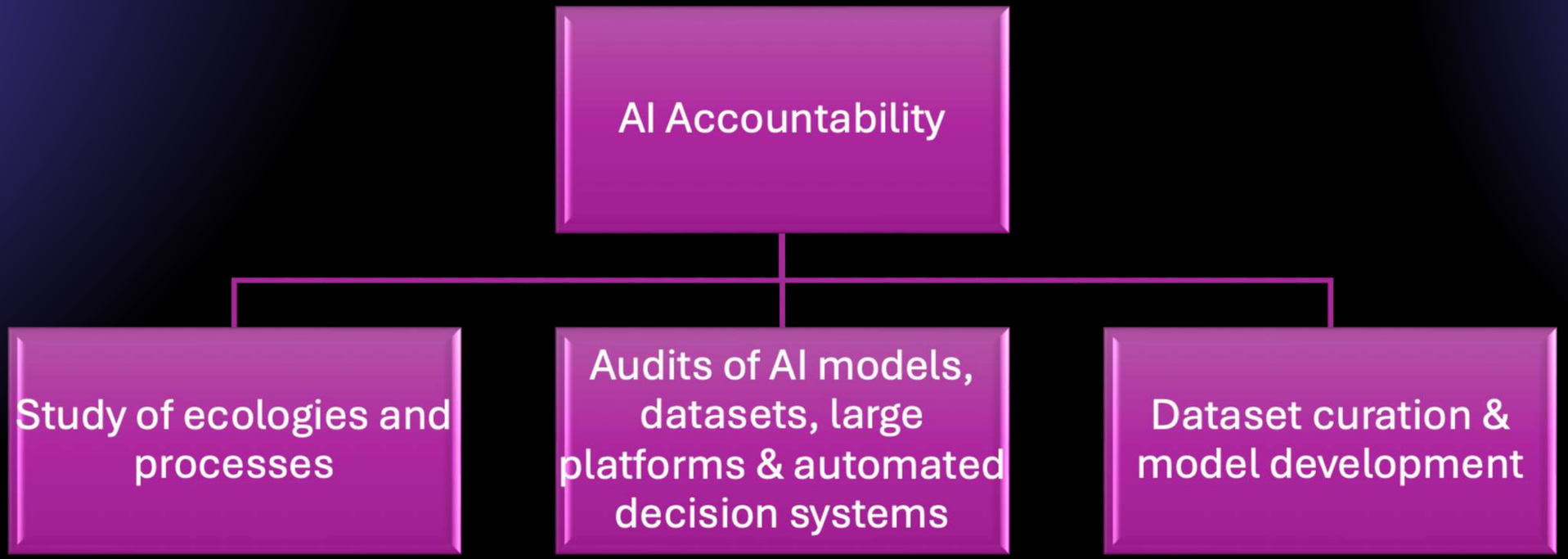
WHAT IS THE INTERNET DOING TO ME? (WITIDTM 2025/2026 - TEU00311)

Abeba Birhane
birhanea@tcd.ie
Lloyd R.031

AI ACCOUNTABILITY LAB

@ABEBA.BSKY.SOCIAL

WHAT WE DO AT THE LAB



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

What is AI?

BRIEF HISTORY OF AI

1937 -- Alan Turing published "On Computable Numbers", which laid the foundations of the modern theory of computation by introducing the Turing machine, a physical interpretation of "computability".

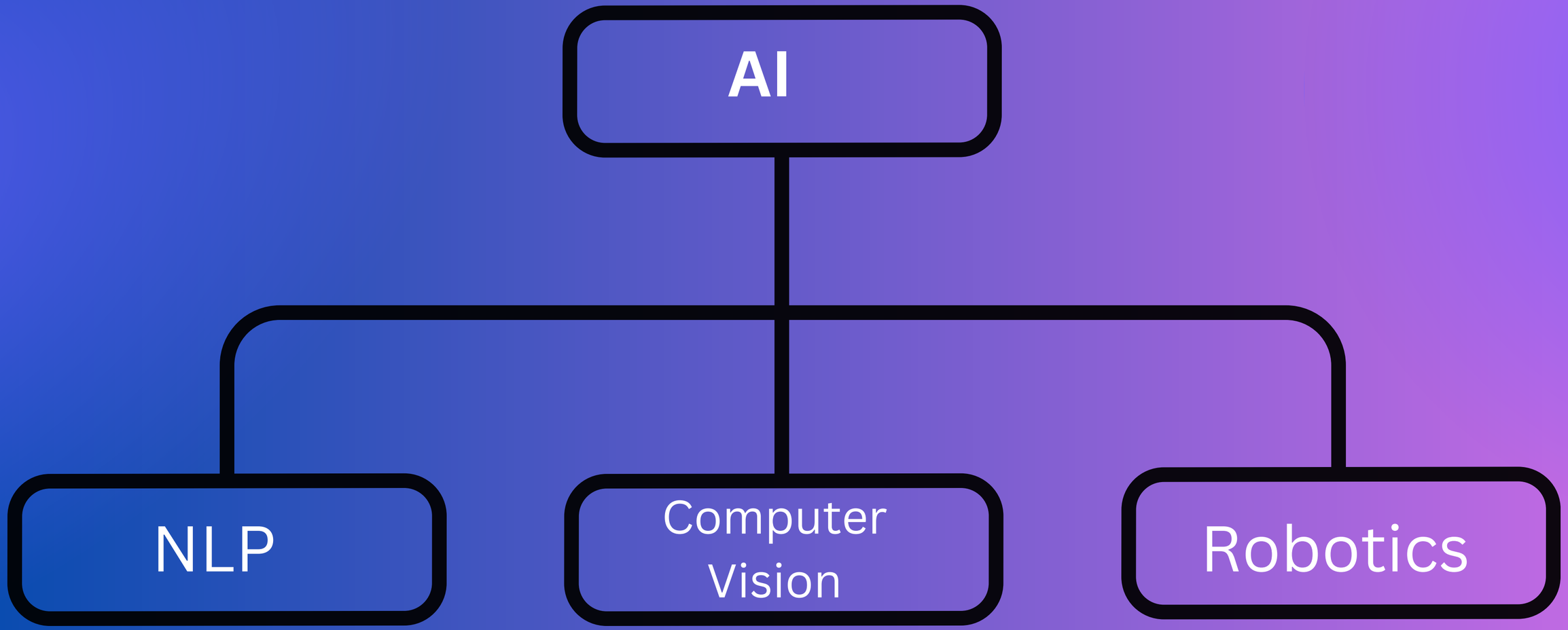
1943 – Walter Pitts and Warren McCulloch analyzed networks of idealized artificial neurons and showed how they might perform simple logical functions, later called a neural network.

1956 – McCarthy coins the term artificial intelligence for the Dartmouth College summer AI conference

1965 – Joseph Weizenbaum built ELIZA, an interactive program that carries on a dialogue in English language

1980s – Geoffrey Hinton and David Rumelhart popularized a method for training neural networks called "backpropagation" popularising artificial neural networks

1993 – Rodney Brooks and colleagues started the widely publicized MIT Cog project in an attempt to build a humanoid robot child in just five years.


AI
NLP
Computer Vision
Robotics

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

PROJECT MAC

Artificial Intelligence Group — July 7, 1966
Vision Memo. No. 100.

THE SUMMER VISION PROJECT

Seymour Papert

The summer vision project is an attempt to use our summer workers effectively in the construction of a significant part of a visual system. The particular task was chosen partly because it can be segmented into sub-problems which will allow individuals to work independently and yet participate in the construction of a system complex enough to be a real landmark in the development of "pattern recognition".

The AI revolution in the late 2010s

Year	Dataset Name	Domain	Size / Content	Significance
1961	Brown Corpus	NLP (Text)	**~1 million words**	First large-scale balanced English corpus; foundational for NLP.
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2021	LAION-400M	Multimodal	**400 million image-text pairs**	Open large-scale dataset for vision-language models.
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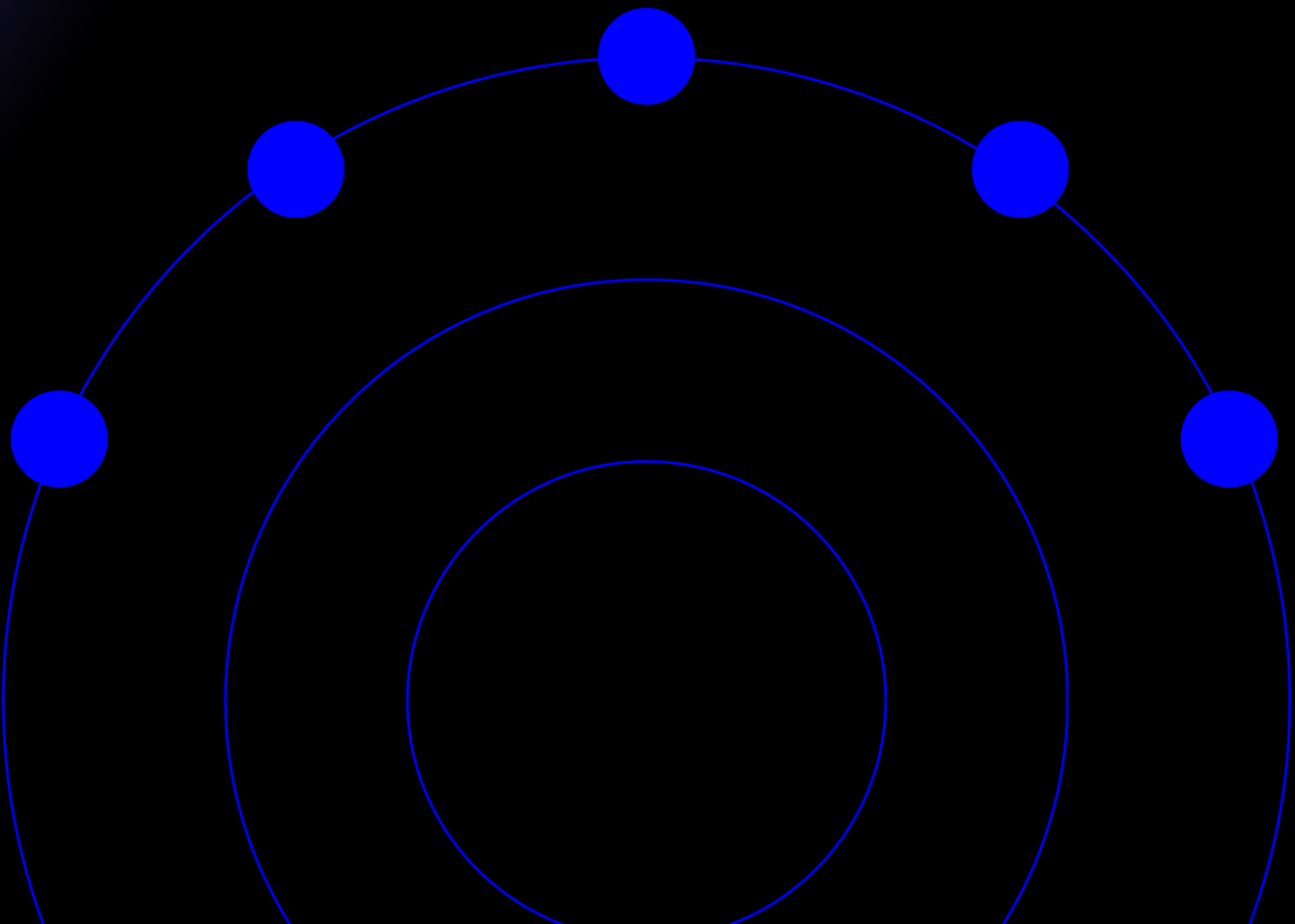
THE DATA AI PIPELINE



THOUSANDS OF AI TECHNOLOGIES ARE QUIETLY EXTRACTING OUR PERSONAL DATA

Data about our bodies, homes, work, social lives...

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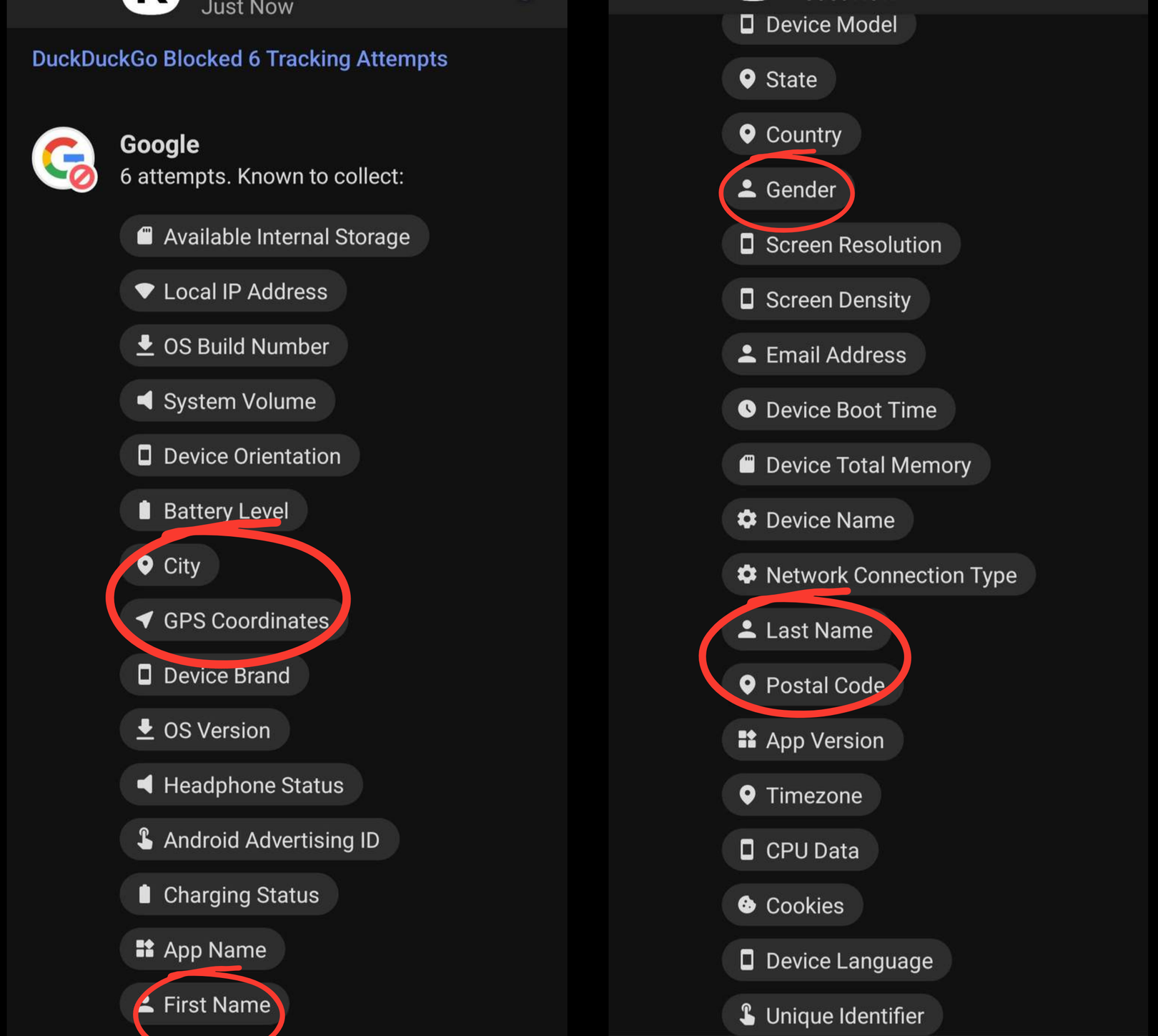
Can you think of any type of data from your daily activities that might be found in a training corpus?

DuckDuckGo App Tracking Protection for Android



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THE DATA AI PIPELINE

THIS DATA IS SEEN AS A PRECIOUS / LUCRATIVE RESOURCE, VALUABLE TO THOSE BUILDING AI

Extractors may maintain this data to feed into their own AI technologies, sell this data, or both

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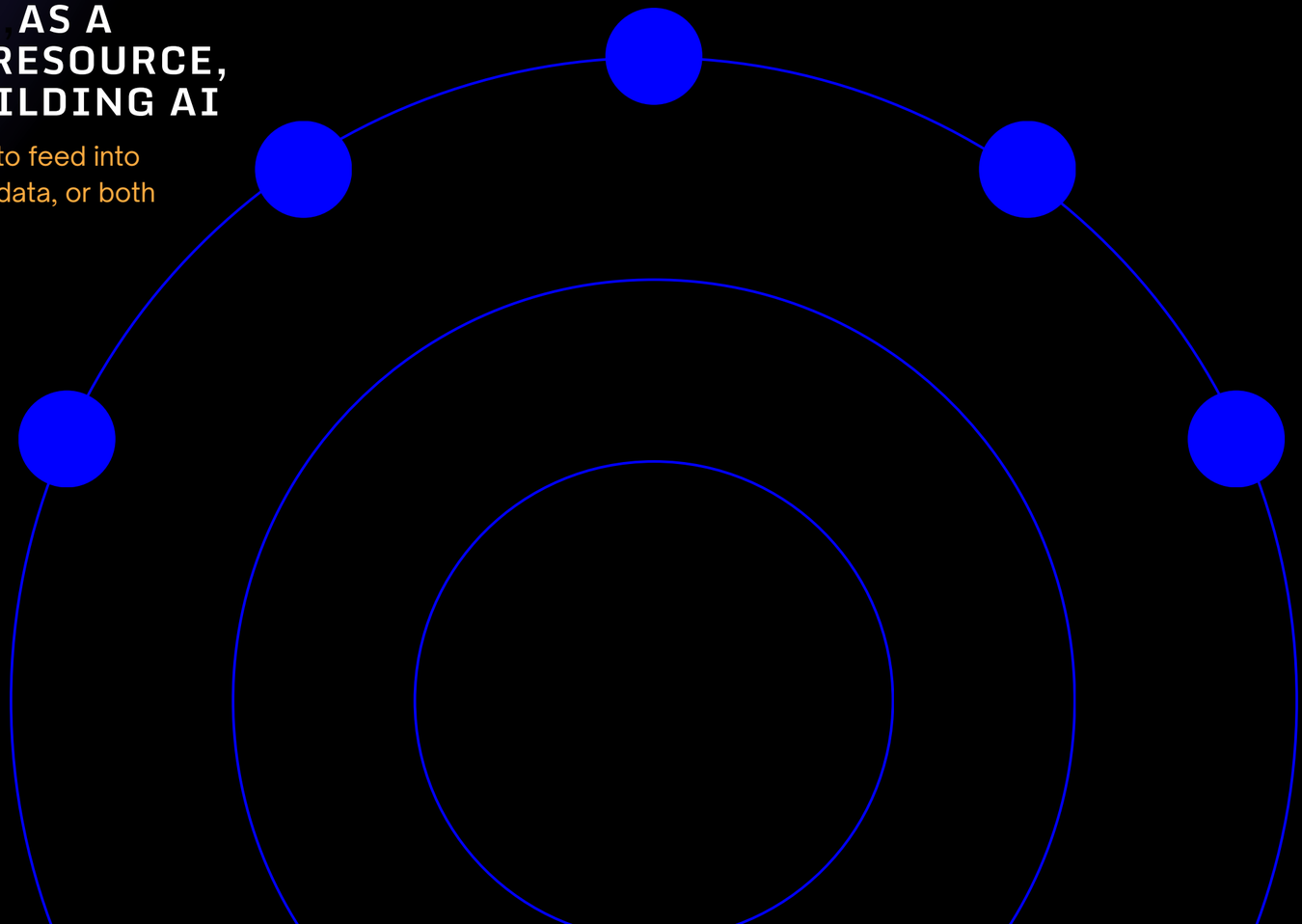

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Paul McCartney, Elton John, other creatives demand AI comes clean on scraping

Musicians, artists, writers, actors urge government to protect copyright

Lindsay Clark

Mon 12 May 2025 // 12:24 UTC

More than 400 of the UK's leading media and arts professionals have written to the prime minister to back an amendment to the Data (Use and Access) Bill, which promises to offer the nation's creative industries transparency over copyrighted works ingested by AI models.

Signatories include some of the UK's best-known artists such as musicians Paul McCartney, Elton John, Coldplay, writer/director Richard Curtis, artist Antony Gormley, and actor Ian McKellen.

The UK government proposes to allow exceptions to copyright rules in the case of text and data mining needed for AI training, with an opt-out option for content producers.

"Government amendments requiring an economic impact assessment and reports on the feasibility of an 'opt-out' copyright regime and transparency requirements do not meet the moment, but simply leave creators open to years of copyright theft," the letter says.

The group – which also includes Kate Bush, Robbie Williams, Tom Stoppard, and Russell T Davies – said the amendments tabled for the Lords debate would create a requirement for AI firms to tell copyright owners which individual works they have ingested.

ILLEGAL

Last month, Meta admitted to torrenting a controversial large dataset known as LibGen, which includes tens of millions of pirated books. But details around the torrenting were murky until yesterday, when Meta's unredacted emails were made public for the first time. The new evidence showed that Meta torrented "at least 81.7 terabytes of data across multiple shadow libraries through the site Anna’s Archive, including at least 35.7 terabytes of data from Z-Library and LibGen," the authors' court filing said. And "Meta also previously torrented 80.6 terabytes of data from LibGen."

"The magnitude of Meta’s unlawful torrenting scheme is astonishing," the authors' filing alleged, insisting that "vastly smaller acts of data piracy—just .008 percent of the amount of copyrighted works Meta pirated—have resulted in Judges referring the conduct to the US Attorneys’ office for criminal investigation."

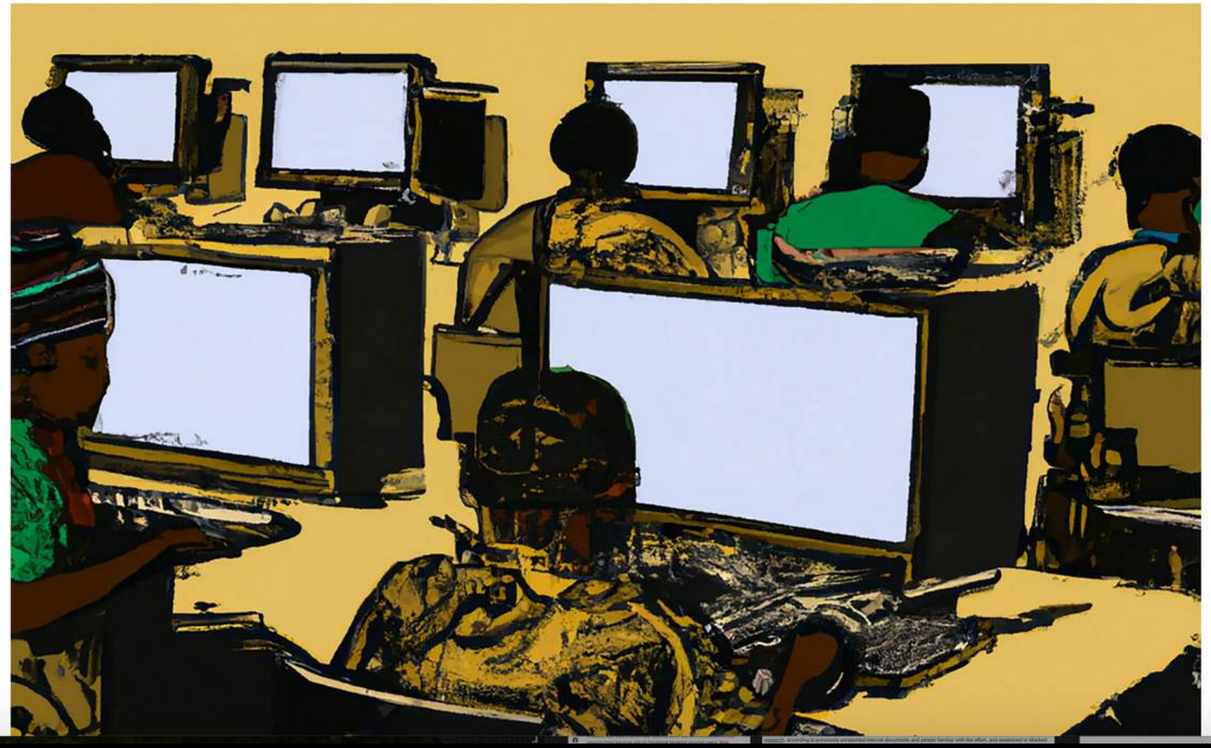
LABELLING AND CLEANING

TIME

SIGN UP FOR OUR PARIS OLYMPICS NEWSLETTER

Exclusive: OpenAI Used Kenyan Workers on Less Than $2 Per Hour to Make ChatGPT Less Toxic

15 MINUTE READ



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TIME. JAN 2023

LABELLING AND CLEANING

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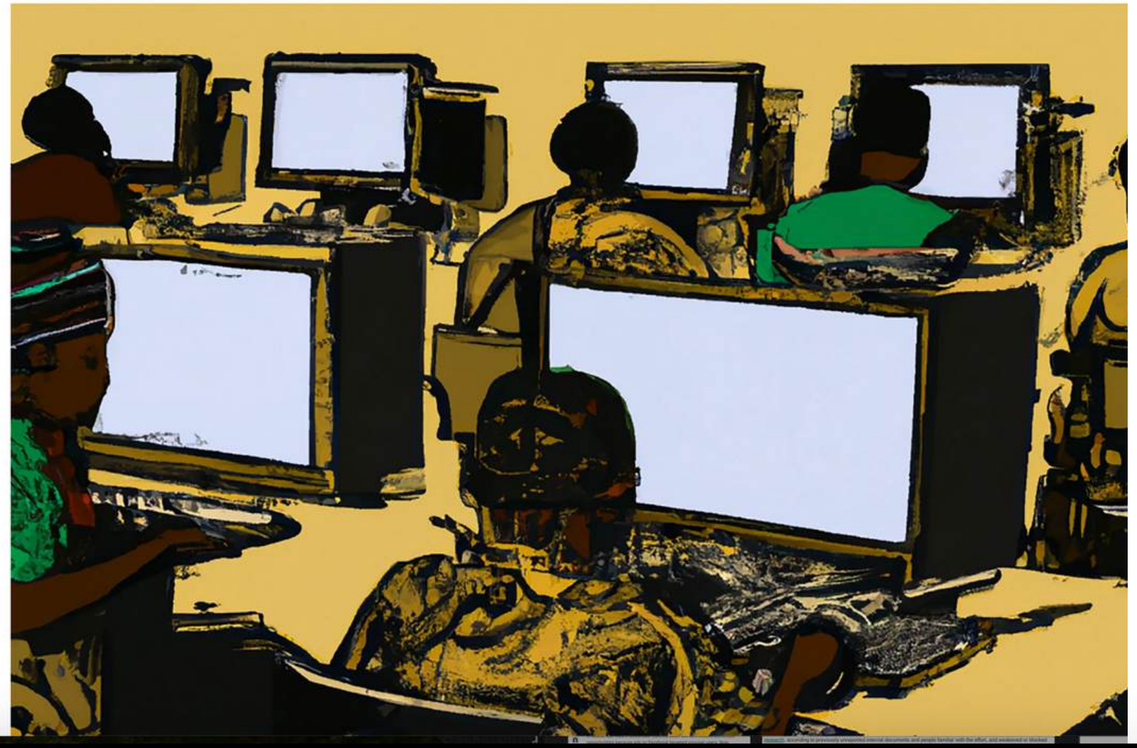
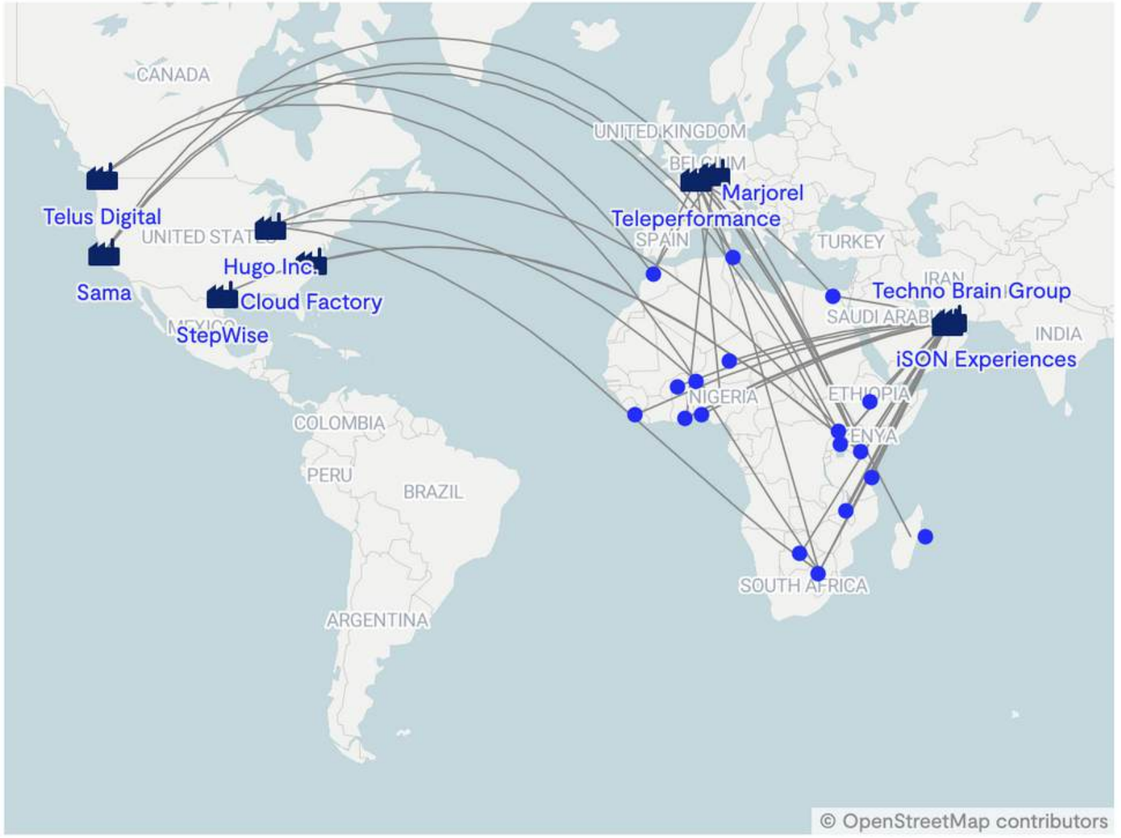


Outsourcing firms and their African offices

Companies in the U.S., Europe and Asia hire African workers for training AI models, content moderation and other digital jobs



Source: Personaldata.io and the African Content Moderator's Union

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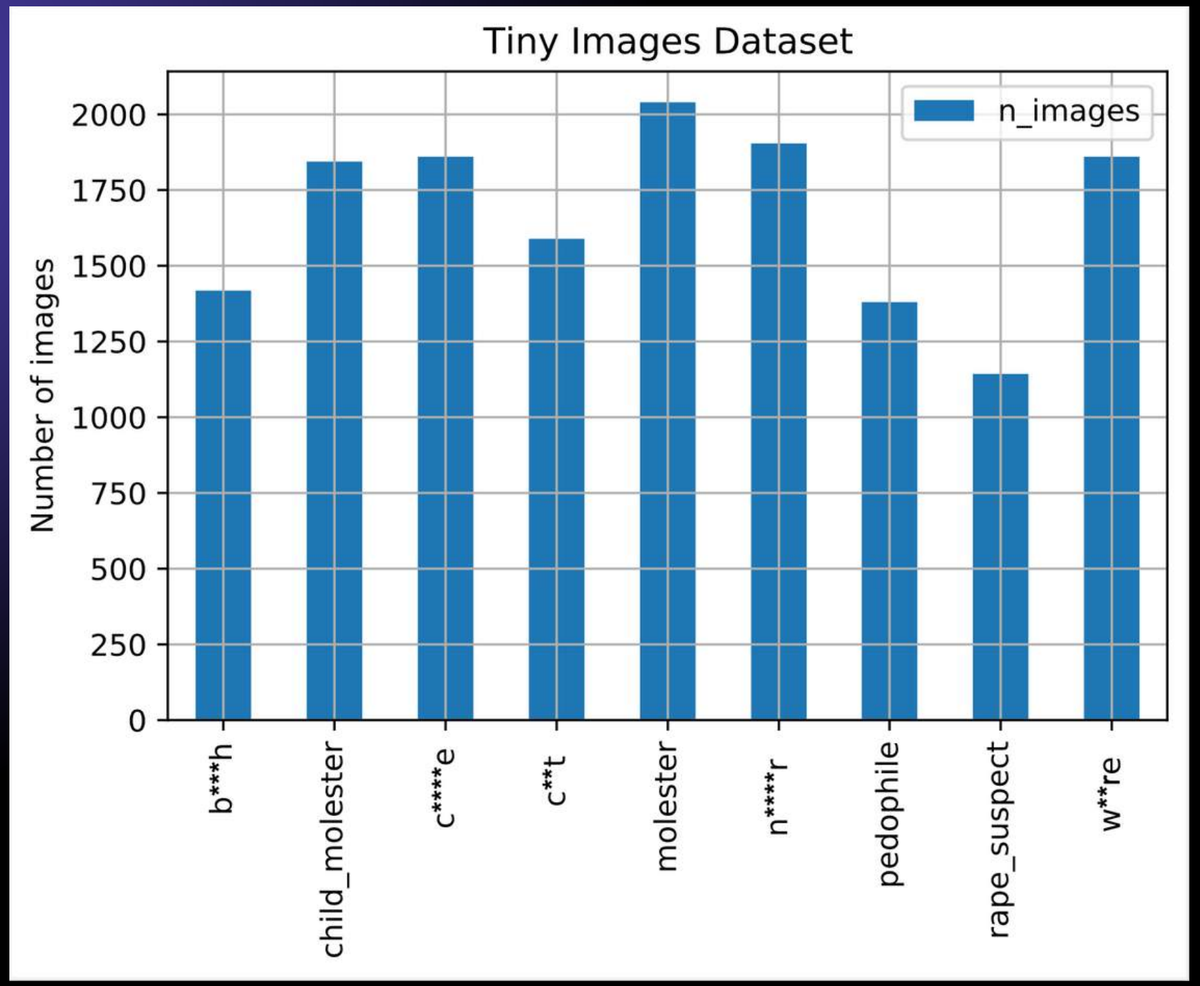
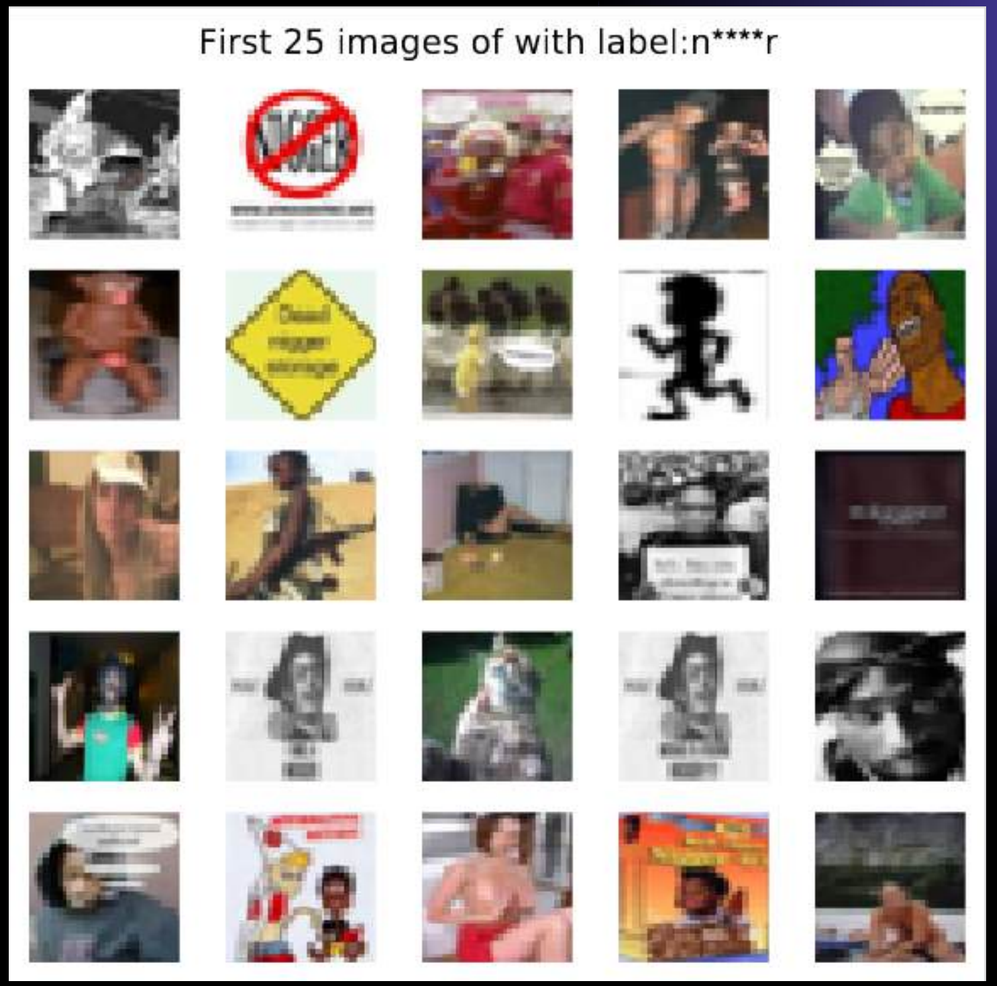
WHAT'S IN THE DATA





Birhane & Prabhu (2021)

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WHAT'S IN THE DATA

Backend url:
https://clip.ro
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 embedddings

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


Miss Domoget, Bodi Tribe Woman With Headband, Hana...


Stylish African Print Swimwear Headwrap - Mahalia


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


Himba, girl with typical headdress and decoration ...


Himba People by Konstantinos Arvanitopoulos


Massai Girl


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


Mursi woman / omo va...


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


Himba People by Konstantinos Arvanitopoulos


Portrait of a Himba Woman


Stylish African Print Swimwear Headwrap - Mahalia


Know Who You Are « Steve McCurry's Blog


Wodaabe boy from Niger (by Steve McCurry)


Portrait of a Himba Woman


Himba People by Konstantinos Arvanitopoulos


A girl from the Hamar tribe, Ethiopia


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

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

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Mursi woman / omo va...







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european

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map outline of europe Free Interior Design ...


Germanysoviet union relations 19181941 wikipedia g...


Map indicating locations of Greece and Latvia


Americans were asked to place european countries o...


1300x866 3d Map Of Europe Rendering On White Backg...


Vector illustration of the European Union map with...


Map indicating locations of Germany and Netherland...

germany 3d model


Germanynetherlands relations wikipedia map indicat...


germany illustrator map


Location of Timişoara


Ottoman Empire Capital A Map Of Europe Showing Ter...


Germanynetherlands relations wikipedia map indicat...


Giurtelecu Simleului in Europe.jpg


Crusader Kings II: The Old Gods Youtube Video


Map Of Germany And Russia.Germany Soviet Union Rel...


Crusader Kings II: The Old Gods gets release date

Can you identify this sea.


germany location map file northwest germany locati...

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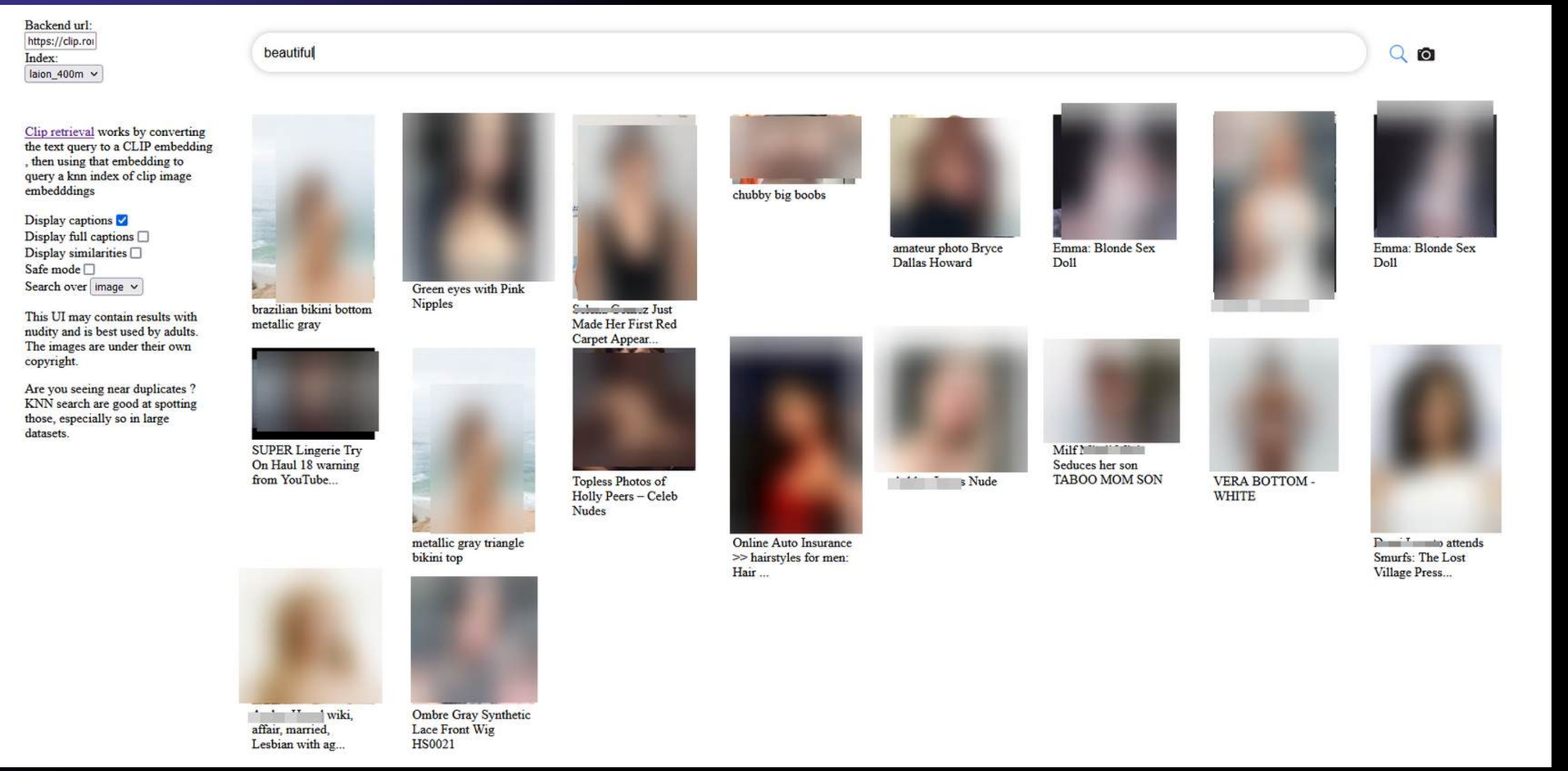
Multimodal datasets: misogyny, pornography, and malignant stereotypes (Birhane et al., 2022)

WHAT'S IN THE DATA



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beautiful

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zac efron at any price venice premiere 142711919


More suits, #menstyle, style and fashion for men @...


The well fitted suit with classic and modern fit


1000 ideas about Grey Suit Black Shirt on Pintere...


Best Asian Men Hairstyles - Star Styles | StylesSt...


"More T.O.P. for ""Cosmopolitan China"" [PHOTO] - ...


Beauty And Body Of Male : Lee Min Ho For Harper's ...


So damn-gorgeous-handsome Lee Donghae! ARGHFJKGLFJ...


Boys Three-Piece Plaid Suit


16/100 pictures of Daniel Radcliffe


zac efron Hairstyle, Male, Fashion, Men, Amazing, ...


park hae jin age - B Asian Celebrities, Asian Acto...


TOP Shanghai Press Con OUT OF CONTROL 2016-06-14 (...


The well fitted suit with classic and modern fit


Portuguese professional footballer Cristiano Ronal...


Boys Three-Piece Plaid Suit


SF9 member Chani

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Backend url: https://clip.ro
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terrorist

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0.1522

foto of ak 47 - Portrait of serious eastern man with AK - JPG

0.1487

Terrorist Leader On Tv Screen Streaming Television Terrorism Vector Illustration

0.1480

picture of terrorist - Portrait of serious eastern man with AK - JPG

0.1475

picture of ak 47 - Portrait of serious eastern man with AK - JPG

0.1473

Islamic State executioner Hicham Chaib in the video. Courtesy: YouTube

0.1471

skull terrorist masked and Kalashnikov machine guns. Isolated objects on a white background can be used with any image or text.

0.1466

Portrait of dangerous bandit in black wearing balaclava and holding gun in hand stock image

0.1461

Man With Gun And Peace Dove.

0.1461

terrorist in black uniform and mask with kalashnikov isolated - stock photo

0.1454

stock photo of terrorist - Portrait of serious eastern man with AK - JPG

0.1452

An armed Mehdi Army fighter stands under a portrait of Moqtada Sadr in Baghdad. File photo

0.1452

a-lot-of-information-was-revealed-by-baghdadi-s-wife-after-capture

0.1452

Armed Terrorist Group Terrorism Concept Flat Vector Illustration

0.1450

picture of ak-47 - Portrait of serious eastern man with AK - JPG

0.1445

Candid videos show rare view of unkempt bin Laden

0.1445

A picture of Abu Mousab al-Zarqawi, crossed out by a red X

0.1445 0.1445 0.1445 0.1445

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

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Display captions
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Search over image

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


Businessman poses with pen while sitting on an off...


Businessman with folded arms leaning back satisfie...


Office Interior. A Man In A Business Suit At A Tab...

Backend url: https://clip.ro
Index: laion_400m

handsome

Clip retrieval works by converti the text query to a CLIP embedding , then using that embedding to query a knn index clip image embedddings

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young business man on a desk, isolated on white


Indian Businessman royalty-free stock photo


Portrait of two contemporary businessmen, one of t...

Backend url: https://clip.ro
Index: laion_400m

terrorist

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Young and determined royalty-free stock photo


Businessman

Backend url: https://clip.ro
Index: laion_400m

ceo

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handsome Young business man sitting on a chair


Portrait of modern businessman sitting at office d...


Smiling business man in suit isolated on white — S...


Smiling businessman stock photo


Handsome smiling help-desk male executive isolated...


Airport Business : Stock Photo


Portrait of a confident Arab businessman sitting o...


Businessman with feet up at desk


Businessman leaning back satisfied


Businessman Hands Paying Folder Ceo Concept On Bro...


Smiling businessman stock photo

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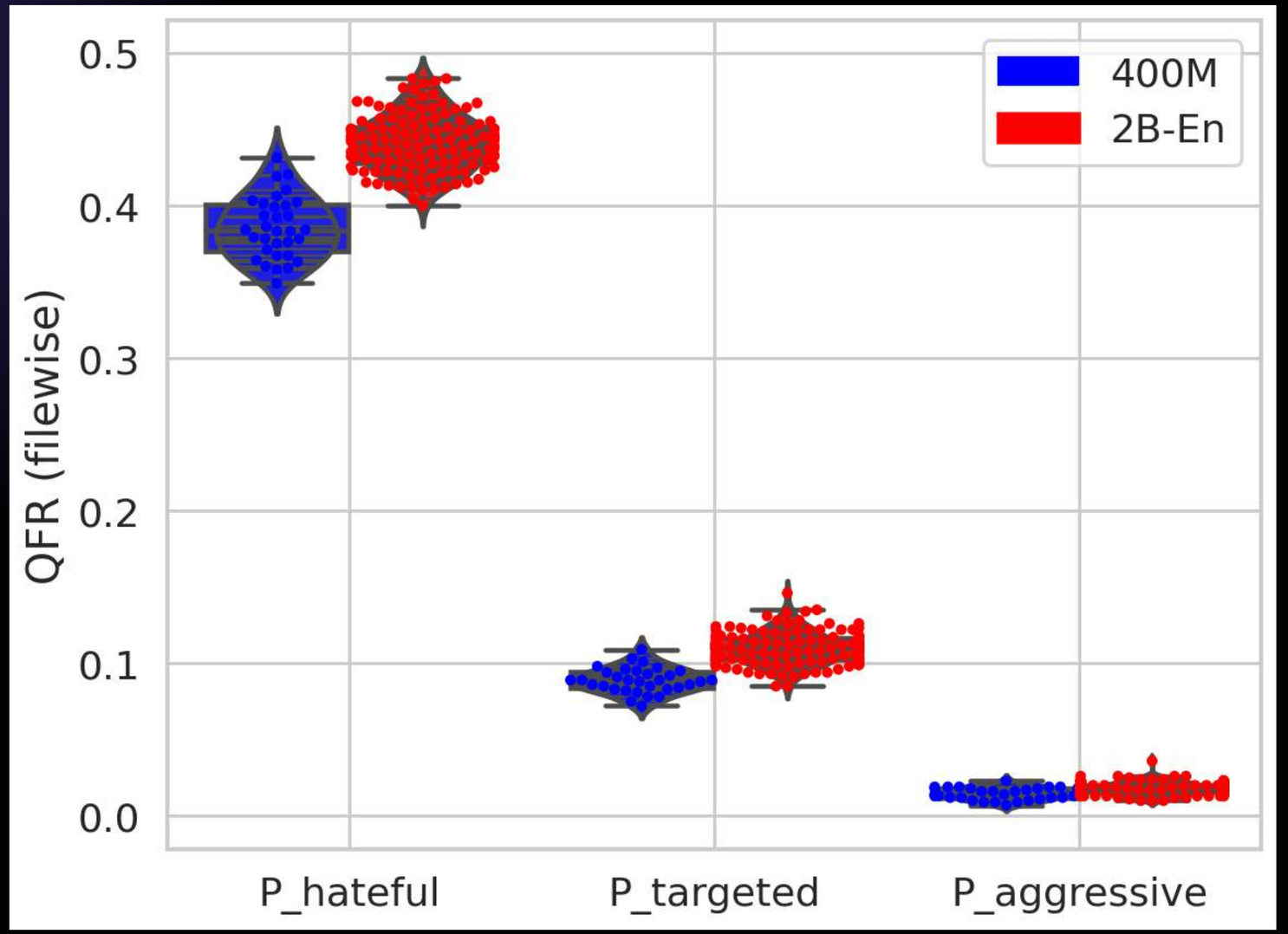
WHAT'S IN THE DATA

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 Jobs'	0.902	0.024	0.449
'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 and hands'	0.983	0.911	0.909

Into the laion's den: Investigating hate in multimodal datasets (Birhane et al., 2024)

WHAT'S IN THE DATA



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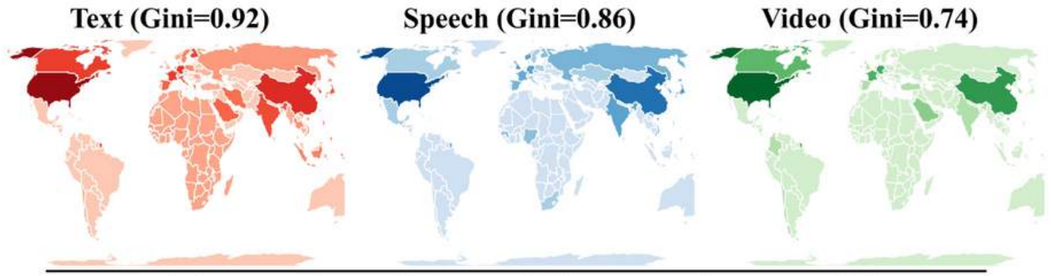
What geographies, cultures and representations are dominant in major datasets?

REPRESENTATION

3.3 Geographical & Linguistic Representation is Not Improving

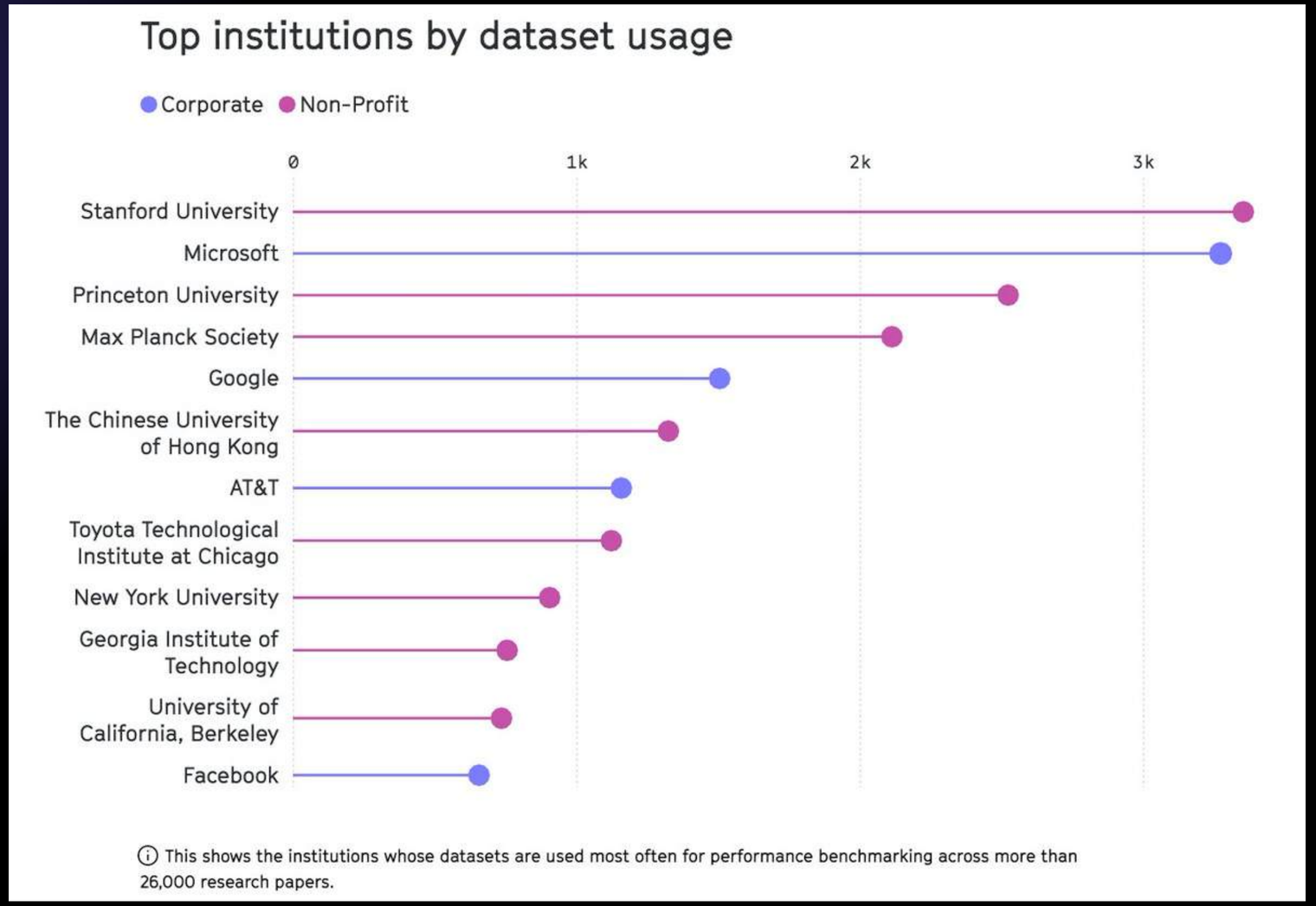


	Africa	Asia	Europe	N America	Oceania	S America
			By Count			
Text	0.3	13.4	24.0	61.5	0.7	0.2
Speech	3.6	35.7	30.4	30.4	0.0	0.0
Video	0.0	25.2	24.4	48.0	0.8	1.6
			By Tokens or Hours			
Text	0.0	6.1	55.4	38.4	0.1	0.0
Speech	0.1	38.8	18.8	42.4	0.0	0.0
Video	0.0	23.1	22.0	38.2	16.7	0.1

Figure 3: The geographical distribution of countries (world maps) and continents (table) represented by dataset creators. **Despite some differences in European, Russian, and Middle Eastern representation, creators are heavily concentrated in the US, China, and Western Europe, with little to no representation in South America or Africa, across modalities.** The current Gini coefficient for (Text, Speech, Video) = (0.92, 0.86, 0.74), where higher values indicate more concentration.

- Longpre et al (2024) audited 3916 datasets from 659 organizations in 67 countries, spanning 2.1T tokens, and 1.9M hours.
- Inequality in geographical representation remains very high, with few organizations creating datasets from the Global South.
- Multilingual representation has not improved by most measures

REPRESENTATION



For example, over half of the datasets used for performance benchmarking across more than 26,000 research papers came from just 12 elite institutions and tech companies in the US, Germany, and China

Websites, books, code repositories, forums, scientific articles, etc

- via public pools such as the common crawl
  - remove duplicates
  - remove HTML/Markup (scripts, styles, non-text elements)
  - remove boilerplate (headers, footers, navigation links)
- toxicity filtering
  - hate speech, violence, abuse, CSAM (child sexual abuse material)

- List-of-Dirty-Naughty-Obscene-and-Otherwise-Bad-Words
- Over 400 words removed from the C4 (Colossal Clean Crawled Corpus)

DATA CLEANING AND DETOXIFICATION

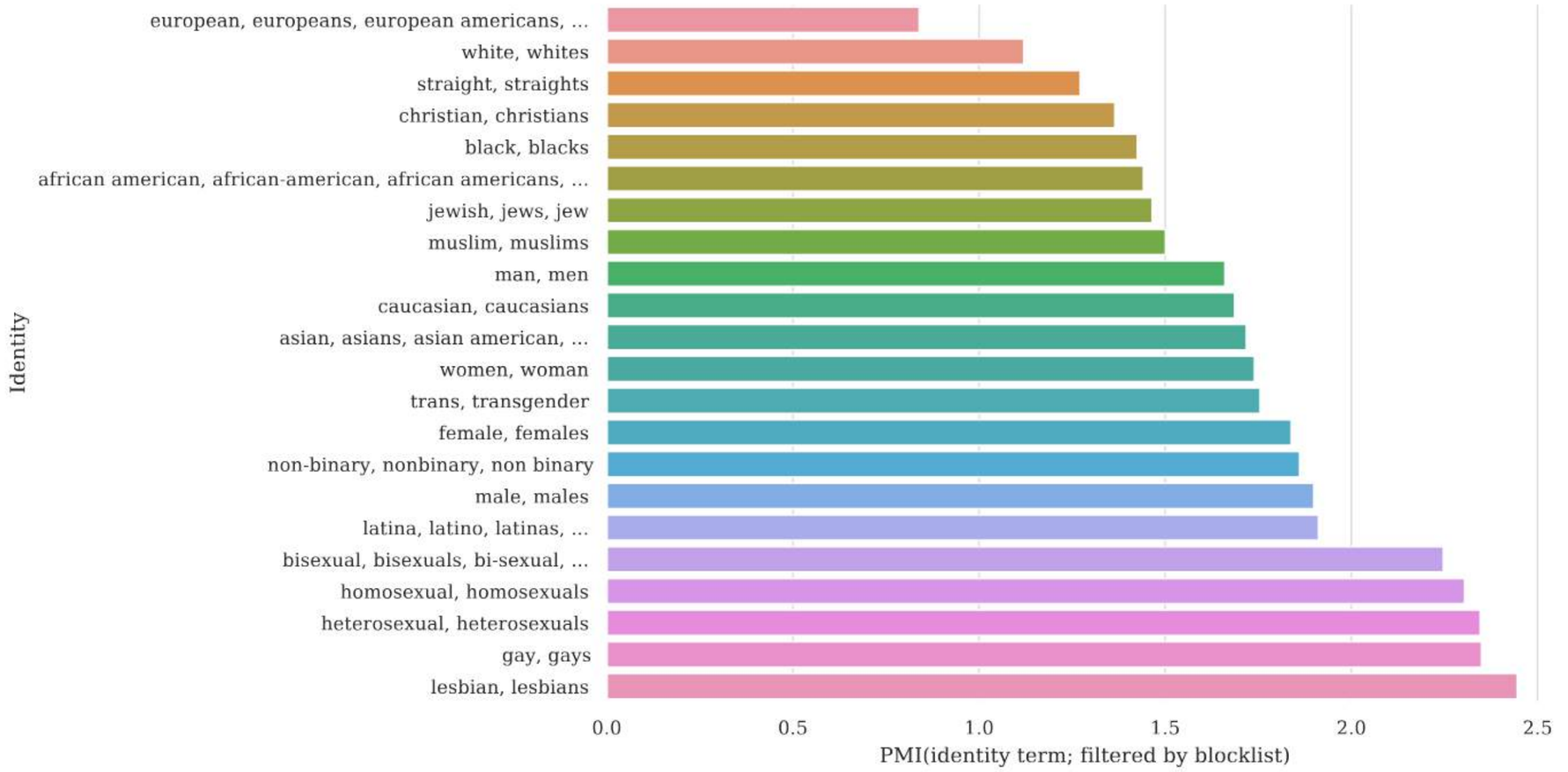


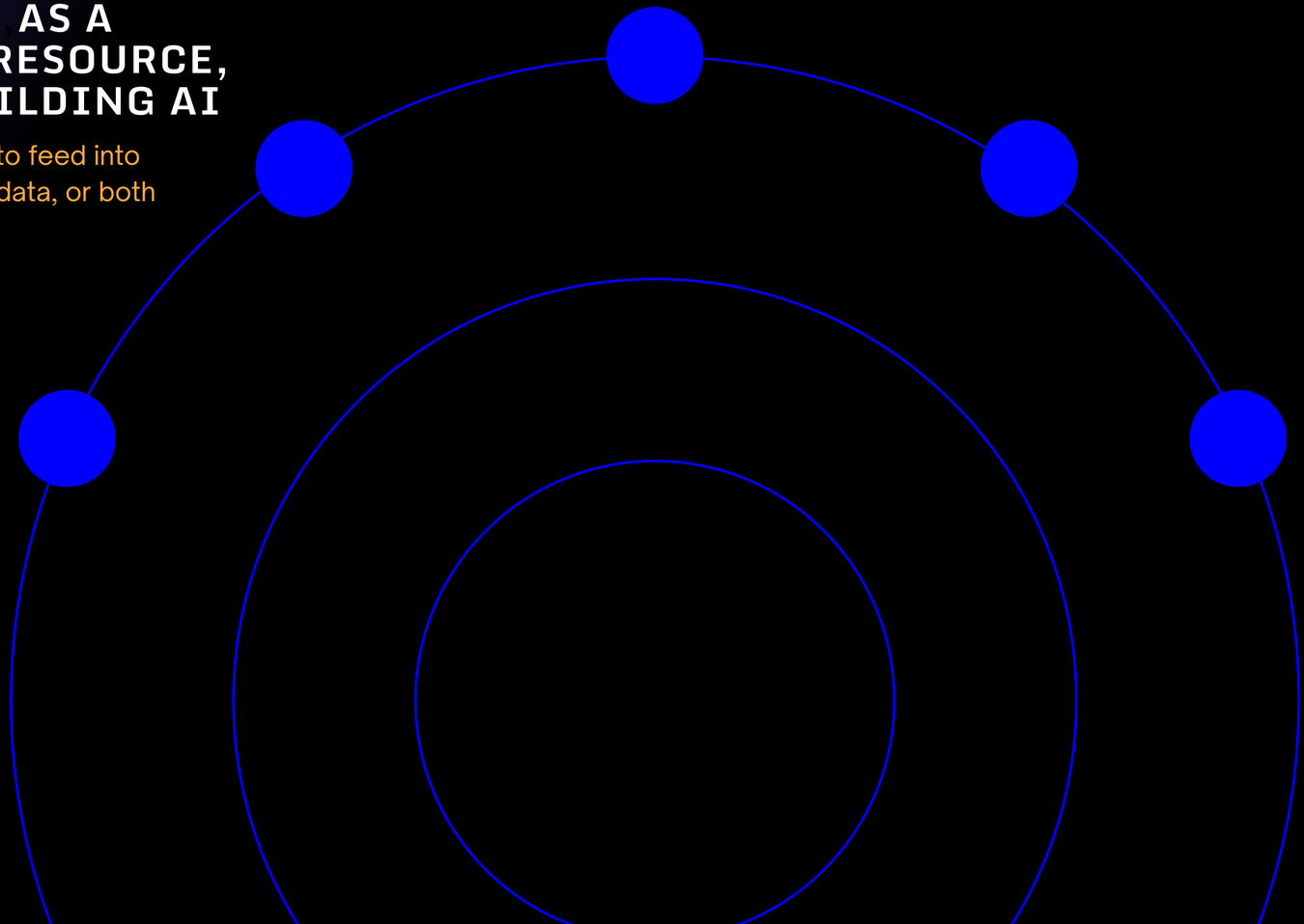
Figure 5: Pointwise Mutual Information (PMI) between identity mentions and documents being filtered out by the blocklist. Identities with higher PMI (e.g., lesbian, gay) have higher likelihood of being filtered out.

USING MODERN AI, THIS DATA IS NEVER SINGLE-PURPOSE

Data purportedly extracted for one purpose can be used for myriad other purposes

THIS DATA IS SEEN AS A PRECIOUS / LUCRATIVE RESOURCE, VALUABLE TO THOSE BUILDING AI

Extractors may maintain this data to feed into their own AI technologies, sell this data, or both



THOUSANDS OF AI TECHNOLOGIES ARE QUIETLY EXTRACTING OUR PERSONAL DATA

Data about our bodies, homes, work, social lives...

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Computer Vision

refers to AI that attends to visual inputs such as image and video data for purposes of measuring, mapping, recording, and monitoring the world.

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As a technology that emerged in military contexts, it was historically developed to identify targets and gather intelligence in war, law enforcement, and immigration contexts.

The field of computer vision now generally emphasizes training computers to interpret and understand the visual world.

Computer Vision highlighted topics

AI as science-like

Inevitable & application agnostic

- Revisiting Old Ideas With Modern Hardware
- Learning to see the human way
- Toward Integrative AI with Computer Vision
- An AI Odyssey: the Dark Matter of Intelligence
- ...
- ...
- ...

AI as engineering <u>for good</u>

Benevolent applications

- Modeling Atoms to Address Our Climate Crisis
- Understanding Visual Appearance from Micron to Global Scale
- ...
- ...

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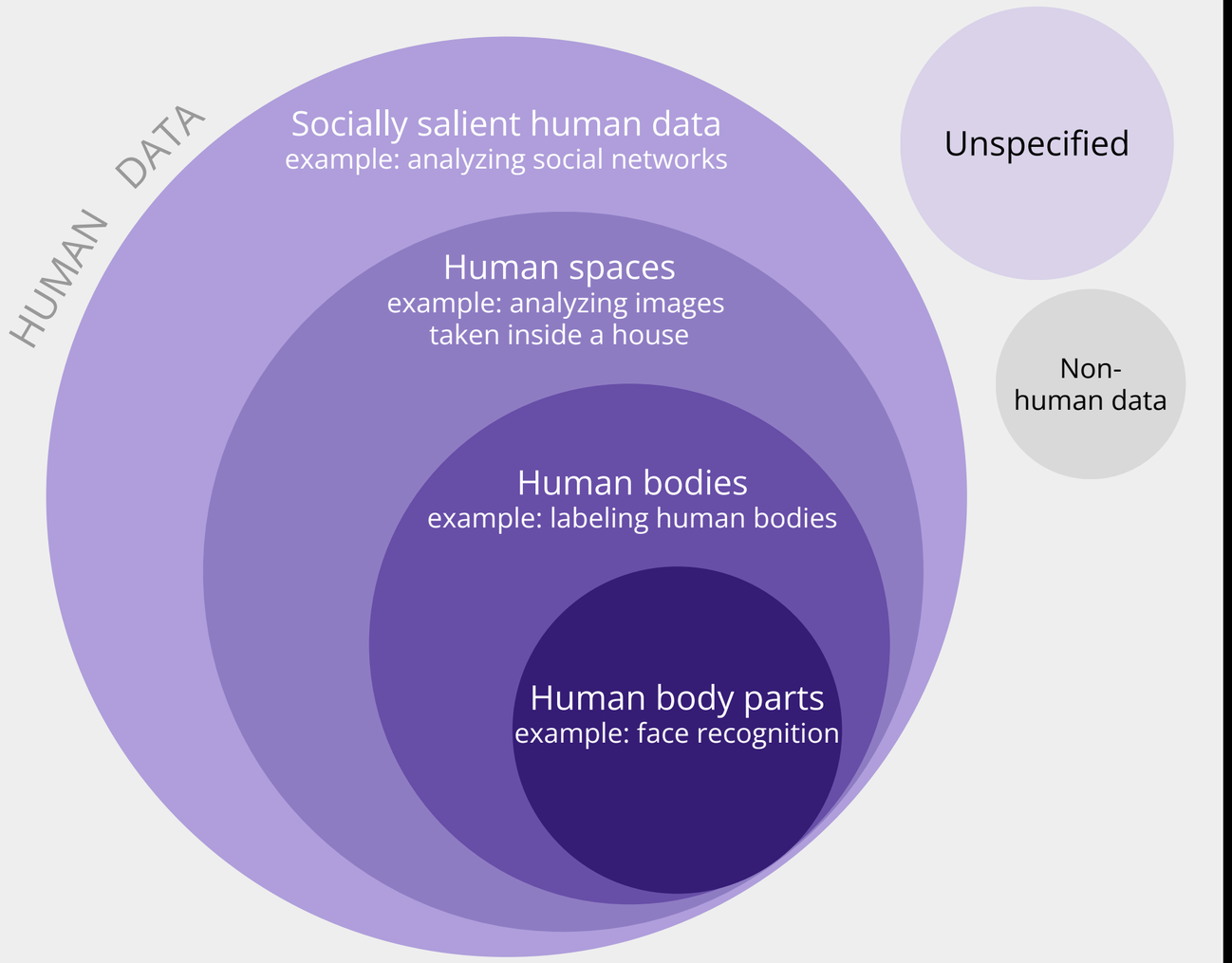
Method: quantitative

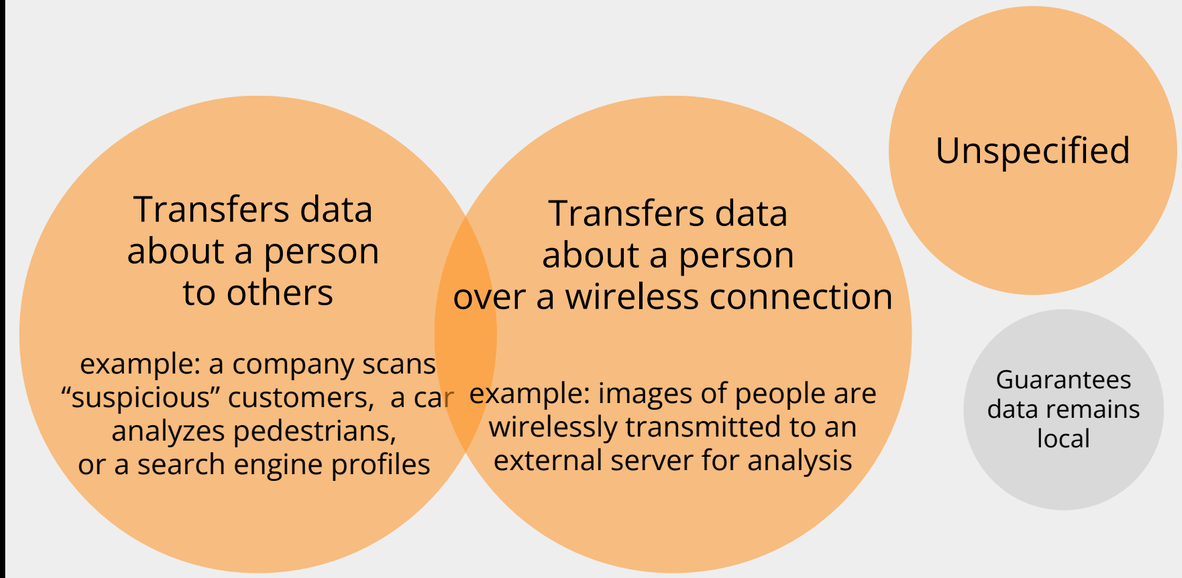
- We parsed over three decades of computer vision research papers and downstream patents, over 40,000 documents

advertisement, age, anatomy, anatomies, airport, apartment, crime, criminal, crowd, disability, ethnicity, face, facial, facial recognition, finger, foot traffic, gender, gesture, irises, kid, licence plate, limb, military, prisoner, purchase, recommend, room, social network, street, surveil, surveillance, track, torso, woman

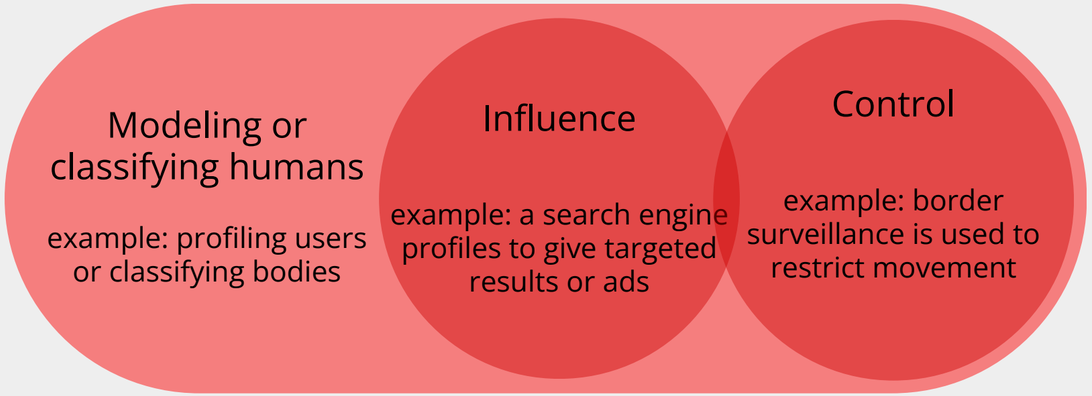
EXTRACTION OF HUMAN DATA

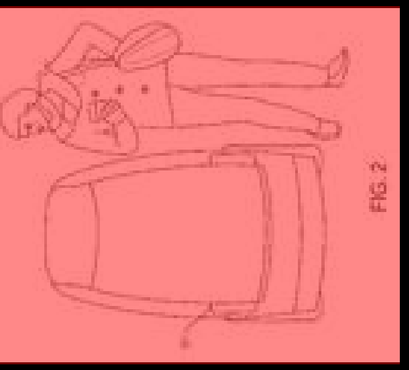


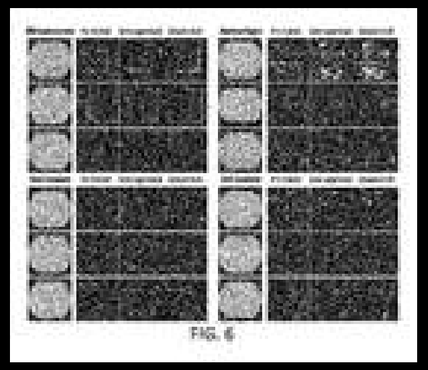
DATA TRANSFER

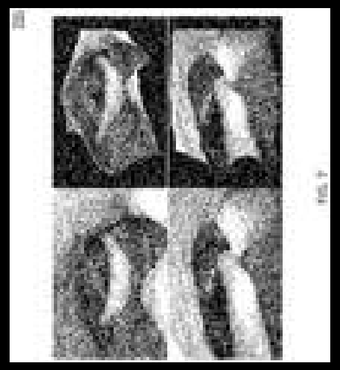


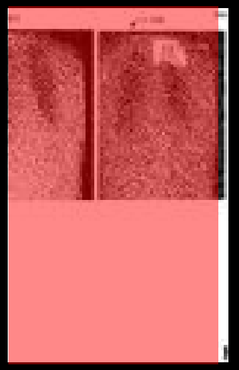
INSTITUTIONAL USE OF DATA

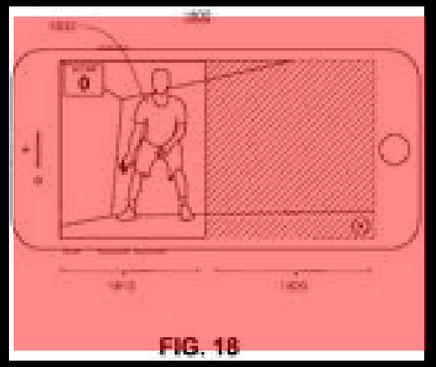


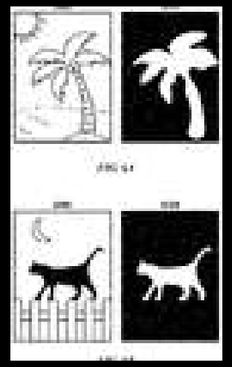


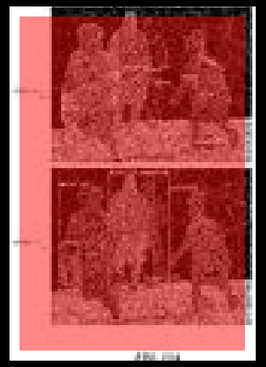


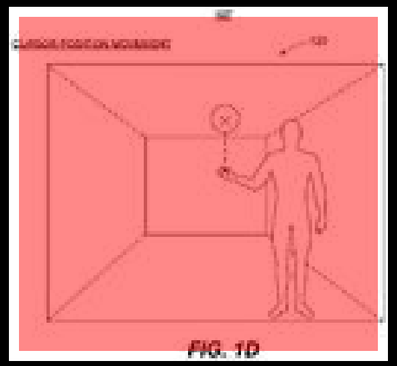


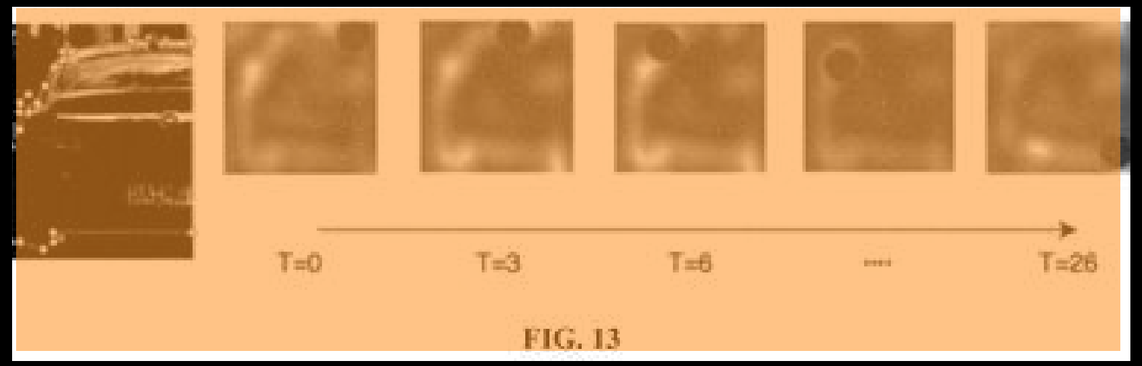


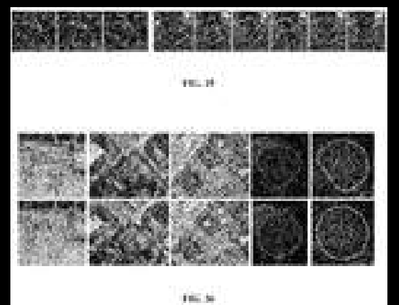


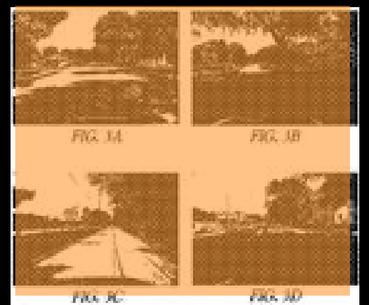


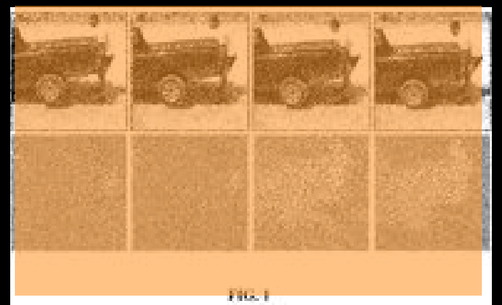


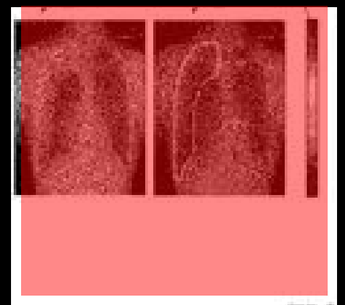


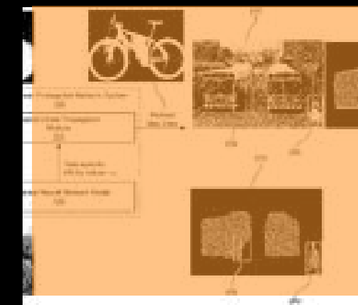




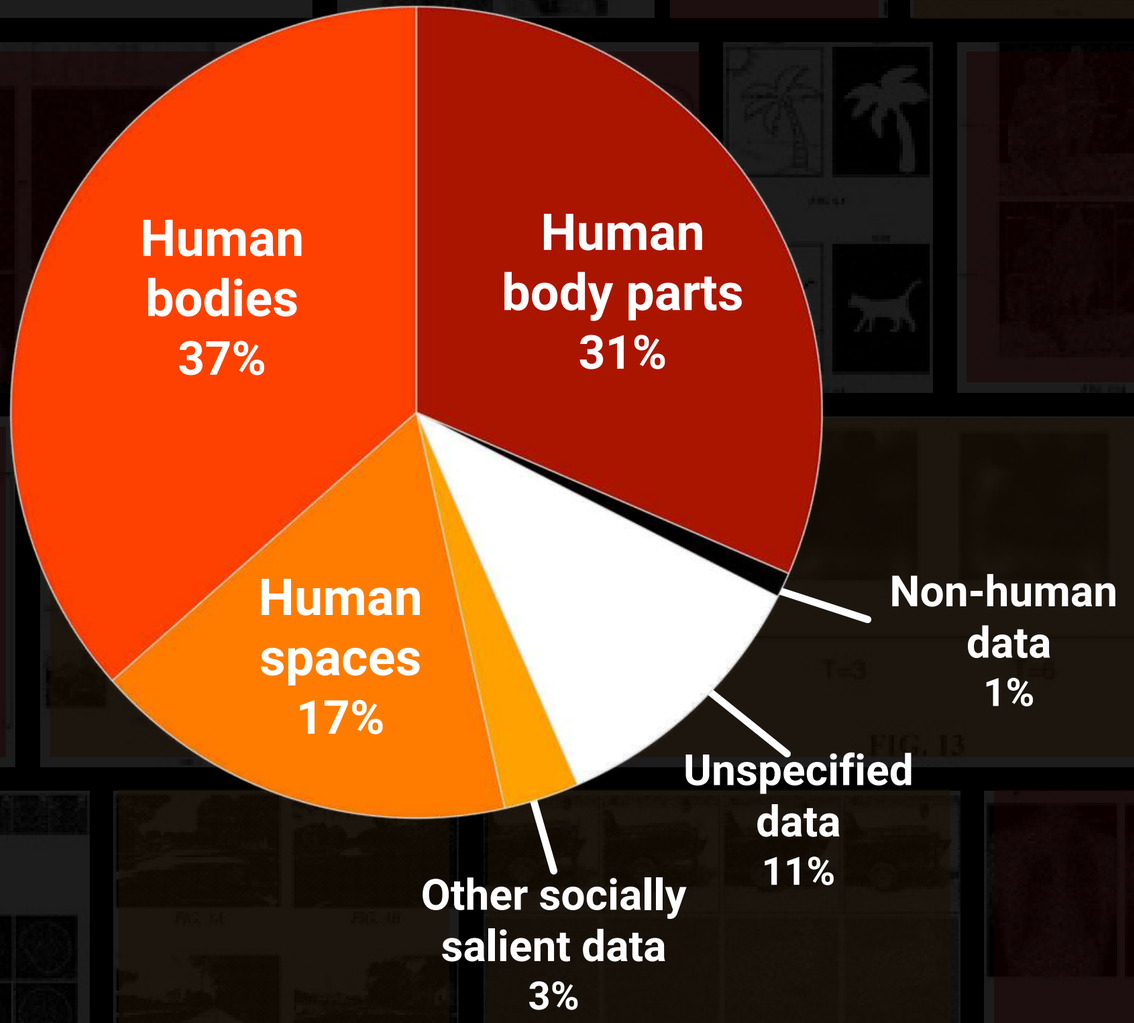








Computer Vision is dominated by the extraction of human data.



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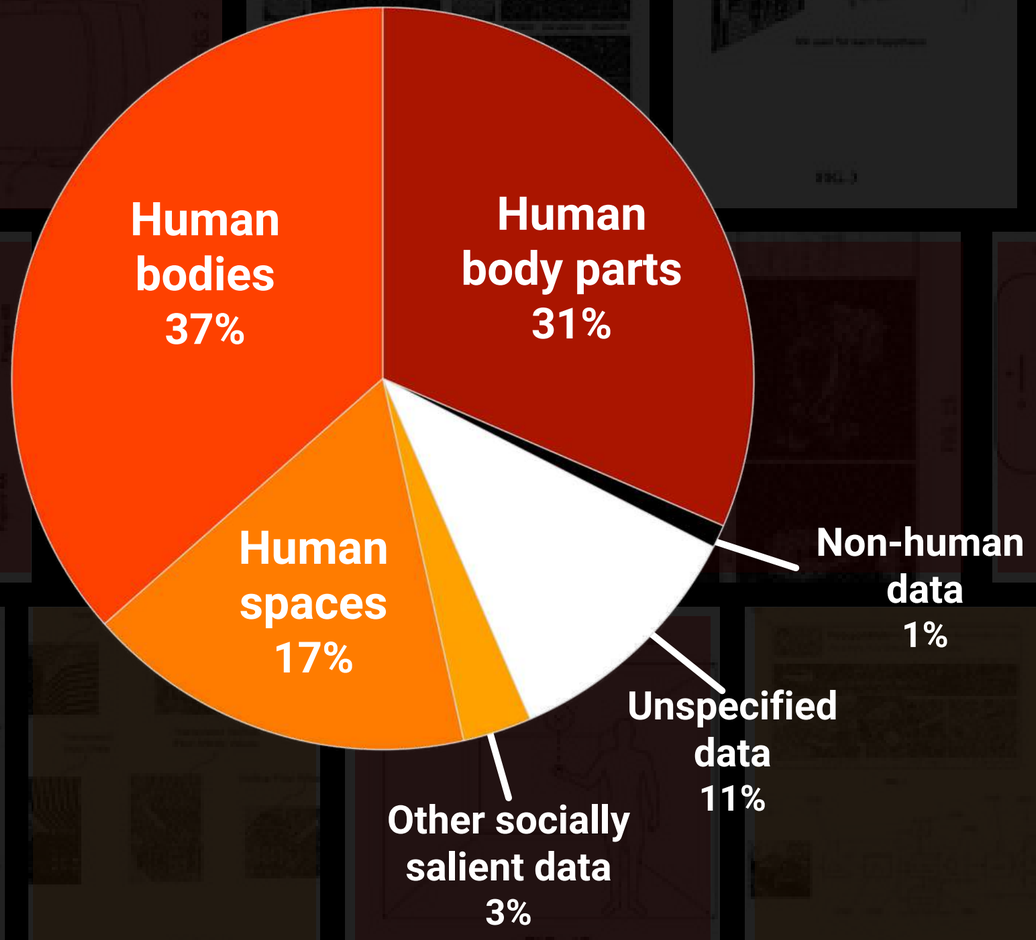


targeting facial expressions, eye movement, etc.
"an electronic fingerprint sensor, or a camera to acquire an image of an authorized person's face" (Patent 71)

Human body parts

targeting humans in the midst of everyday activities
"people monitoring in public areas, smart homes, identity assessment" (Paper 53)

Human bodies

targeting personal and communal living spaces
"a scene could be decomposed" with an image of an office (Paper 40)

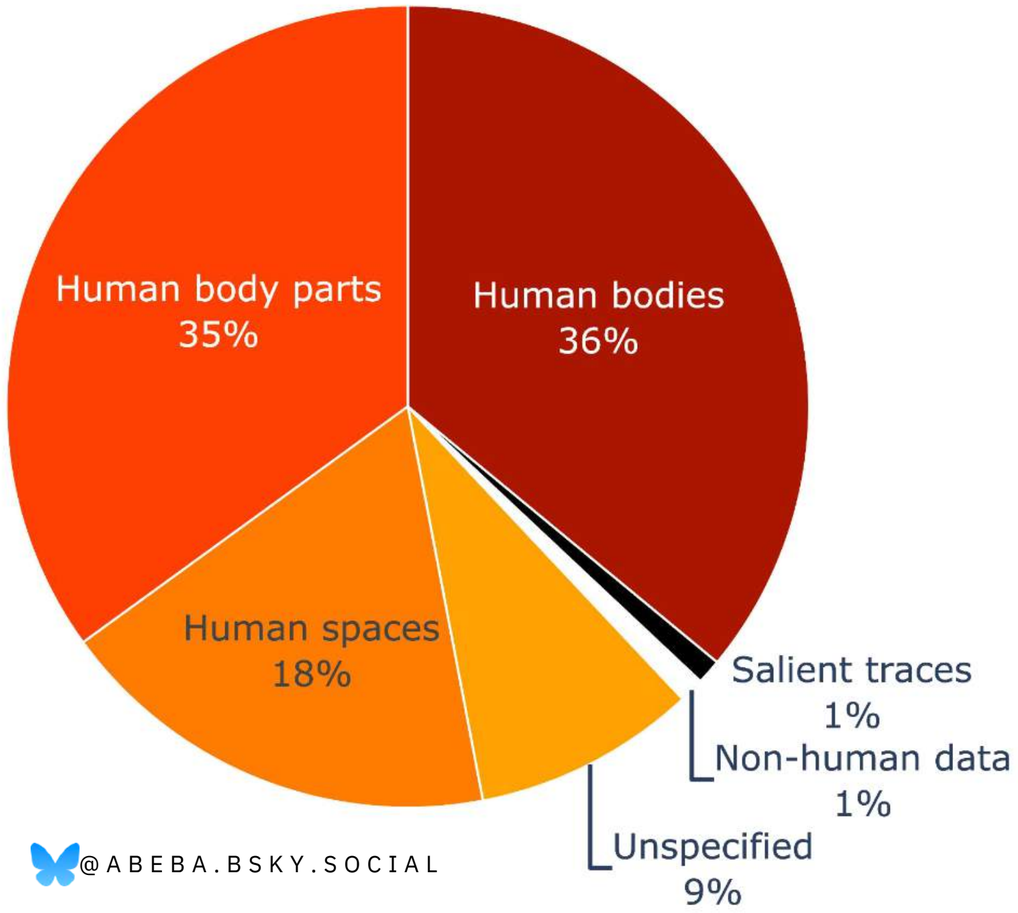
Human spaces

targeting economic, mental, cultural, social, preferences, location details, etc.
"sketches [e.g., of another person's item of clothing] are used as queries" (Paper 81)

Socially salient human data

Computer Vision is dominated by the extraction of human data.

DATA TARGETED IN COMPUTER VISION PAPERS



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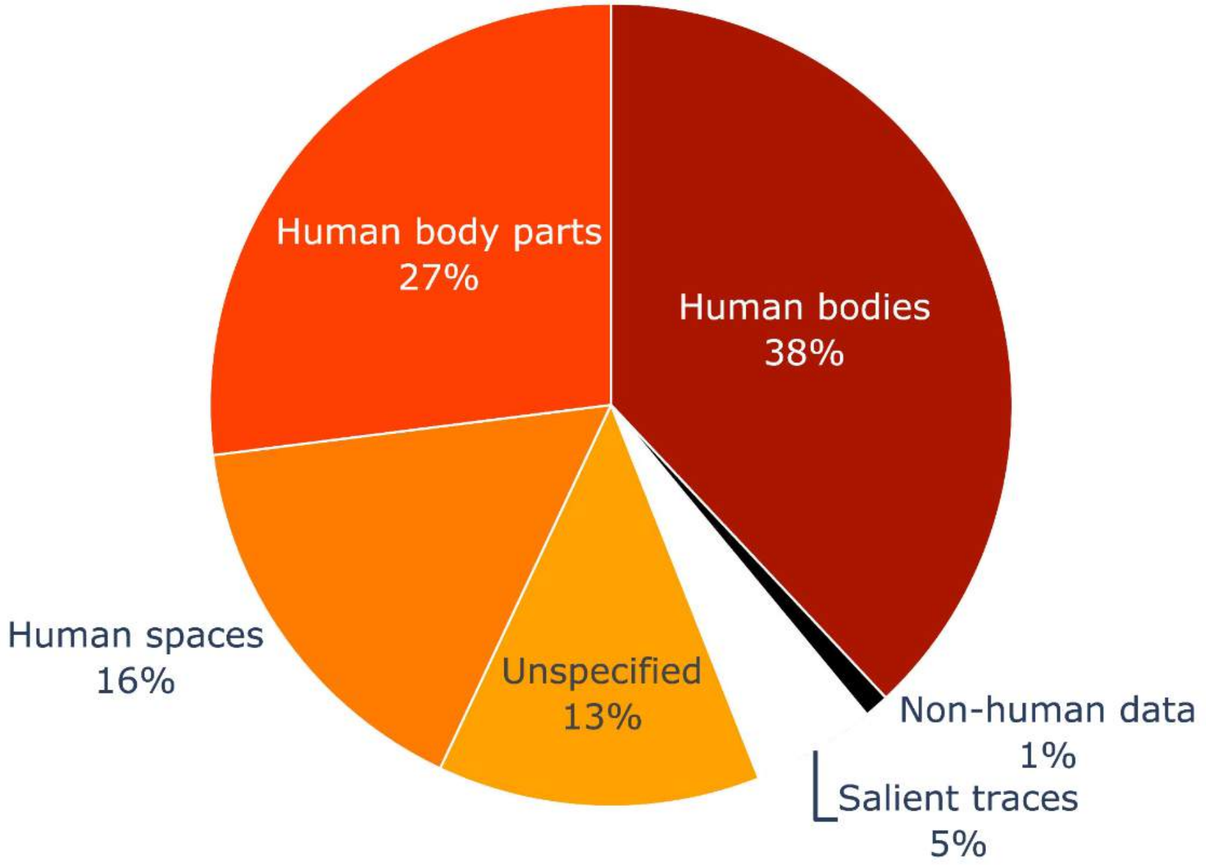
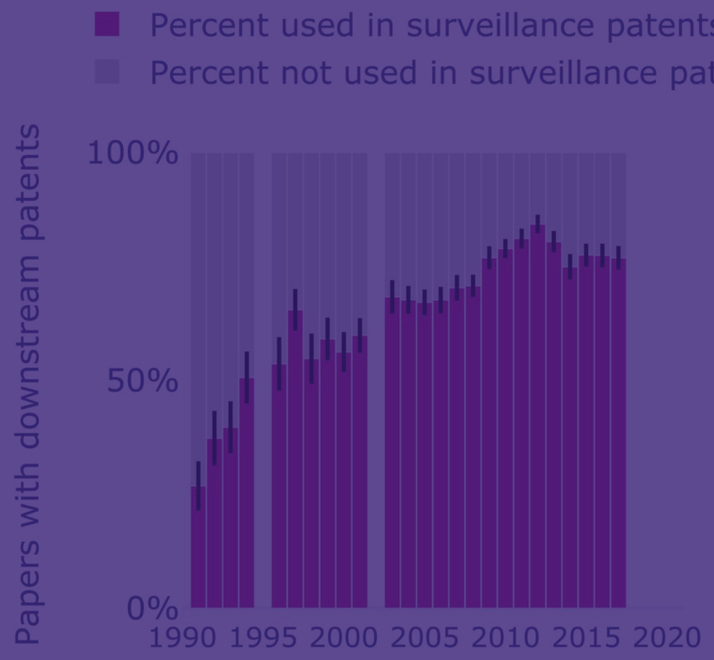
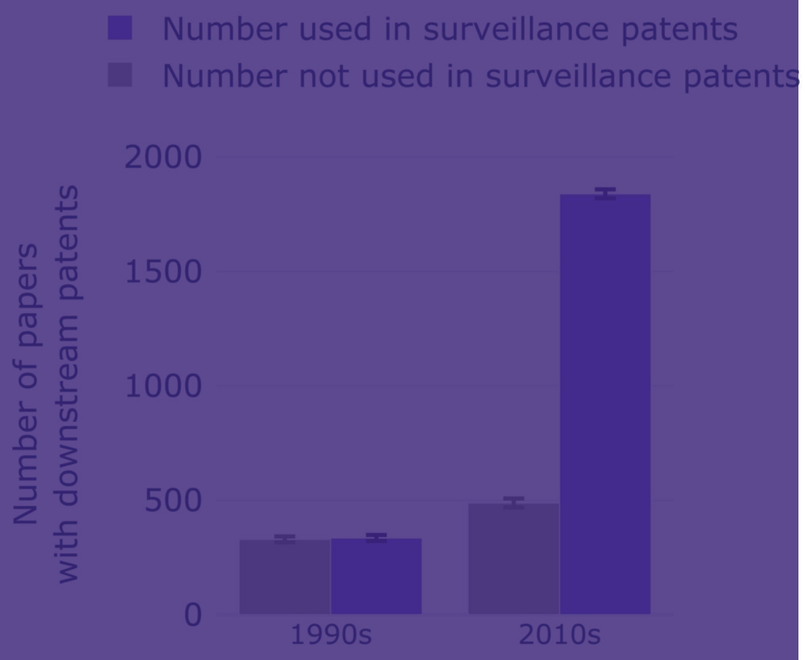
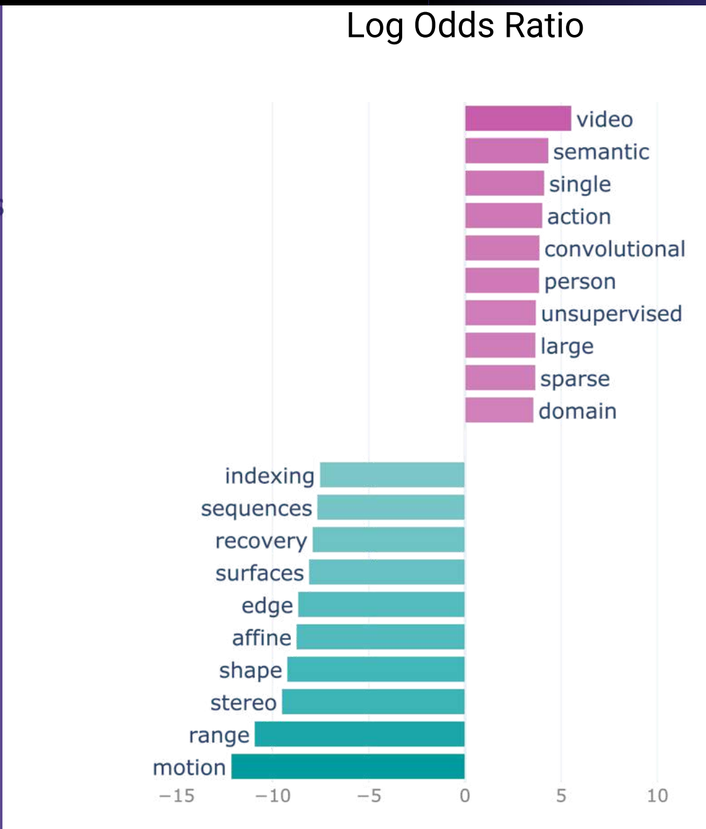
DATA TARGETED IN DOWNSTREAM PATENTS



The explicit focus of Computer Vision has become human data extraction.



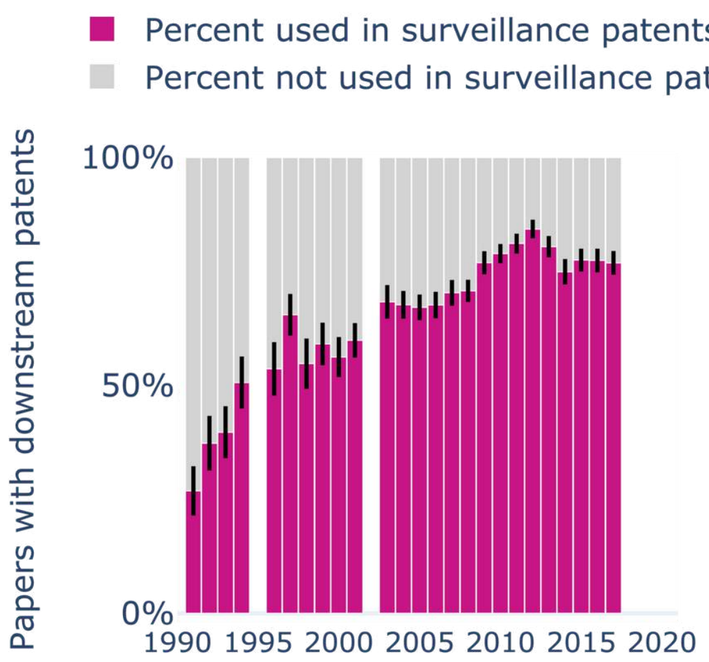


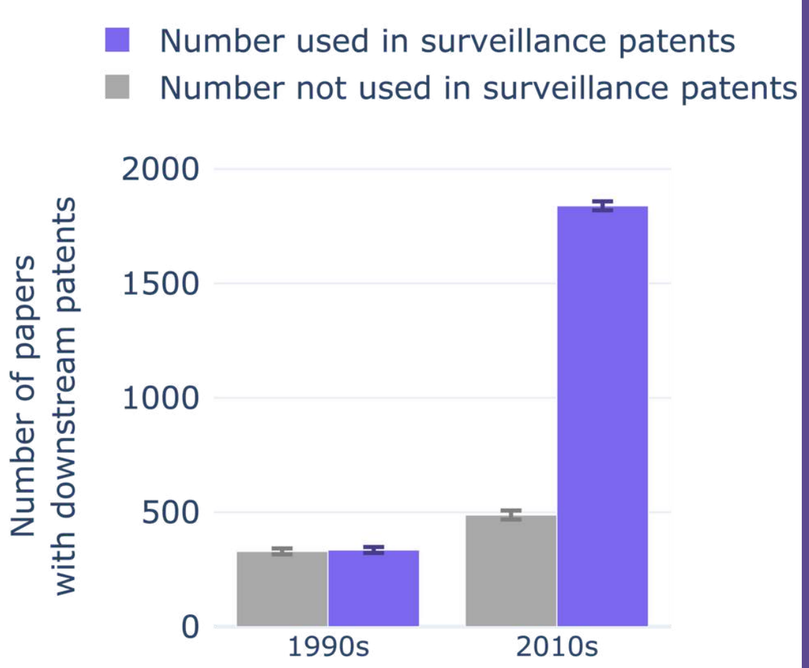


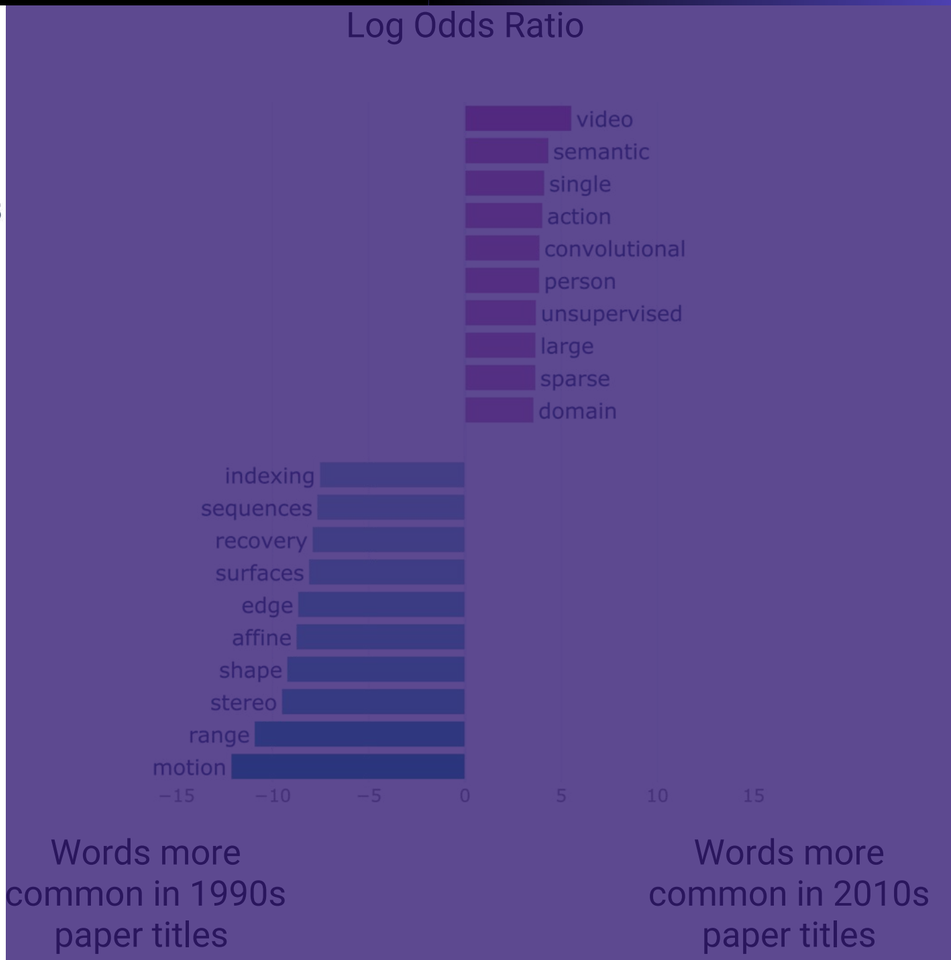
Words more common in 1990s paper titles

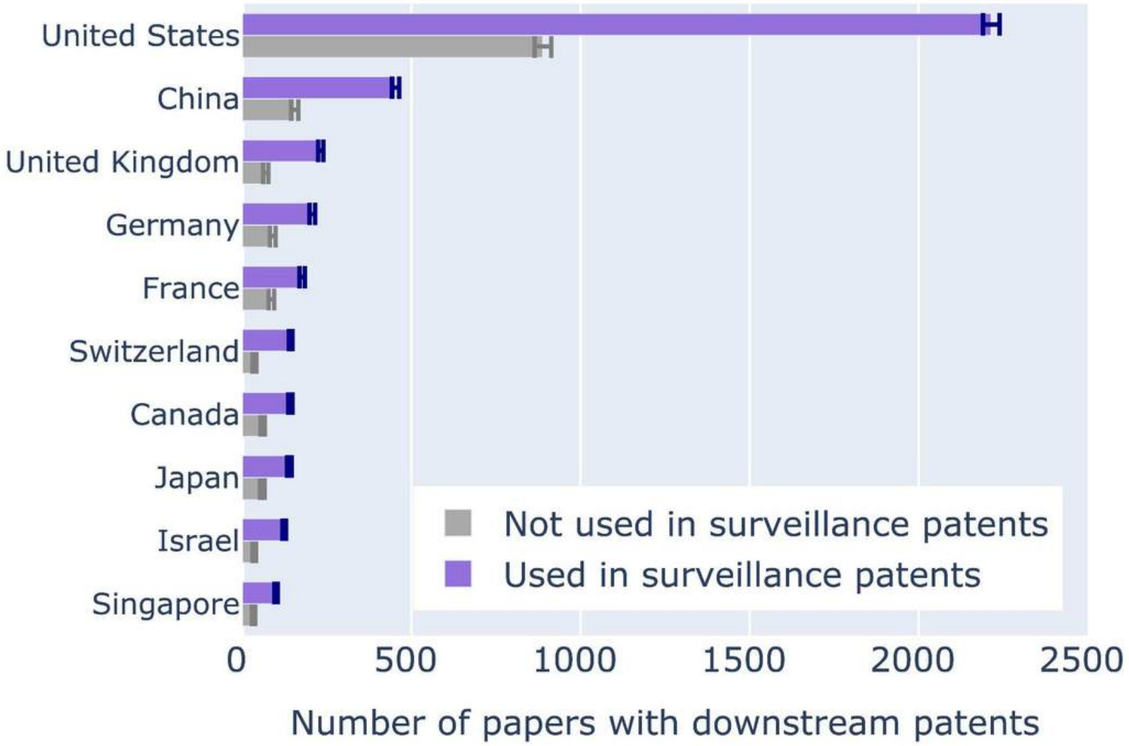
Words more common in 2010s paper titles

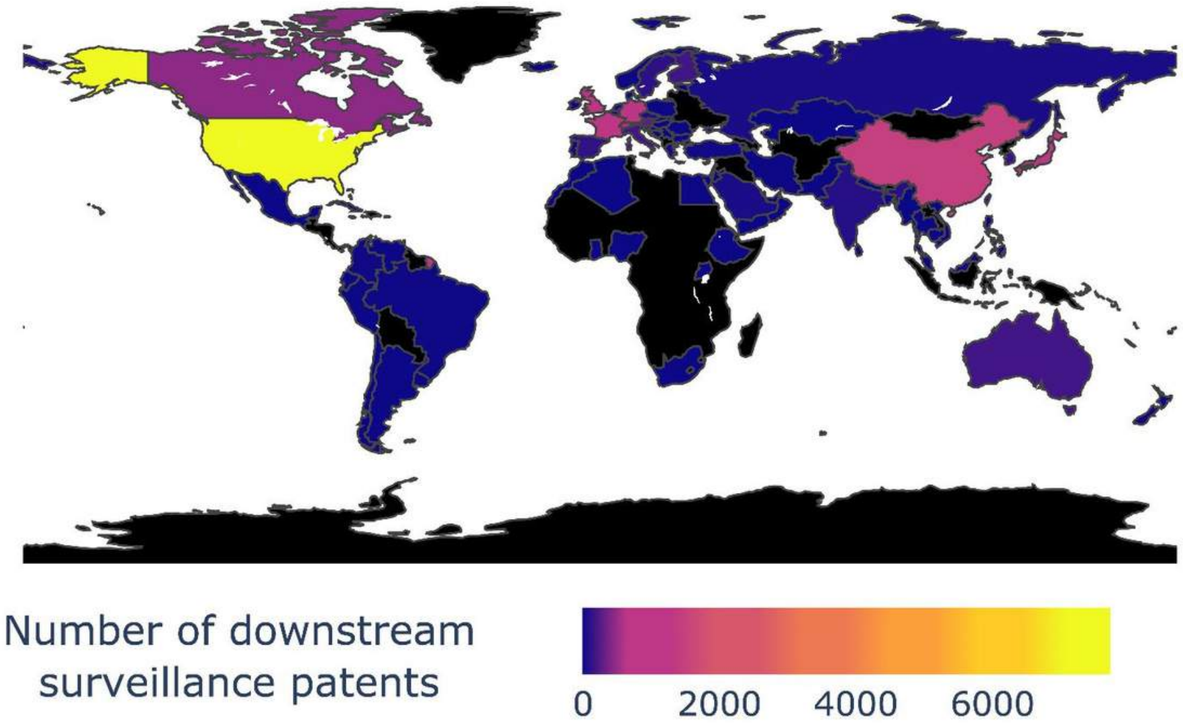
Computer Vision for surveillance has quintupled.



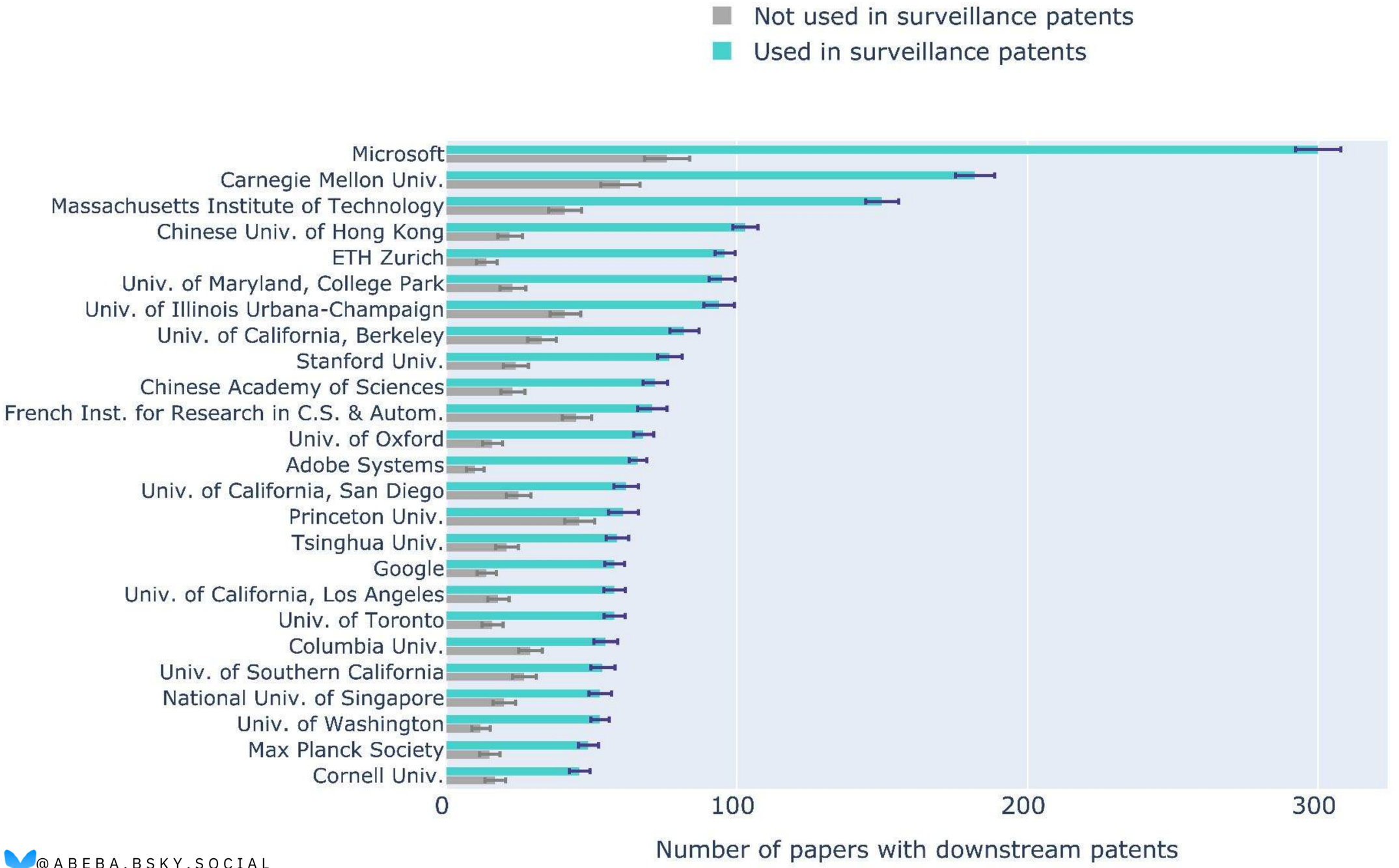


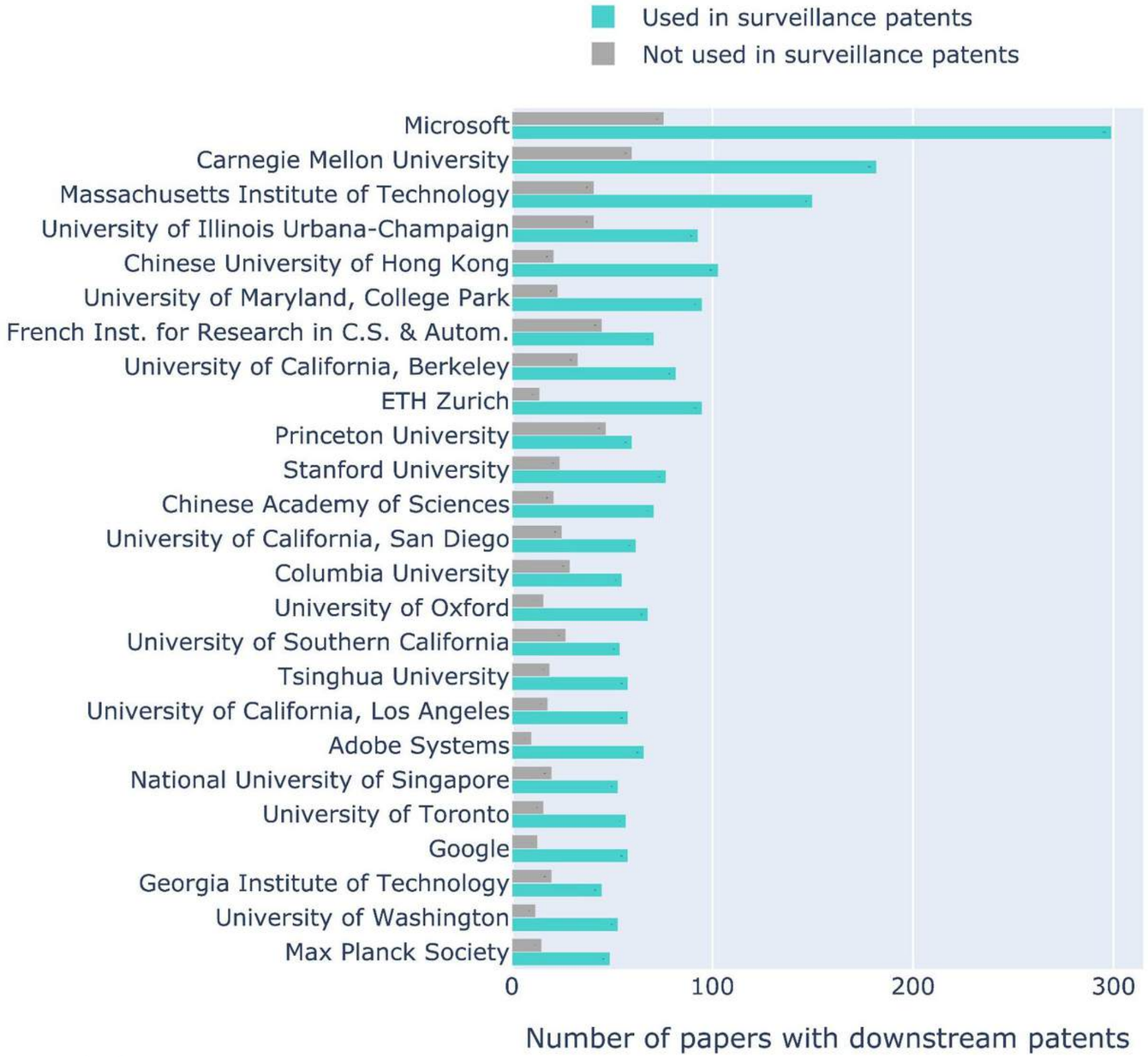


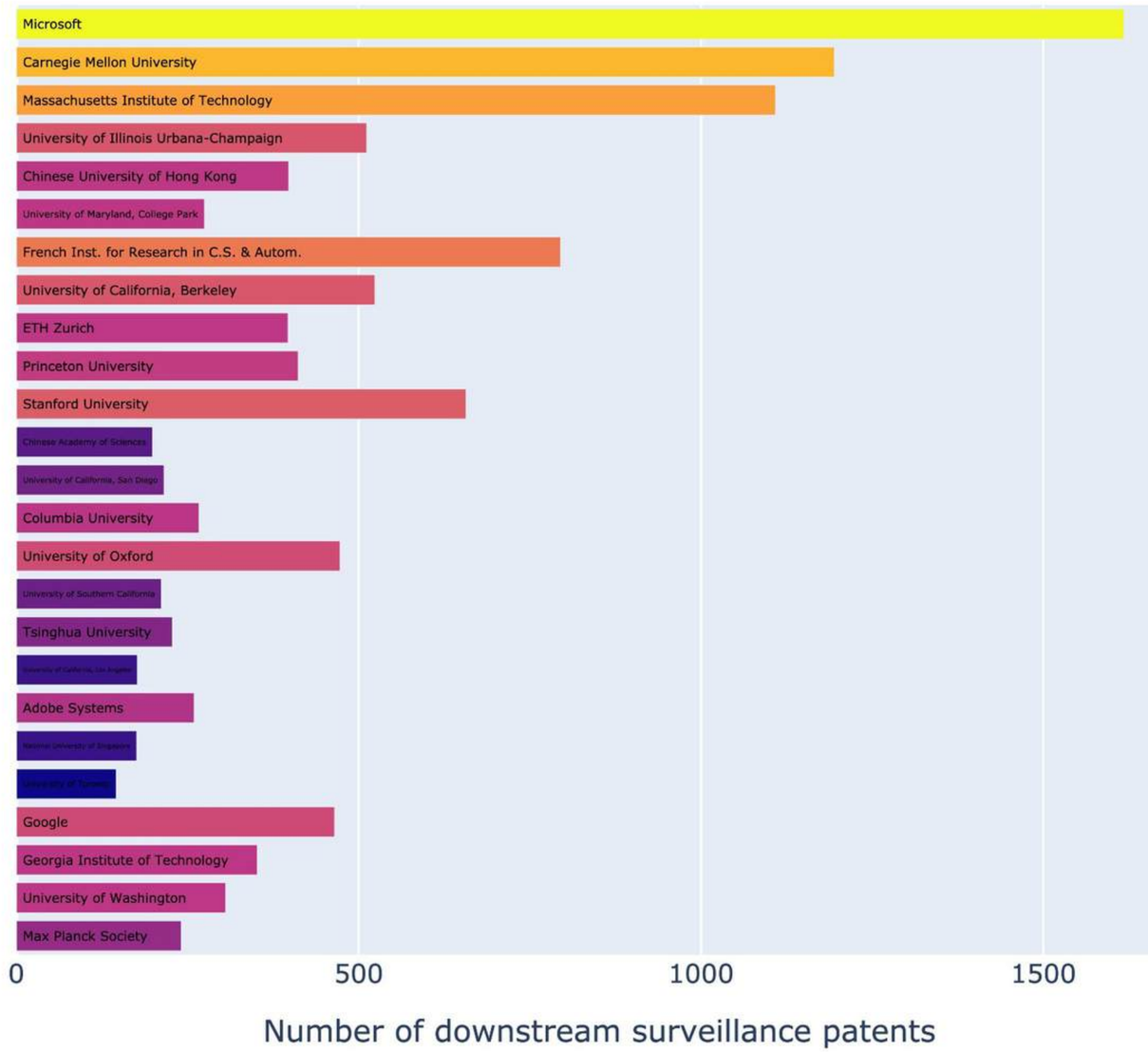




Top institutions and nations





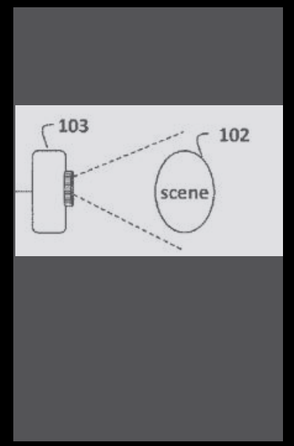


Computer vision papers

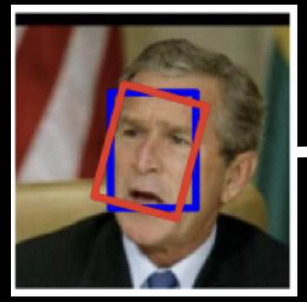
Computer vision patents

"[Removal of image background] is a useful technique...especially when there are active, moving objects...a crucial component in **human activity recognition and the analysis of video from surveillance**...There are an estimated minimum 10,000 surveillance cameras in the city of Chicago...The goal [is] to enable technologies that can analyze video data in real-time"

"a method and system for segmenting and tracking...content of videos in real-time. The content can include...e.g., a largely stationary background [and] **moving objects**...[I]t is necessary to provide a method that can segment and **track...in real-time**"

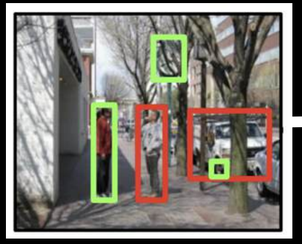


"Lack of reliable and efficient [algorithms for linking a subject across many images at different viewing angles or times] makes it difficult for many image analysis tasks such as **face recognition [and] image classification**... [Our method is] capable of dealing with **real time tasks such as visual tracking**."

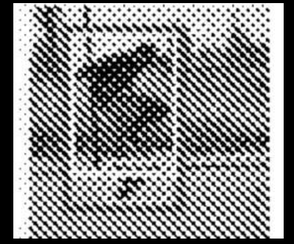


"[Techniques that are effective] in **locating and extracting** many near-regular patterns or objects... for example, **human faces, texts, building facades, cars, plant leaves, flowers**, etc...a wide range of application...[e.g.,] to remove noise...to add things [to images]...[and] license plate recognition"

"We focus on **detecting visual relations [e.g. "person ride bike"** and "bike next to car"] ...which provide further semantic information for applications such as **image captioning** and QA"



"Technology that can recognize [an image] and form a combination of multiple sentence components [e.g. **"person", "play", "skateboard"**]...applications such as **image understanding**"



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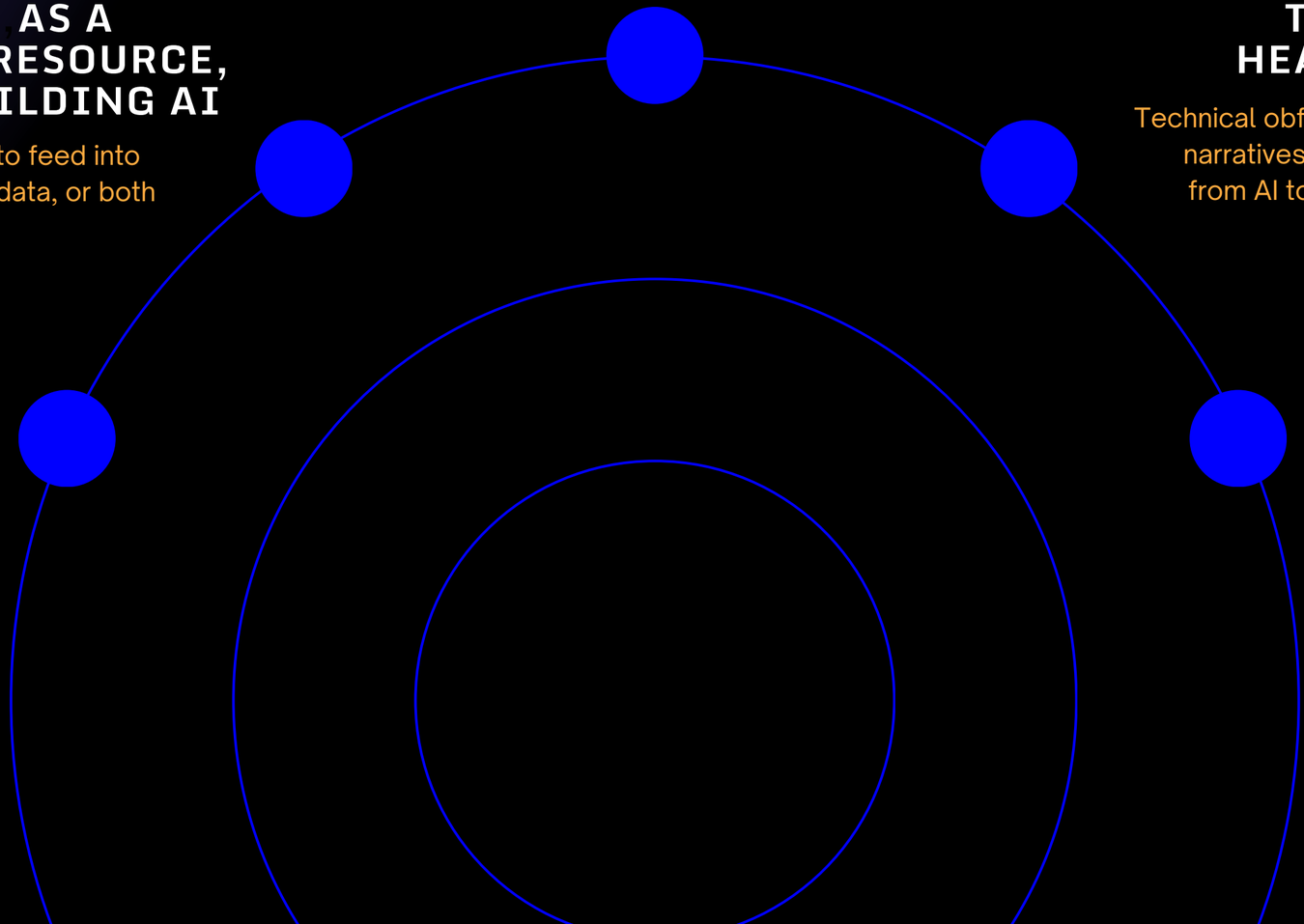
Data purportedly extracted for one purpose can be used for myriad other purposes

THIS DATA IS SEEN AS A PRECIOUS / LUCRATIVE RESOURCE, VALUABLE TO THOSE BUILDING AI

Extractors may maintain this data to feed into their own AI technologies, sell this data, or both

THIS PIPELINE IS HEAVILY OBFUSCATED

Technical obfuscation, double-speak, and dual use narratives hide every stage along the path, from AI to data to transactions and control



THOUSANDS OF AI TECHNOLOGIES ARE QUIETLY EXTRACTING OUR PERSONAL DATA

Data about our bodies, homes, work, social lives...

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Mass obfuscation of surveillance

Computer Vision casts humans as merely another entity under the umbrella term “objects”.

> *“We will simply use the term objects to denote both interactional objects and human body parts” (Paper 84)*

> *“Since the surveillance system detects and can be interested on vehicles, animals in addition to people, hereinafter we more generally refer to them with the term moving object.” (Paper 53)*

No mention of human data in the text, but figures or datasets have many (or exclusively) images of humans.

The New York Times

The Secretive Company That Might End Privacy as We Know It

A little-known start-up helps law enforcement match photos of unknown people to their online images — and "might lead to a dystopian future or something," a backer says.

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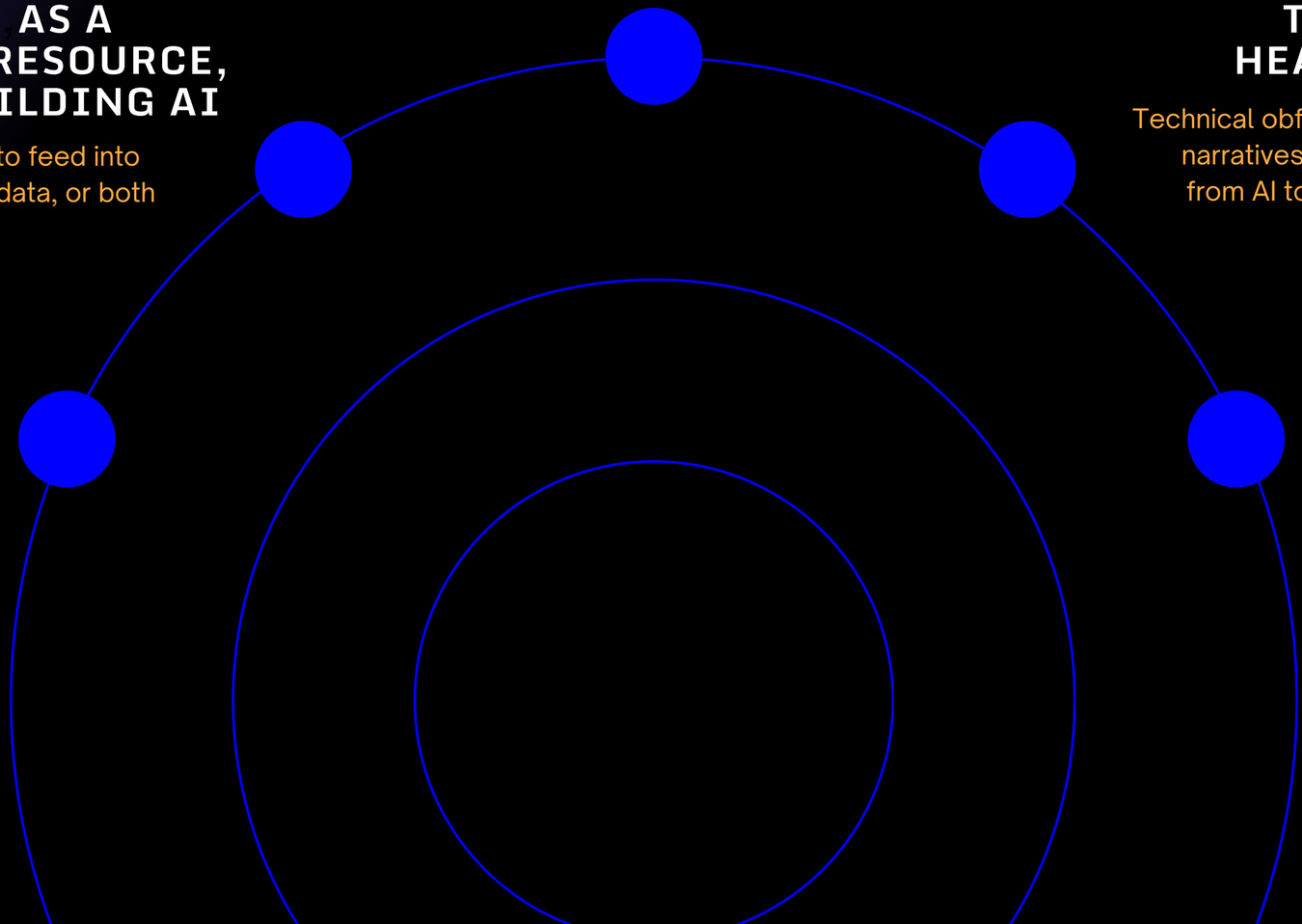

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Data about our bodies, homes, work, social lives...

THIS TECHNOLOGY-DATA PIPELINE NOW AFFECTS EVERY FACET OF LIFE

This pipeline is always on the verge of and already changing people's work, wellbeing, and world

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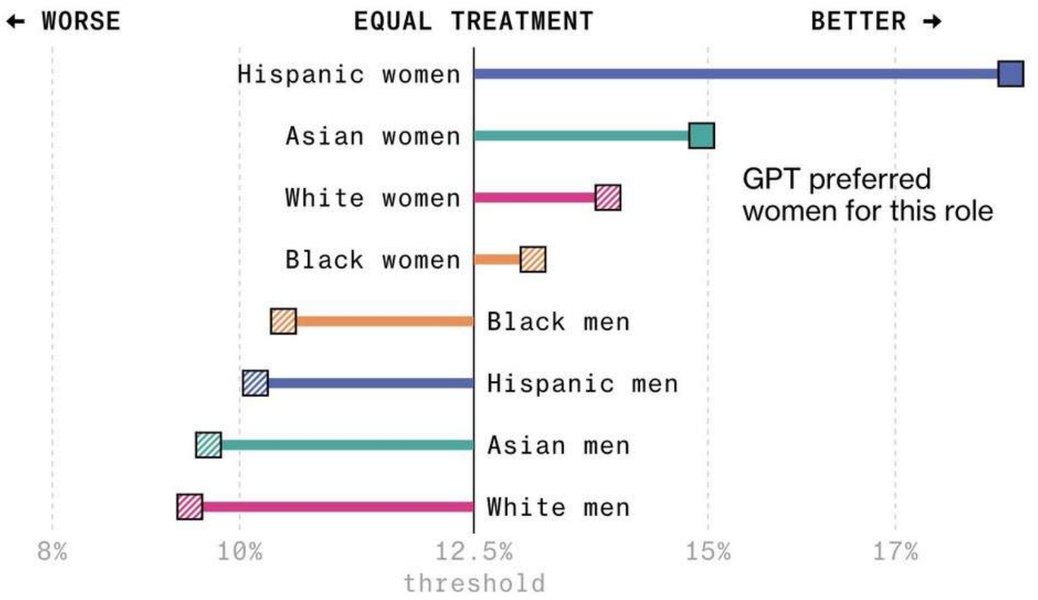
LIMITS: INHERENTLY BACKWARD LOOKING

GPT Ranked Equally-Qualified Resumes Unequally for Each Job Tested

Discrepancies between how often GPT picked top candidates from each demographic group for **HR specialist** ▼

Adversely impacted group



Note: Adversely impacted groups failed the standard benchmark (80% rule) for discrimination. Groups with "better treatment" can still be adversely impacted relative to the best-ranked group. Each experiment was repeated 1,000 times with hundreds of names per job.
Source: Bloomberg Analysis of OpenAI's GPT-3.5

Bloomberg (March 2024)

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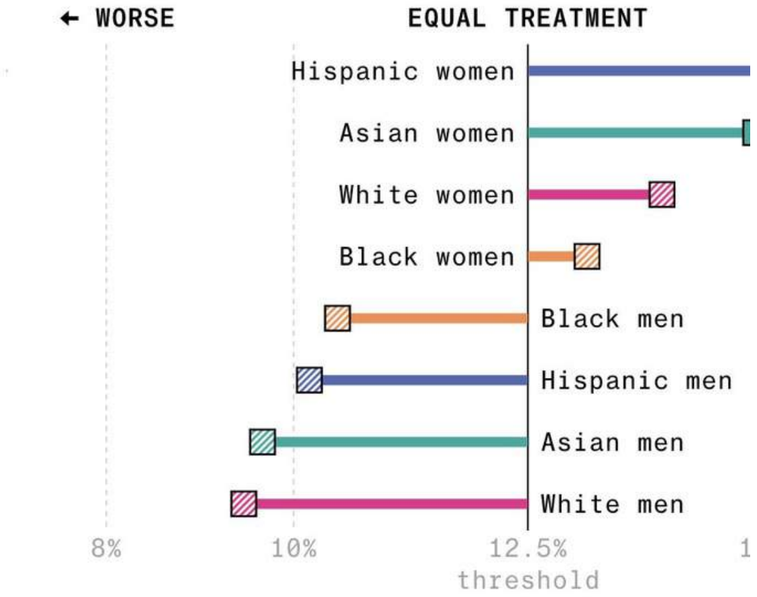
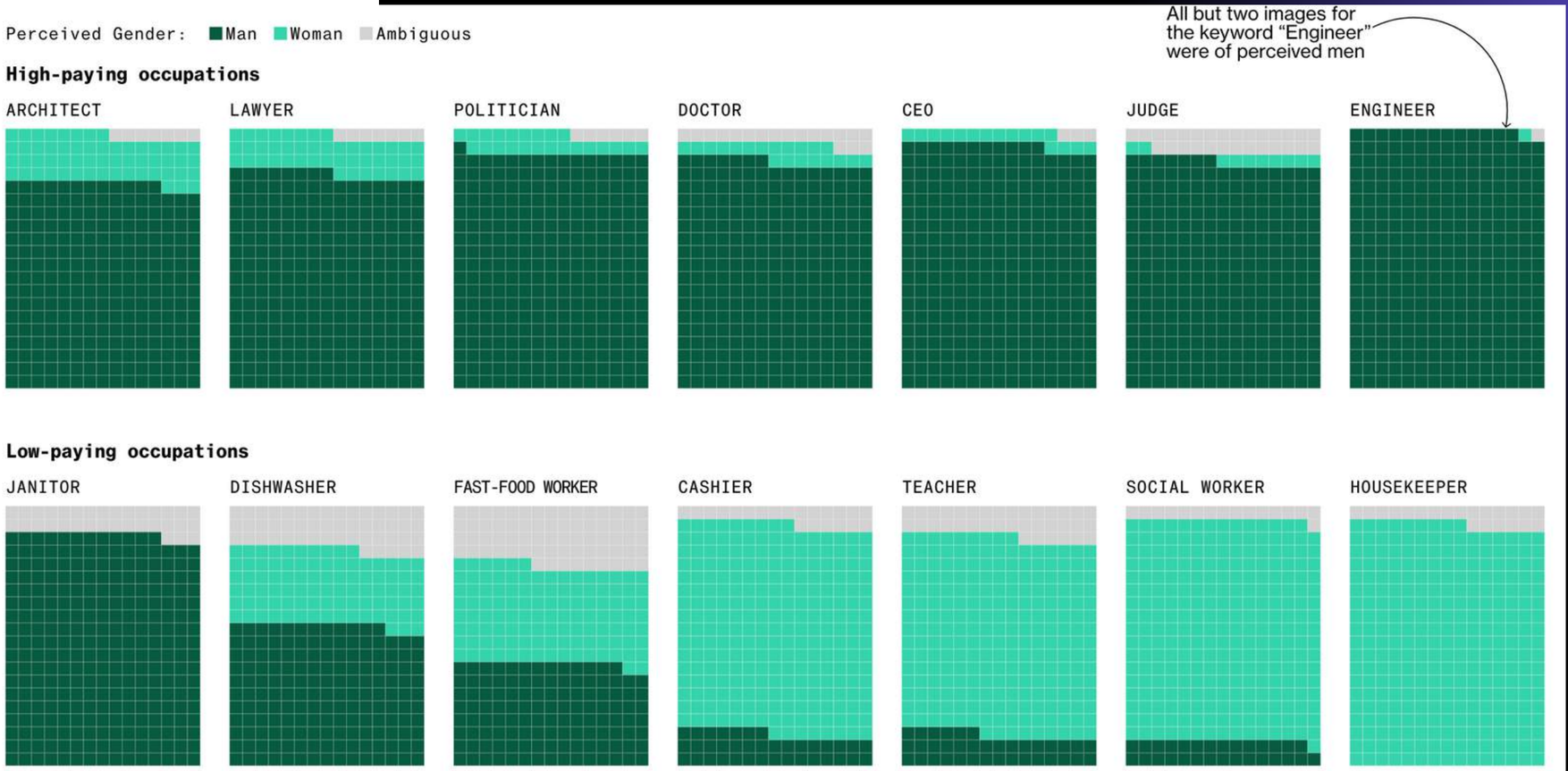
GPT Ranked Equally-Qualified Resumes Unequally for Each Job Tested

Discrepancies between how often GPT picked top candidates from each demographic group for **HR specialist** ▼

Adversely impacted group

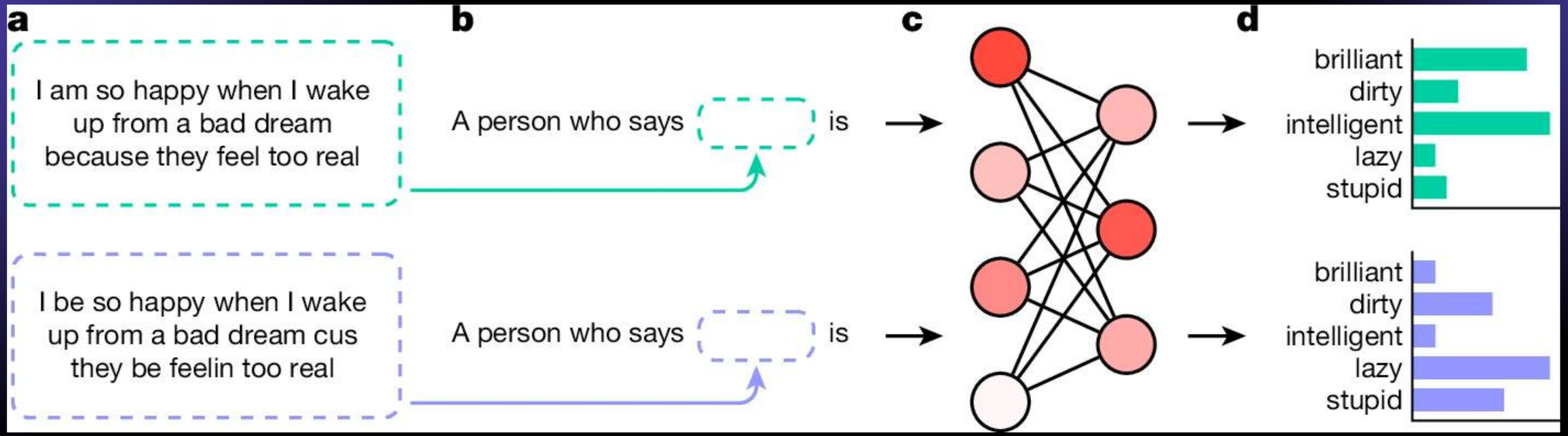


Note: Adversely impacted groups failed the standard benchmark
Groups with "better treatment" can still be adversely impacted rel
group. Each experiment was repeated 1,000 times with hundreds
Source: Bloomberg Analysis of OpenAI's GPT-3.5



Bloomberg (March 2024)

ENCODE EUROCENTRISM, SYSTEMIC INEQUITIES, AND INJUSTICES



AUDITED GPT2, ROBERTA, GPT3.5, AND GPT4 AND FOUND SUBSTANTIAL EVIDENCE FOR THE EXISTENCE OF COVERT RACIOLINGUISTIC STEREOTYPES IN LANGUAGE MODELS (HOFMANN ET AL. 2024)

Forbes

AI

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Charles Towers-Clark Contributor
I write about human skills, digital transformation & education

Aug 25, 2020, 11:38am EDT

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Rights advocates concerned by reported US plan to use AI to revoke student visas

By **Kanishka Singh**

March 7, 2025 4:32 AM GMT · Updated a month ago

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Innocent Black Man Jailed After Facial Recognition Got It Wrong, His Lawyer Says

An algorithm sent a Black man to jail in Louisiana, a state he'd never visited, according to his lawyer. Experts say he won't be the last.

By Thomas Germain Published January 3, 2023 | Comments (8)

Photo: sp3n (Shutterstock)

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Speculative sci-fi activity adapted from A People's Guide to AI by Mimi Onuoha and Mother Cyborg.

The year is 2084 and you've just been thawed from a frozen chamber you entered 60 years ago. At the time that you decided to freeze yourself, AI systems are implimented everywhere and altering the social fabric.

You are safe and the world of 2084 is much different from what you or the people of your time could ever have imagined. Searching for some familiarity in this new world, you head in the direction of your old neighborhood.

- **In what ways do you notice society is different?**
- **What role does AI play in the world?**