school establishment, yet there was a headline in your paper just a few months ago which said that out of a 1000-some freshmen who took the writing test, 800 flunked. How is it then for people who are going to junior colleges? How does it look for people who aren't going to college at all? How does it look for people who dropped out of school when they were 14 or 15? Clearly the American school establishment is failing very seriously.

It is terribly important to ask the reasons the schools are failing so miserably. I think that even if one could show that the introduction of the computer into schools actually effected an improvement, say for example in reading scores, even if one could show that, the question, "Why can't Johnny read?" must still be asked.

There is a very good reason that questions of that kind are uncomfortable. When we ask this question, we may discover that Johnny is hungry when he comes to school, or that Johnny comes from a milieu in which reading is irrelevant to concrete problems or survival on the street -- that is, there is no chance to read, it is a violent milieu, and so on.

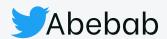
You might discover that, and then you might ask the next question: "Why is it that Johnny comes to school hungry? Don't we have school breakfast programs and lunch programs?" The answer to that might be, yes, we used to, but we don't any more.

Why is there so much poverty in our world, in the United States, especially in the large cities? Why is it that classes are so large? Why is it that fully half the science and math teachers in the United States are underqualified and are operating on emergency certificates?

When you ask questions like that, you come upon some very important and very tragic facts about America. One of the things you would discover is that education has a very much lower priority in the United States than do a great many other things, most particularly the military.

It is much nicer, it is much more comfortable, to have some device, say the computer, with which to flood the schools, and then to sit back and say, "You see, we are doing something about it, we are helping," than to confront ugly social realities.

"It is much nicer, it is much more comfortable, to have some device, say the computer, with which to flood the schools, and then to sit back and say, "You see, we are doing something about it, we are helping," than to confront ugly social realities." Weizenbaum (1985)



# Tech-solutionism

- mislead us into wishful thinking that complex social problems can be solved by data and models
- distract attention and resources away from root causes
- enable new risks and vulnerabilities



# Genuine social transformation

- what is the problem and its history?
- what are the root causes?
- what are the most effective way to address these root causes?
- who is at the table?
- what is the project's vision or theory of change?
- what are the potential negative consequences?



# Conditions for a true "Al for good"

must be built, controlled, and owned by indigenous peoples, to serve the needs of indigenous peoples, in a manner that is informed by and grounded in indigenous epistemologies, experiences and needs

