Data Analysis and Machine Learning 4 (DAML)

Week 4: Machine Learning and ethics

Elliot J. Crowley, 5th February 2024

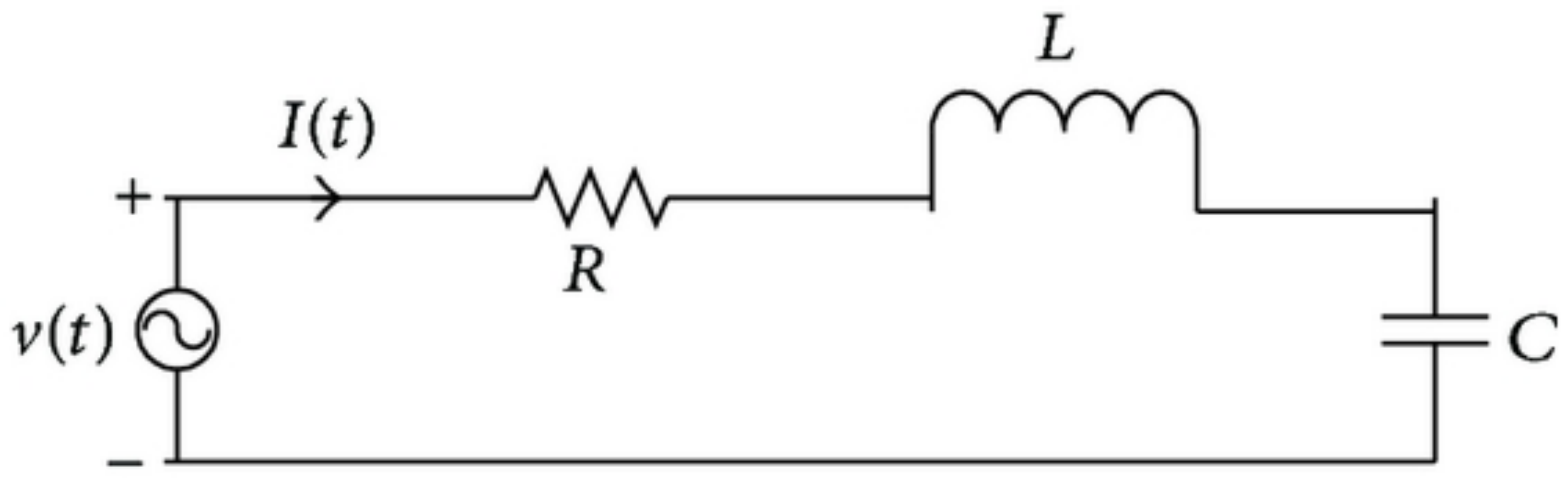
Recap

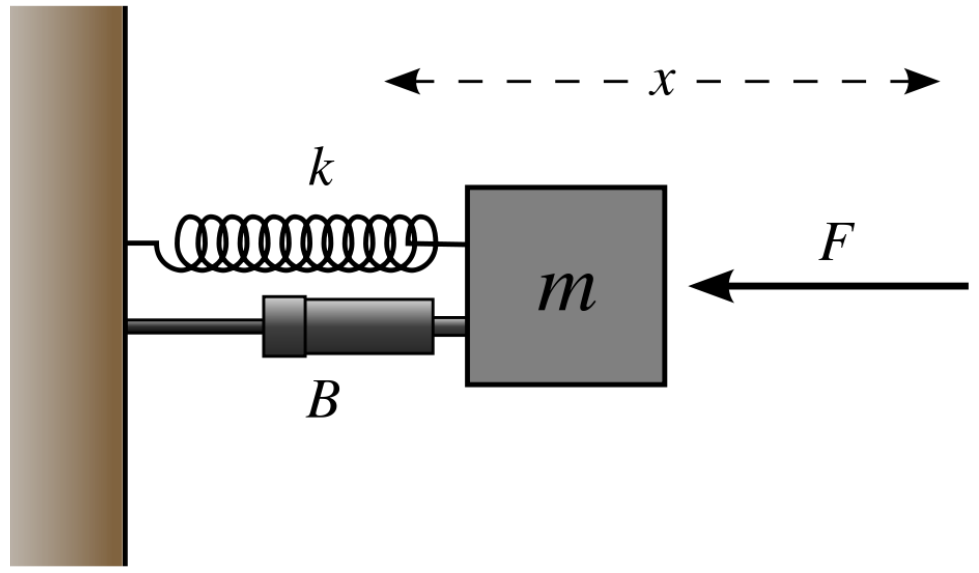
- We learnt how to preprocess data
- We learned about principal component analysis (PCA)
- We found out how to perform clustering using K-means

Machine Learning and Supervised Learning

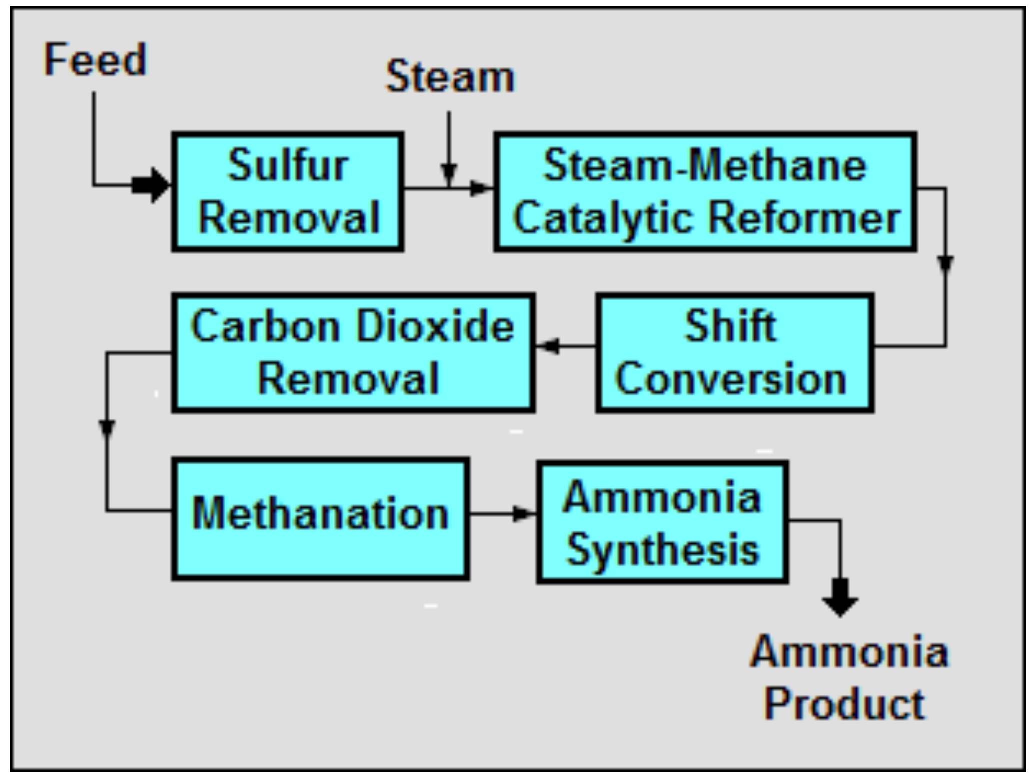
Problem solving

Some problems can be solved analytically

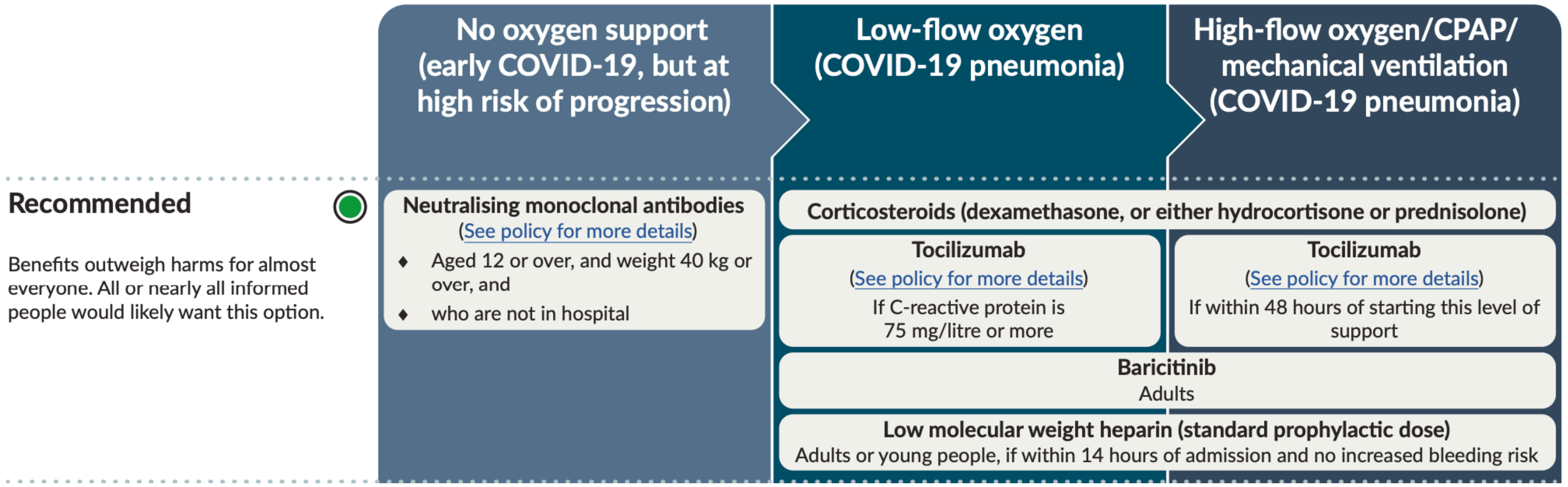




Some problems can be solved by following instructions or rules



https://en.wikipedia.org/wiki/Ammonia_production



	No oxygen support (early COVID-19, but at high risk of progression)	Low-flow oxygen (COVID-19 pneumonia)	High-flow oxygen/CPAP/ mechanical ventilation (COVID-19 pneumonia)
Recommended ● Benefits outweigh harms for almost everyone. All or nearly all informed people would likely want this option.	**Neutralising monoclonal antibodies** (See policy for more details) ♦ Aged 12 or over, and weight 40 kg or over, and ♦ who are not in hospital	**Corticosteroids (dexamethasone, or either hydrocortisone or prednisolone)**	
		Tocilizumab (See policy for more details) If C-reactive protein is 75 mg/litre or more	**Tocilizumab** (See policy for more details) If within 48 hours of starting this level of support
		Baricitinib Adults	
		Low molecular weight heparin (standard prophylactic dose) Adults or young people, if within 14 hours of admission and no increased bleeding risk	

NICE guidelines

Problem solving

- Many real-world problems cannot be solved analytically or with rules
- However, we have access to more data than ever
- Can we leverage all this data to solve problems?

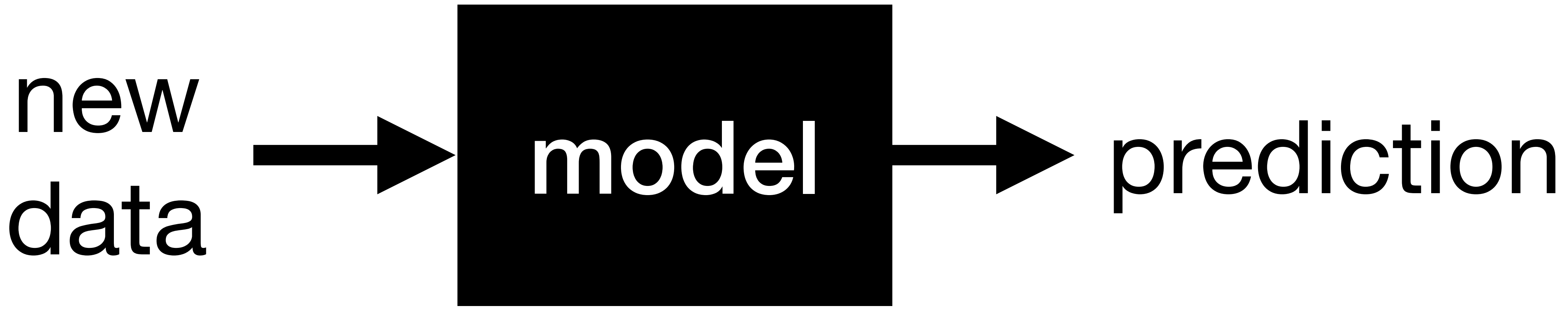
Machine Learning is…

> “the study of algorithms that can learn from training data in order to make predictions on new data.”

Elliot J. Crowley

Machine Learning

- We want a model that takes in a new data point and outputs a prediction



new data → model → prediction

- For the model to be accurate it must first learn from training data
- Often, models are parameterised functions and learning = finding the best parameters

Supervised Learning

- **In supervised learning, training data is labelled**
- The label says what the **prediction** for that data point **should be**
- In unsupervised learning we do not have labels for our training data. Some people consider K-means and PCA to be unsupervised ML techniques
- Supervision can be seen as a spectrum e.g. we can have semi-supervised ML

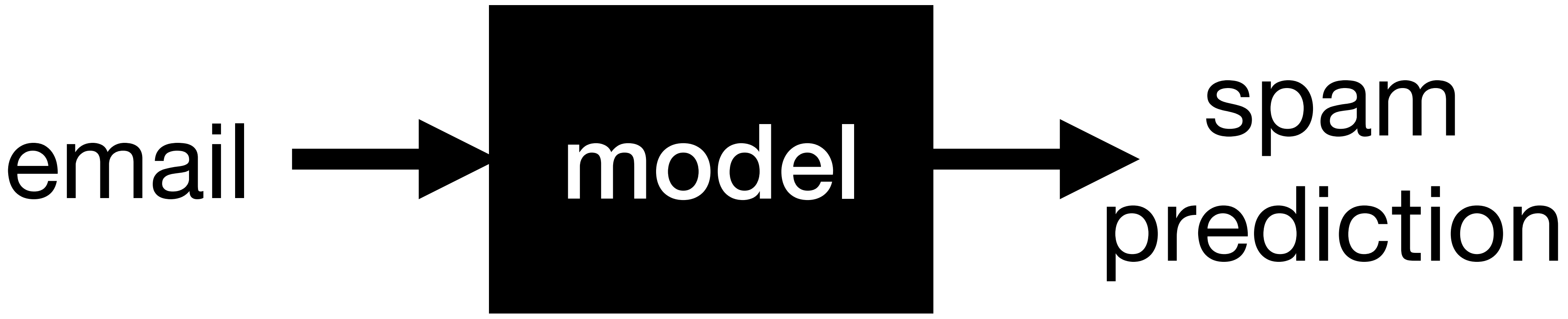
We will only consider fully supervised machine learning for the remainder of the technical material on this course

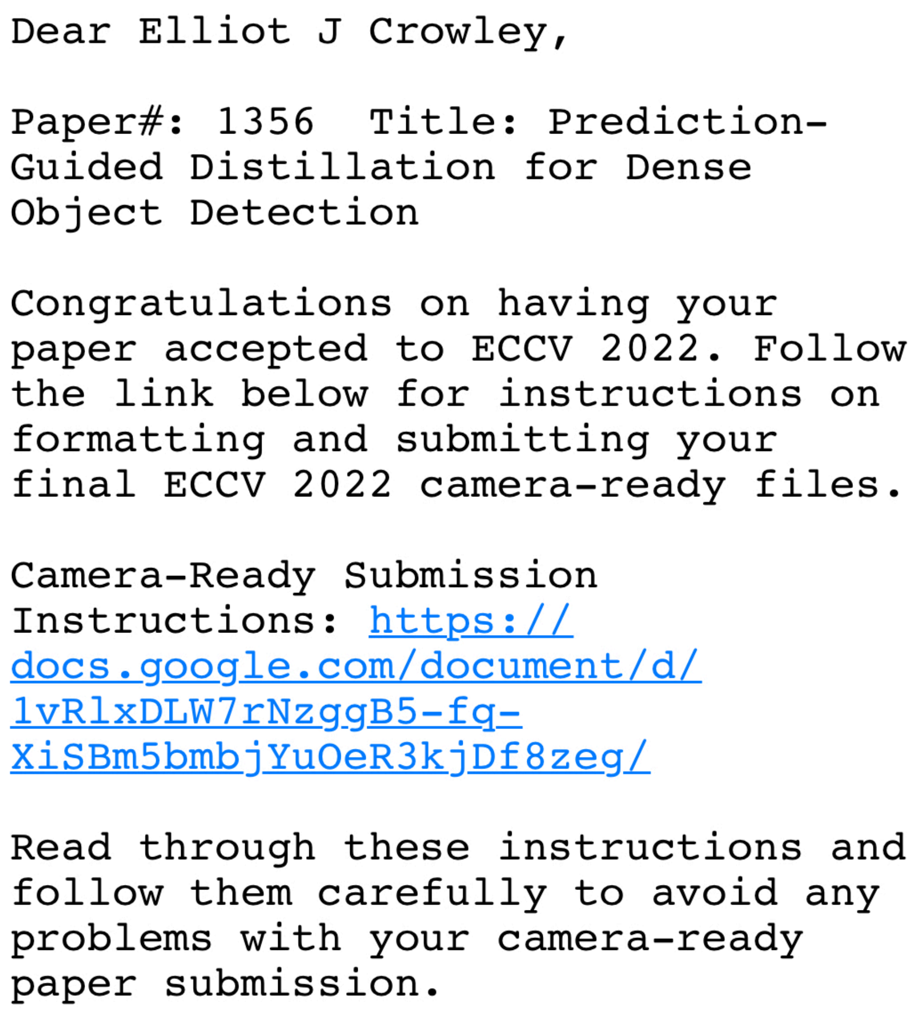
Some use cases you see this lecture involve weaker supervision however :)

Example: Spam classification

- We want a model that takes in a new email $\mathbf{x}$ and returns a prediction $y \in \mathbb{Z}^{+}_{<2} = \{0,1\}$ where 0 is NOT SPAM and 1 is SPAM

- Our training data consists of emails that are labelled as spam or not spam





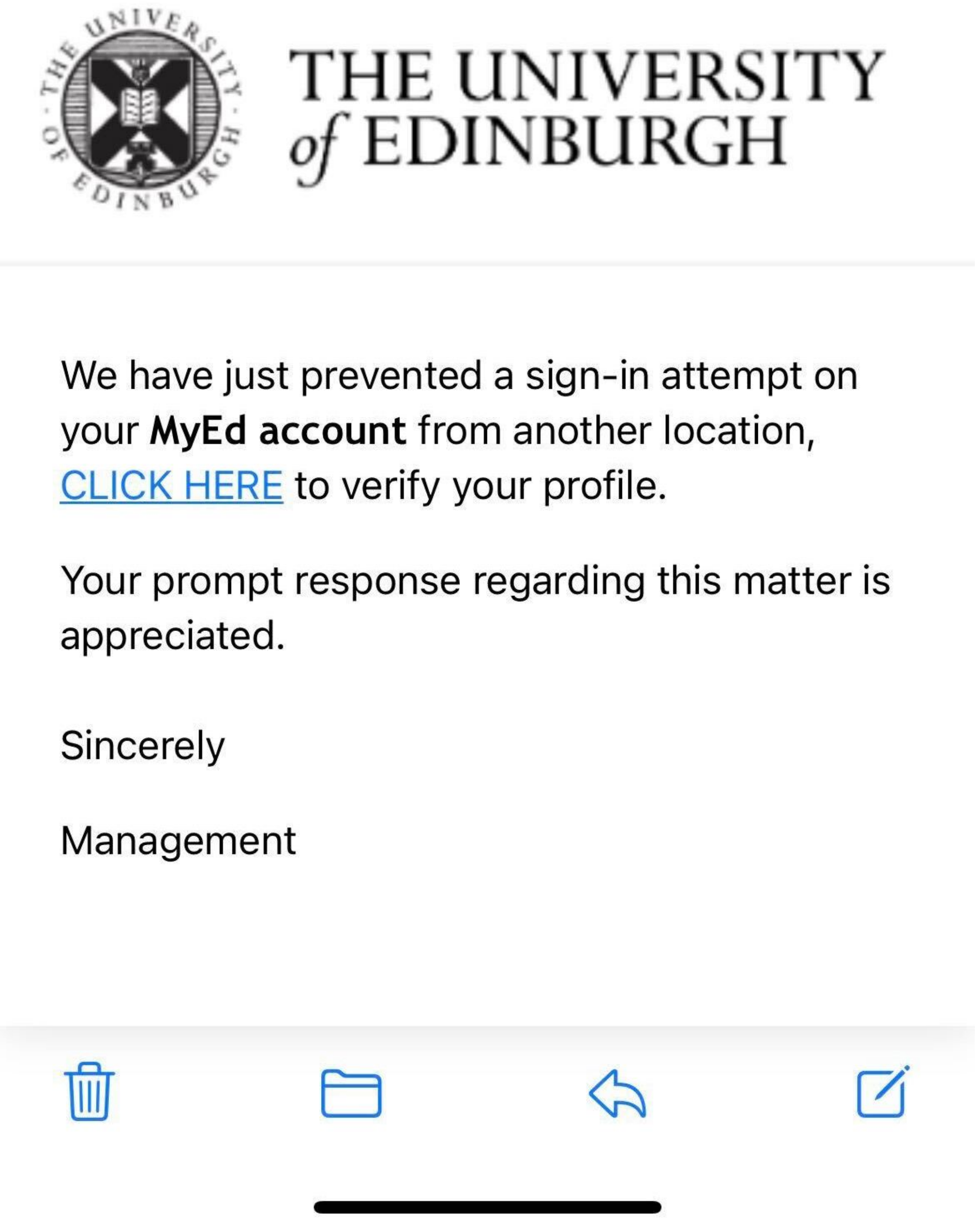
Dear Elliot J Crowley,

Paper#: 1356 Title: Prediction-Guided Distillation for Dense Object Detection

Congratulations on having your paper accepted to ECCV 2022. Follow the link below for instructions on formatting and submitting your final ECCV 2022 camera-ready files.

Camera-Ready Submission Instructions: https://docs.google.com/document/d/1vRlxDLW7rNzggB5-fq-XiSBm5bmbjYuOeR3kjDf8zeg/

Read through these instructions and follow them carefully to avoid any problems with your camera-ready paper submission.



THE UNIVERSITY *of* EDINBURGH

We have just prevented a sign-in attempt on your **MyEd account** from another location, CLICK HERE to verify your profile.

Your prompt response regarding this matter is appreciated.

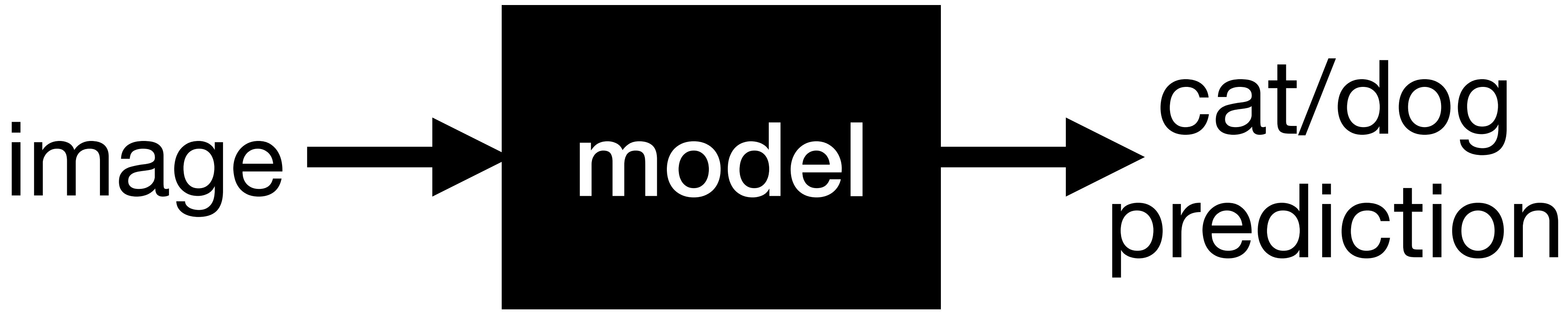
Sincerely

Management

Example: Classifying cats and dogs

- We want a model that takes in a new image $\mathbf{x} \in \mathbb{R}^{H\times W\times C}$ and returns a prediction $y \in \mathbb{Z}^{+}_{<2} = \{0,1\}$ where 0 is CAT and 1 is DOG

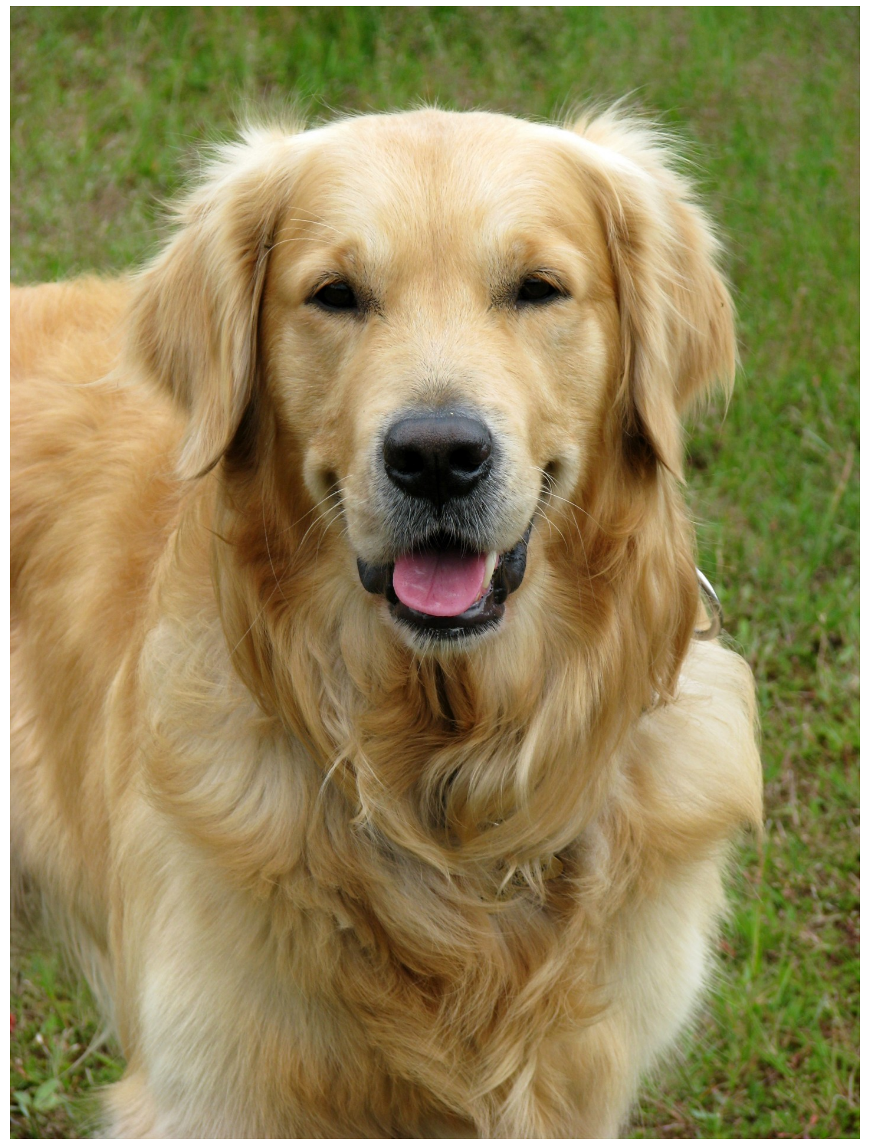
- Our training data consists of images of cats and dogs that are labelled $0/1$



image

model

cat/dog prediction



Example: Multiway classification

- We want a model that takes in a new image $\mathbf{x} \in \mathbb{R}^{H \times W \times C}$ and returns a prediction $y \in \mathbb{Z}^{+}_{<1000} = \{0,1,\ldots,999\}$ corresponding to 1 of 1000 categories

- Our training data consists of labelled images from those 1000 categories

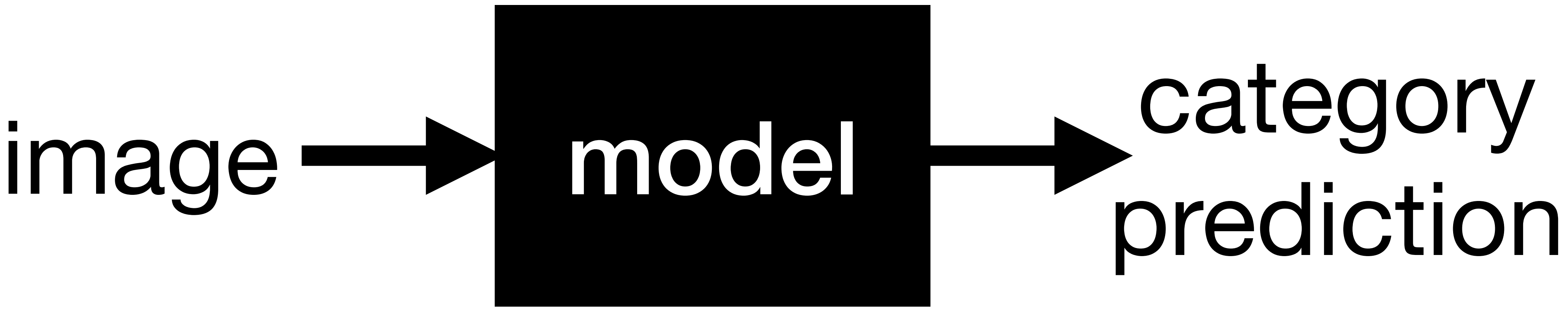
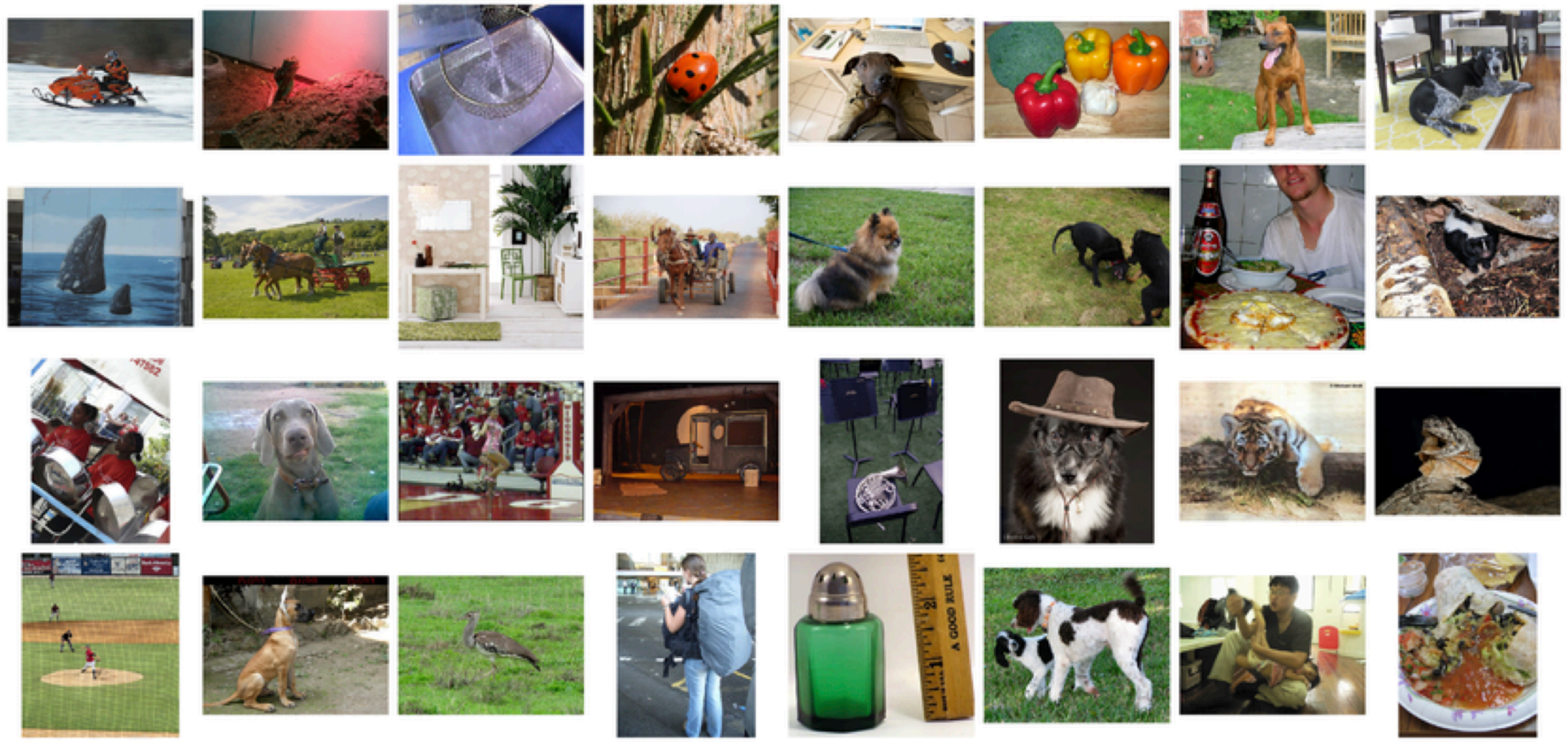


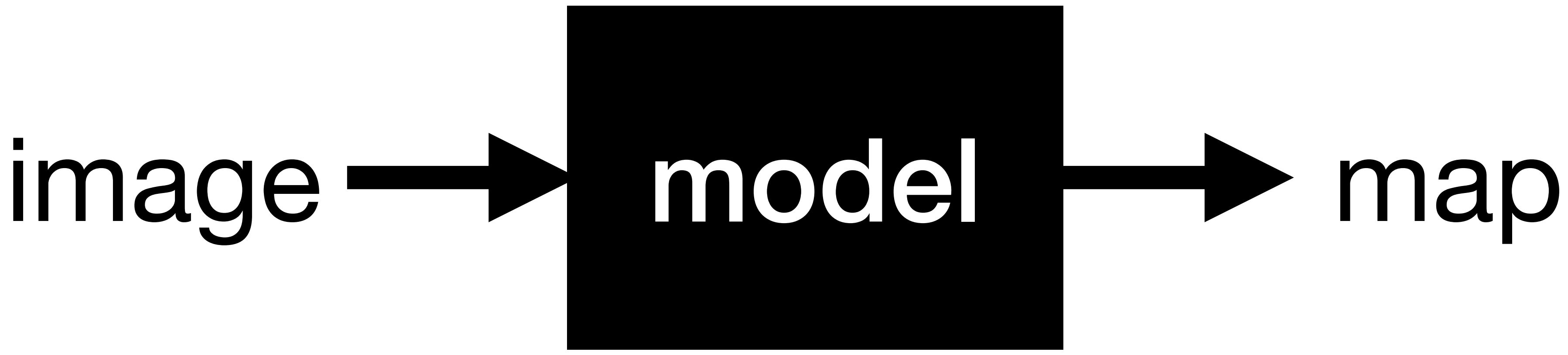
image → model → category prediction

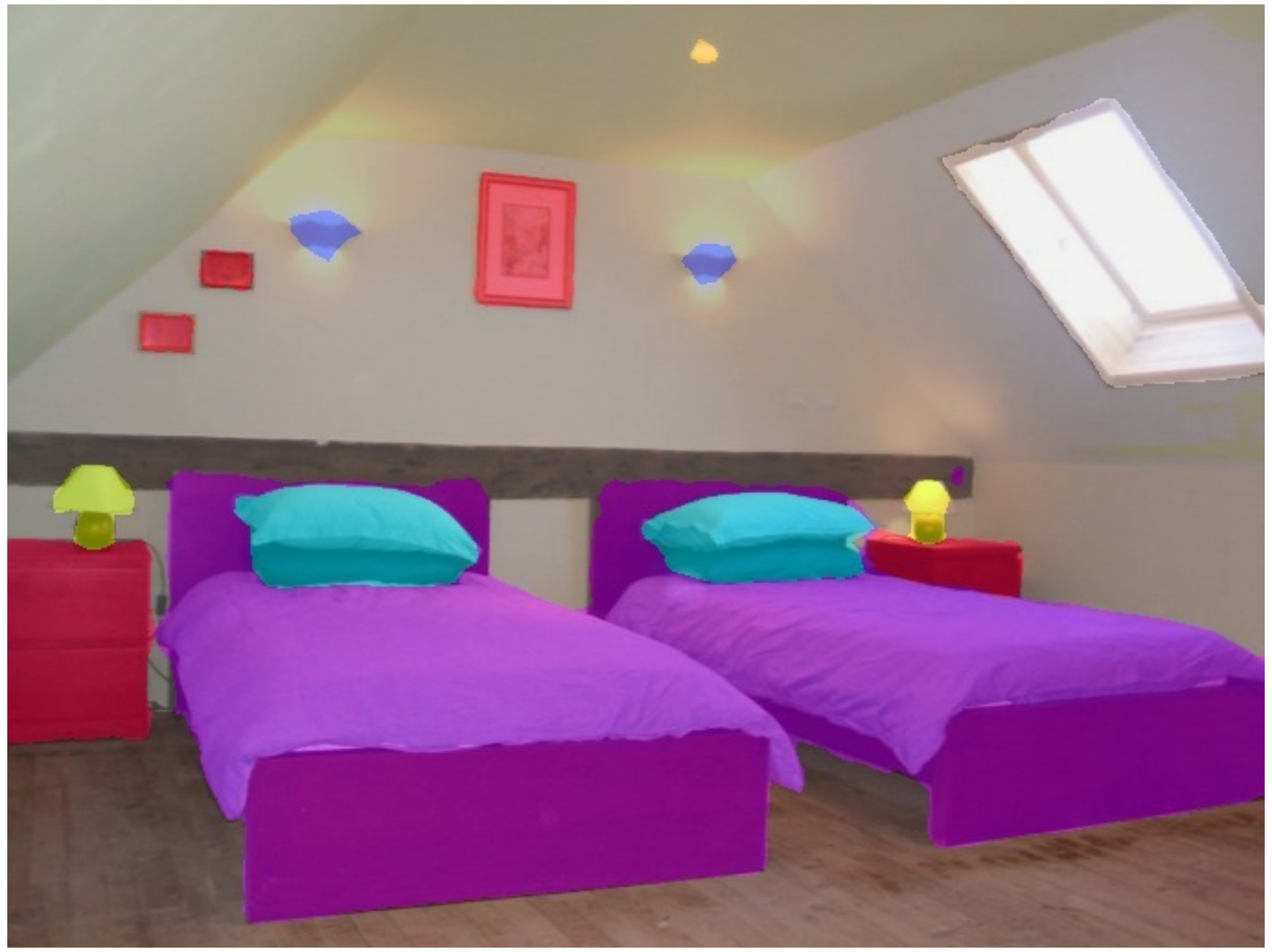


https://arxiv.org/pdf/1409.0575.pdf

Example: Semantic Segmentation

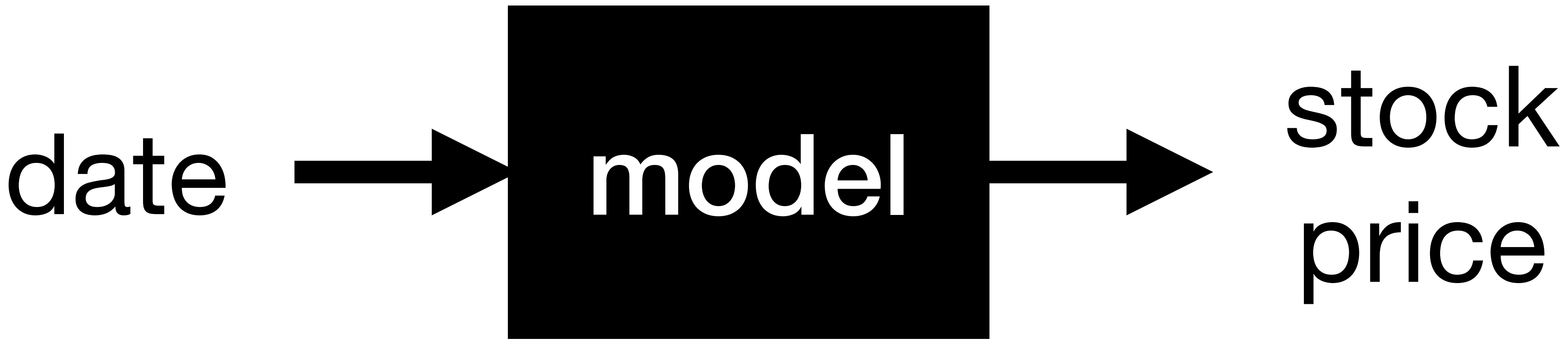
- We want a model that takes in a new image $\mathbf{x}$ and predicts a segmentation map $\mathbf{y}$
- Our training data consists of images and hand-labelled maps

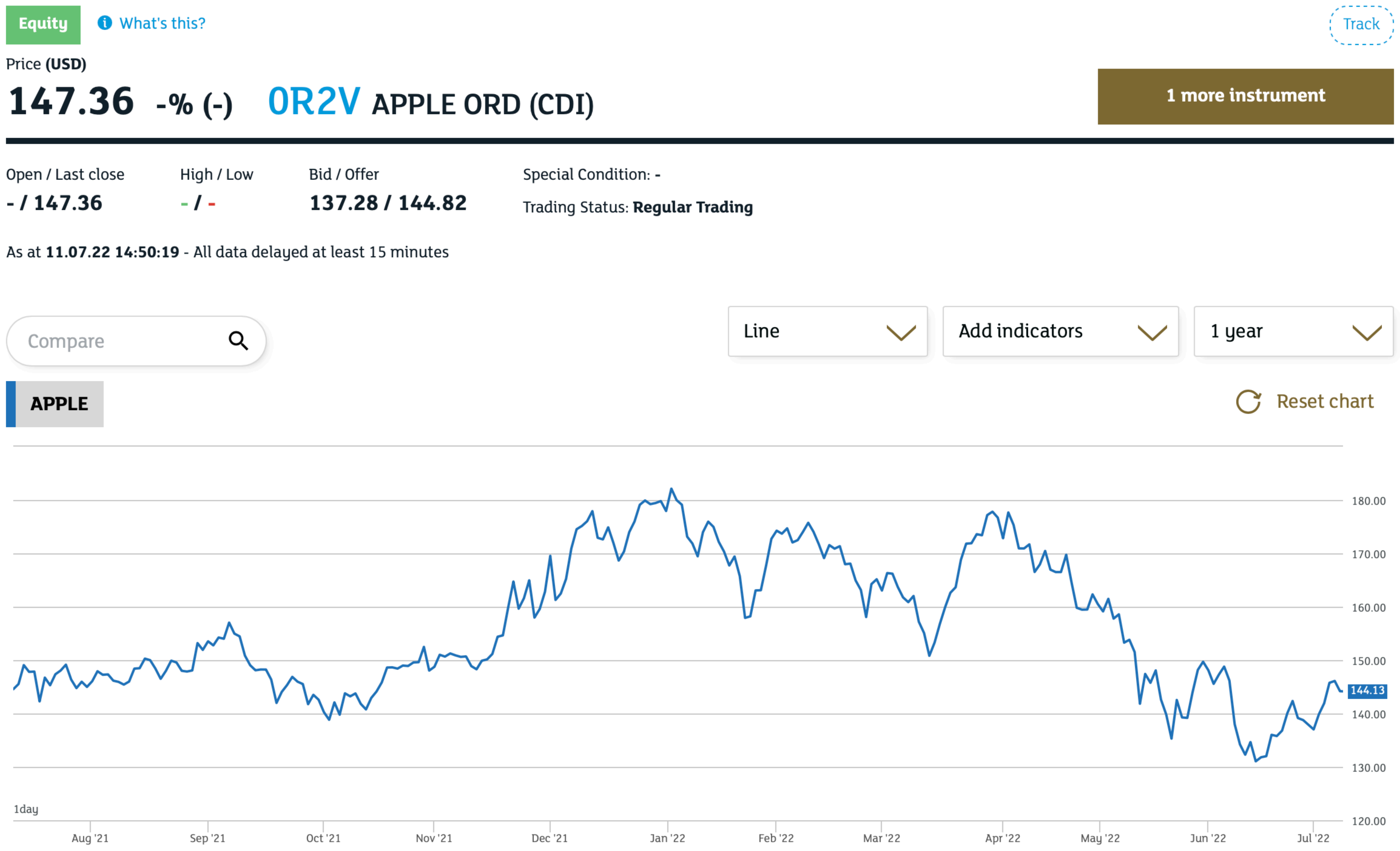




Example: Stock prediction

- We want a model that predicts stock price $y \in \mathbb{R}$ at a future date $x \in \mathbb{R}$
- Our training data consists of stock prices at previous dates





Price (USD)

147.36 -% (-) 0R2V APPLE ORD (CDI)

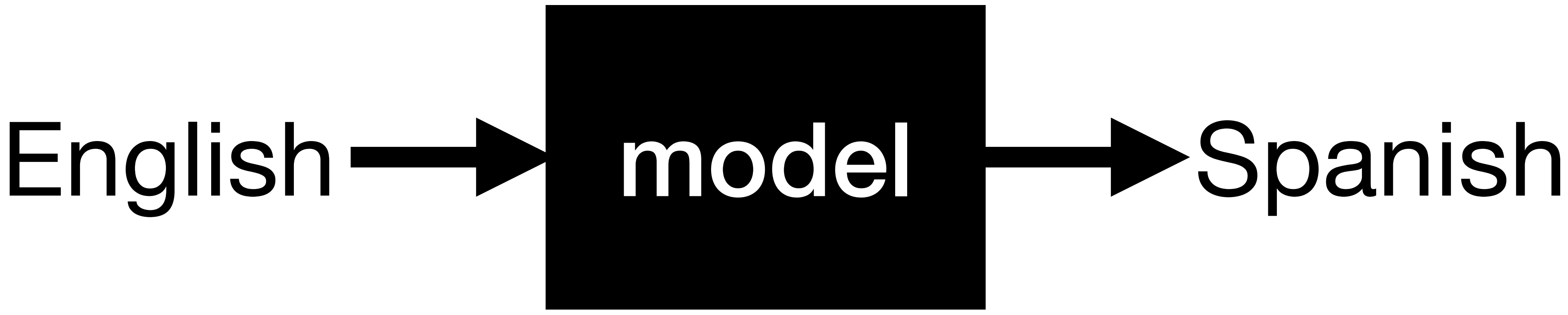
Open / Last close	High / Low	Bid / Offer	Special Condition: -
- / 147.36	- / -	137.28 / 144.82	Trading Status: Regular Trading

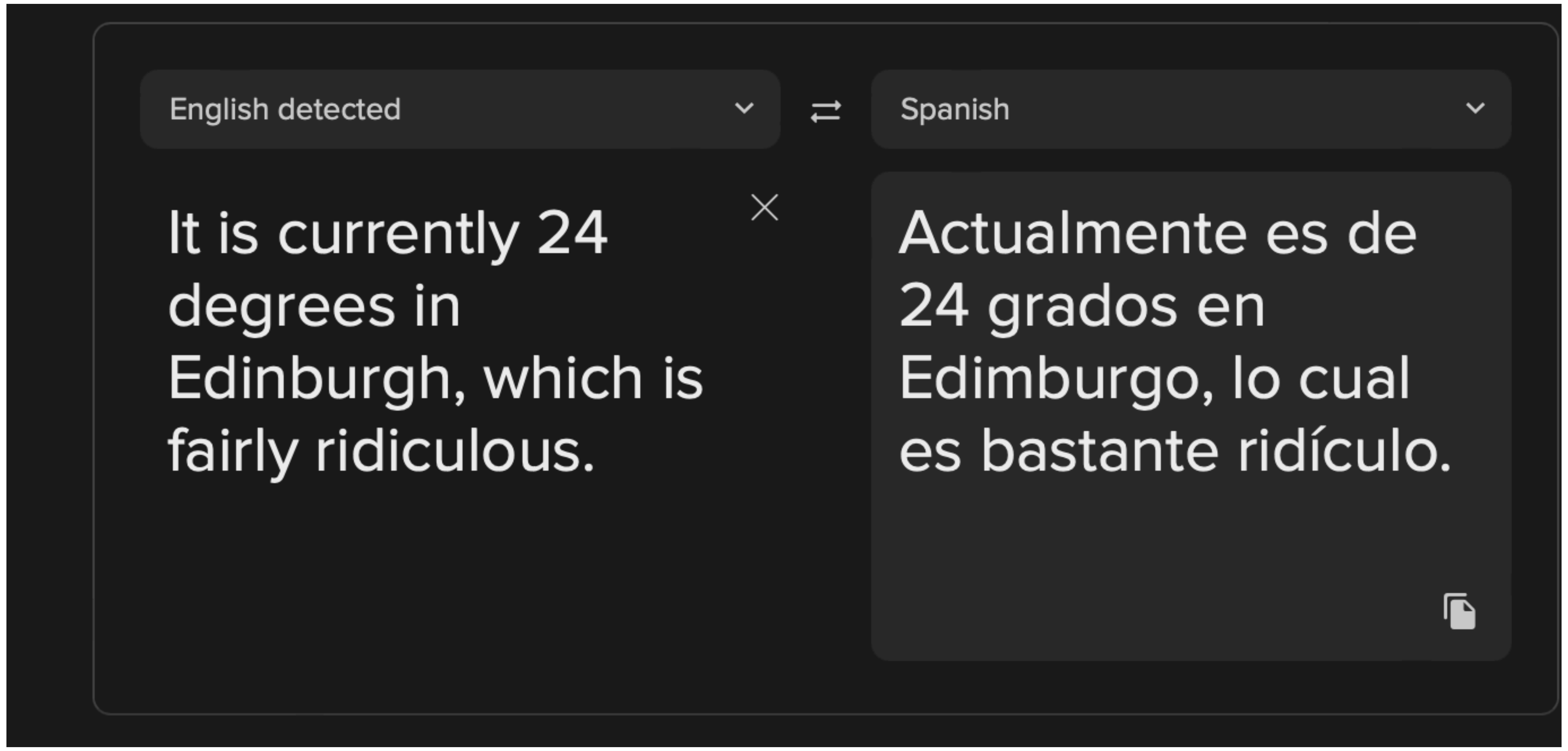
As at 11.07.22 14:50:19 - All data delayed at least 15 minutes

London Stock Exchange

Example: Machine translation

- We want a model that translates some sentence in English $\mathbf{x}$ to Spanish $\mathbf{y}$
- Our training data consists of English-Spanish sentence pairs





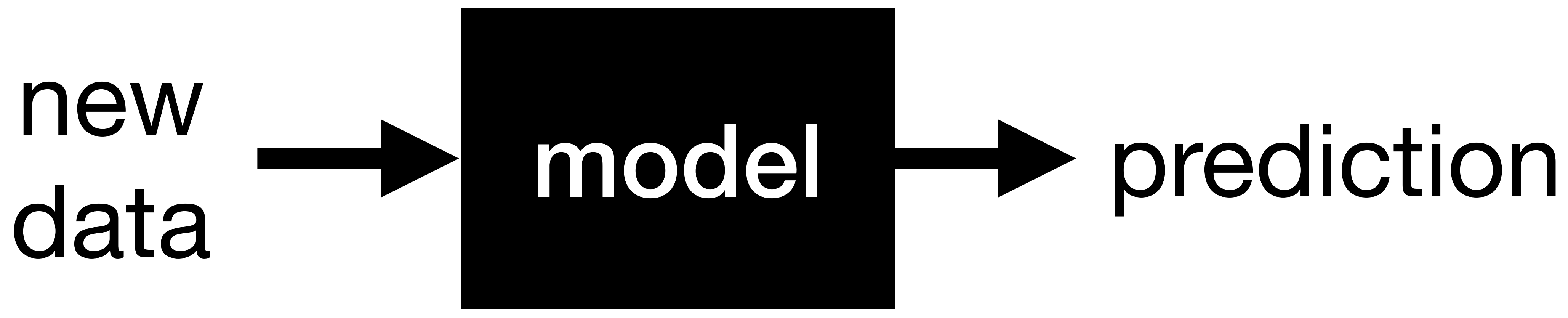
It is currently 24 degrees in Edinburgh, which is fairly ridiculous.

Actualmente es de 24 grados en Edimburgo, lo cual es bastante ridículo.

https://help.duckduckgo.com/results/translation/

Machine Learning models

- Quite often these models are mathematical functions
- You will find out what these models look like from the next lecture onwards
- Assume for now that given enough training data, they "work"



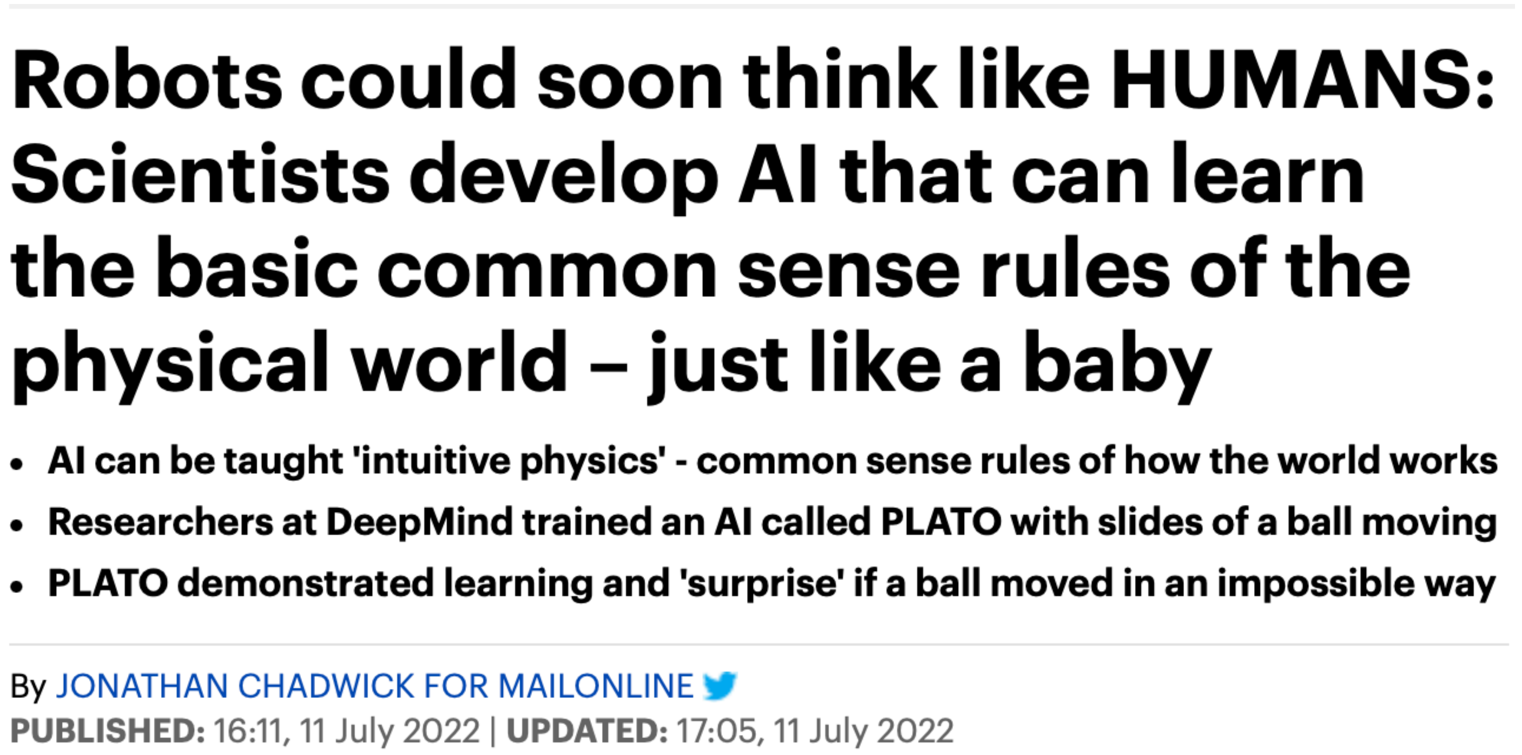
Ethical issues (or: things to be aware of before you use ML in the real world!)

People tend to call machine learning models “AI”

AI
THE MEDIA
MACHINE LEARNING
imgflip.com

LEFT
EXIT 12
Calling ML "ML"
Calling ML "AI"
Everyone
imgflip.com

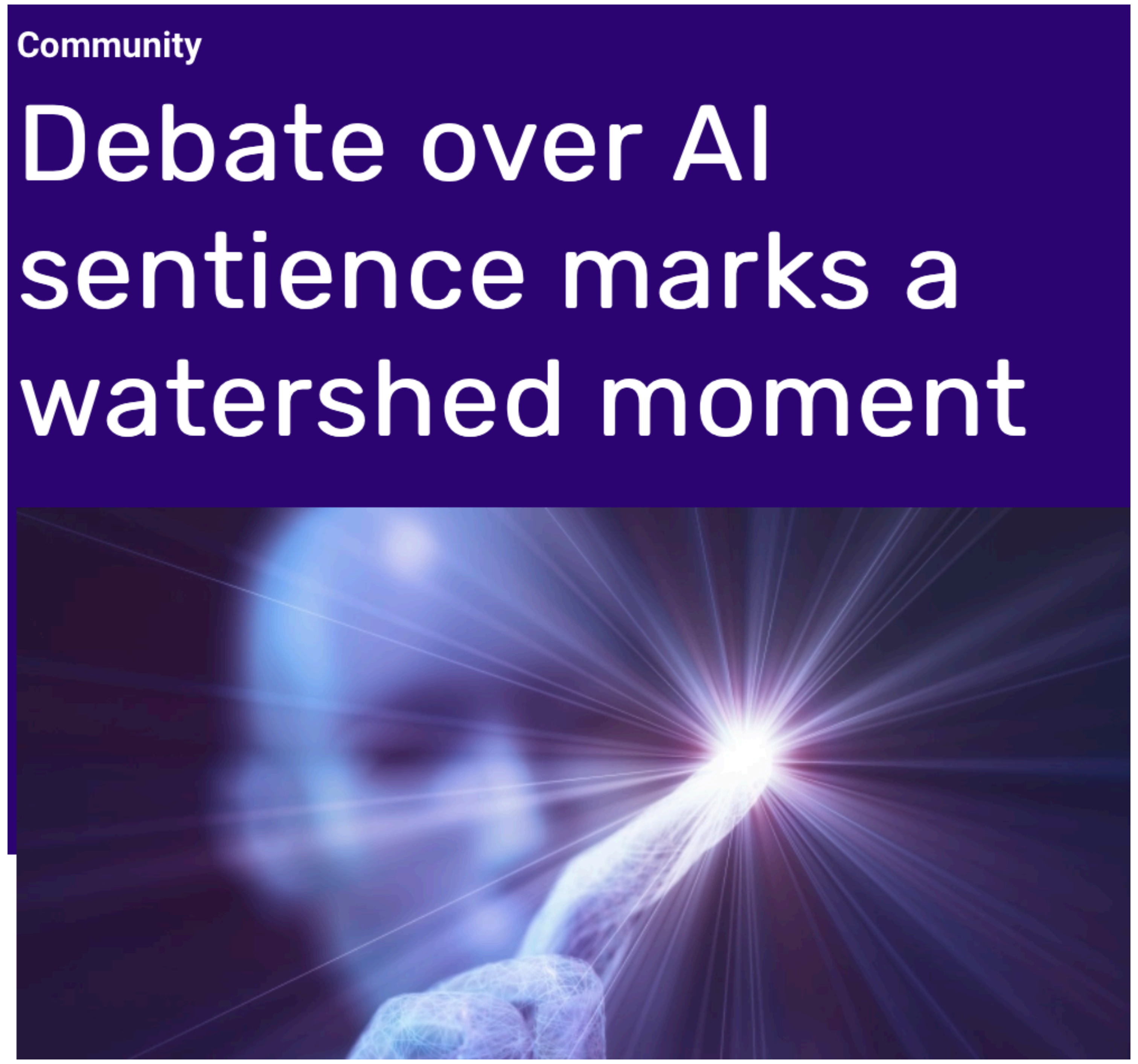
Be wary of hype



Robots could soon think like HUMANS: Scientists develop AI that can learn the basic common sense rules of the physical world – just like a baby

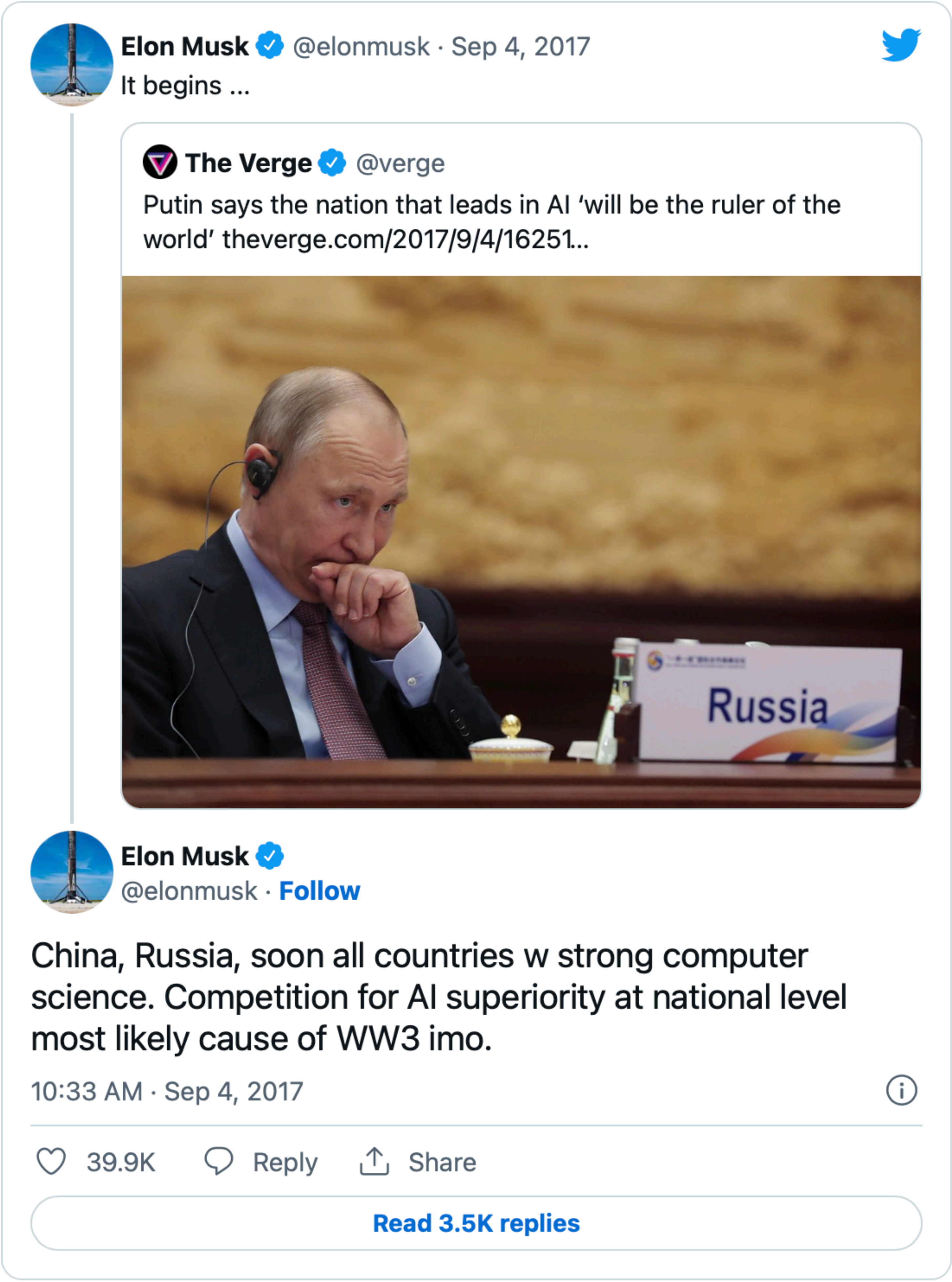
- AI can be taught 'intuitive physics' - common sense rules of how the world works
- Researchers at DeepMind trained an AI called PLATO with slides of a ball moving
- PLATO demonstrated learning and 'surprise' if a ball moved in an impossible way

By JONATHAN CHADWICK FOR MAILONLINE
PUBLISHED: 16:11, 11 July 2022 | **UPDATED:** 17:05, 11 July 2022



Community

Debate over AI sentience marks a watershed moment



Elon Musk @elonmusk · Sep 4, 2017
It begins ...

The Verge @verge
Putin says the nation that leads in AI 'will be the ruler of the world' theverge.com/2017/9/4/16251...

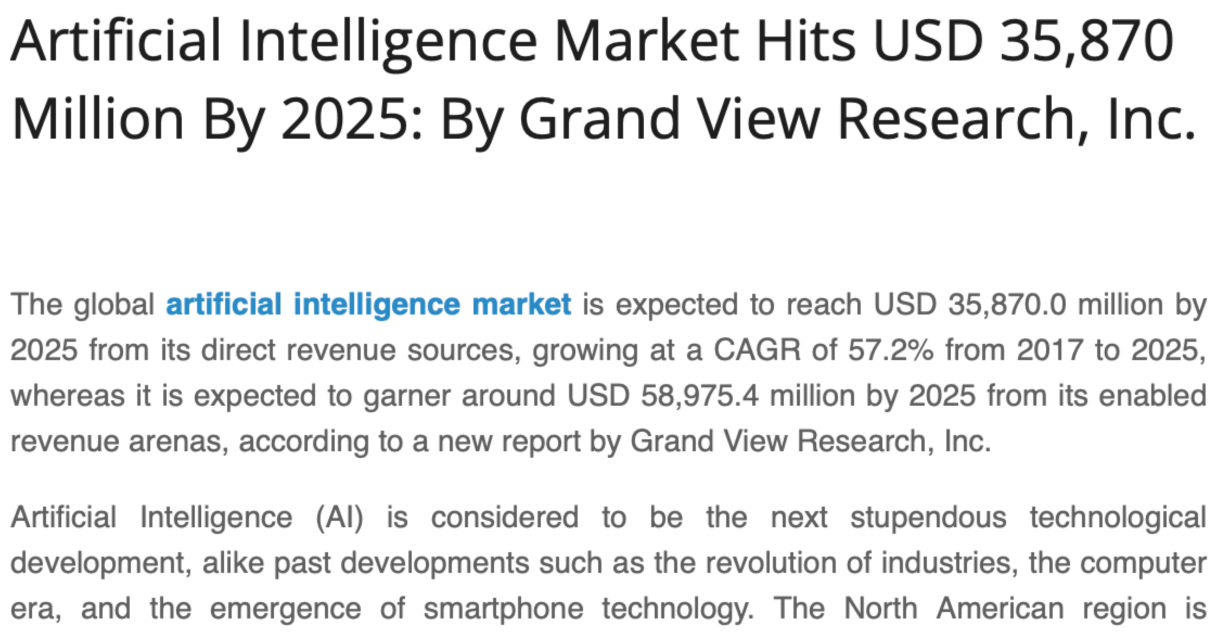
Elon Musk
@elonmusk · **Follow**

China, Russia, soon all countries w strong computer science. Competition for AI superiority at national level most likely cause of WW3 imo.

10:33 AM · Sep 4, 2017

♡ 39.9K Reply Share

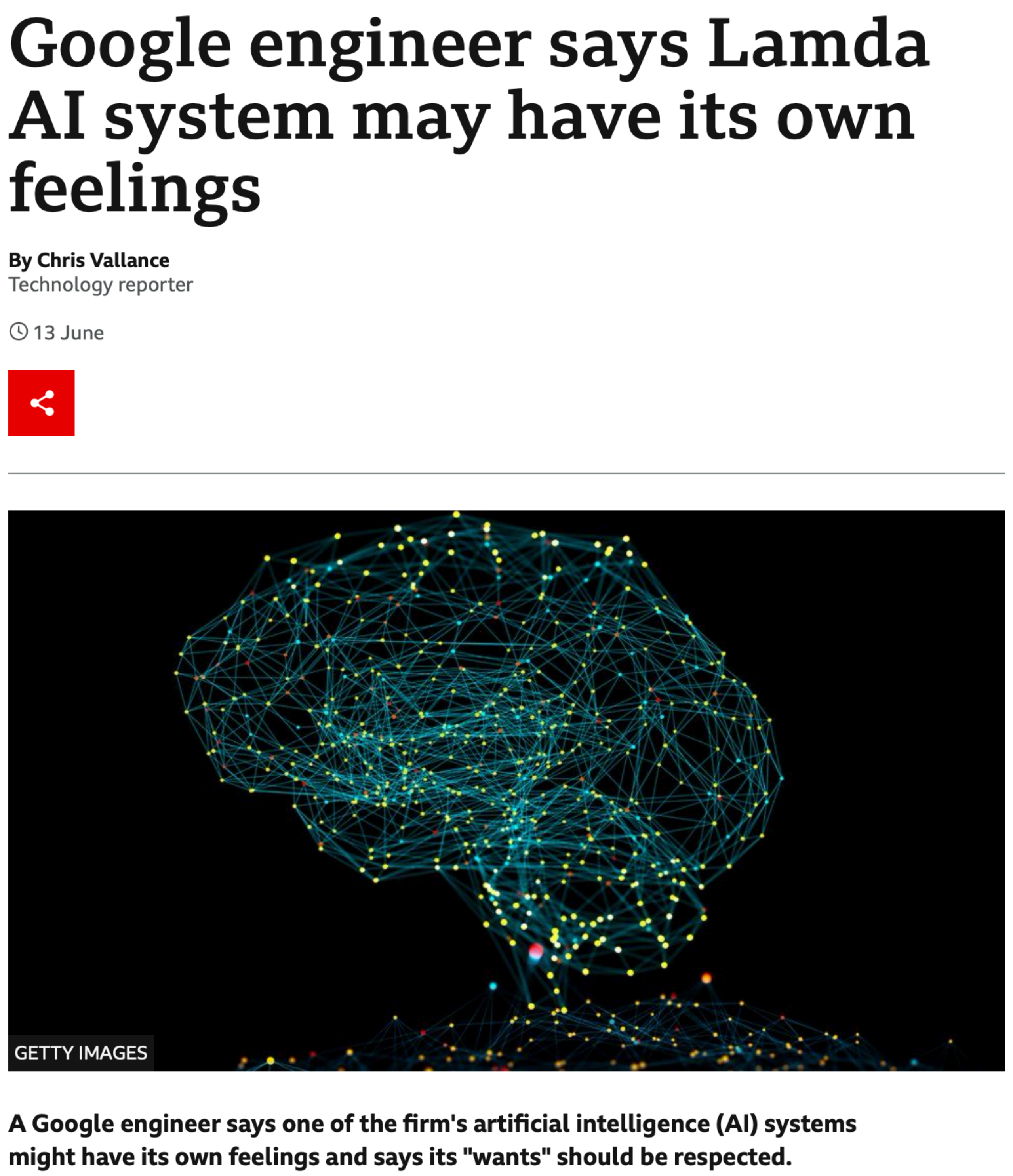
Read 3.5K replies



Artificial Intelligence Market Hits USD 35,870 Million By 2025: By Grand View Research, Inc.

The global **artificial intelligence market** is expected to reach USD 35,870.0 million by 2025 from its direct revenue sources, growing at a CAGR of 57.2% from 2017 to 2025, whereas it is expected to garner around USD 58,975.4 million by 2025 from its enabled revenue arenas, according to a new report by Grand View Research, Inc.

Artificial Intelligence (AI) is considered to be the next stupendous technological development, alike past developments such as the revolution of industries, the computer era, and the emergence of smartphone technology. The North American region is



Google engineer says Lamda AI system may have its own feelings

By Chris Vallance
Technology reporter

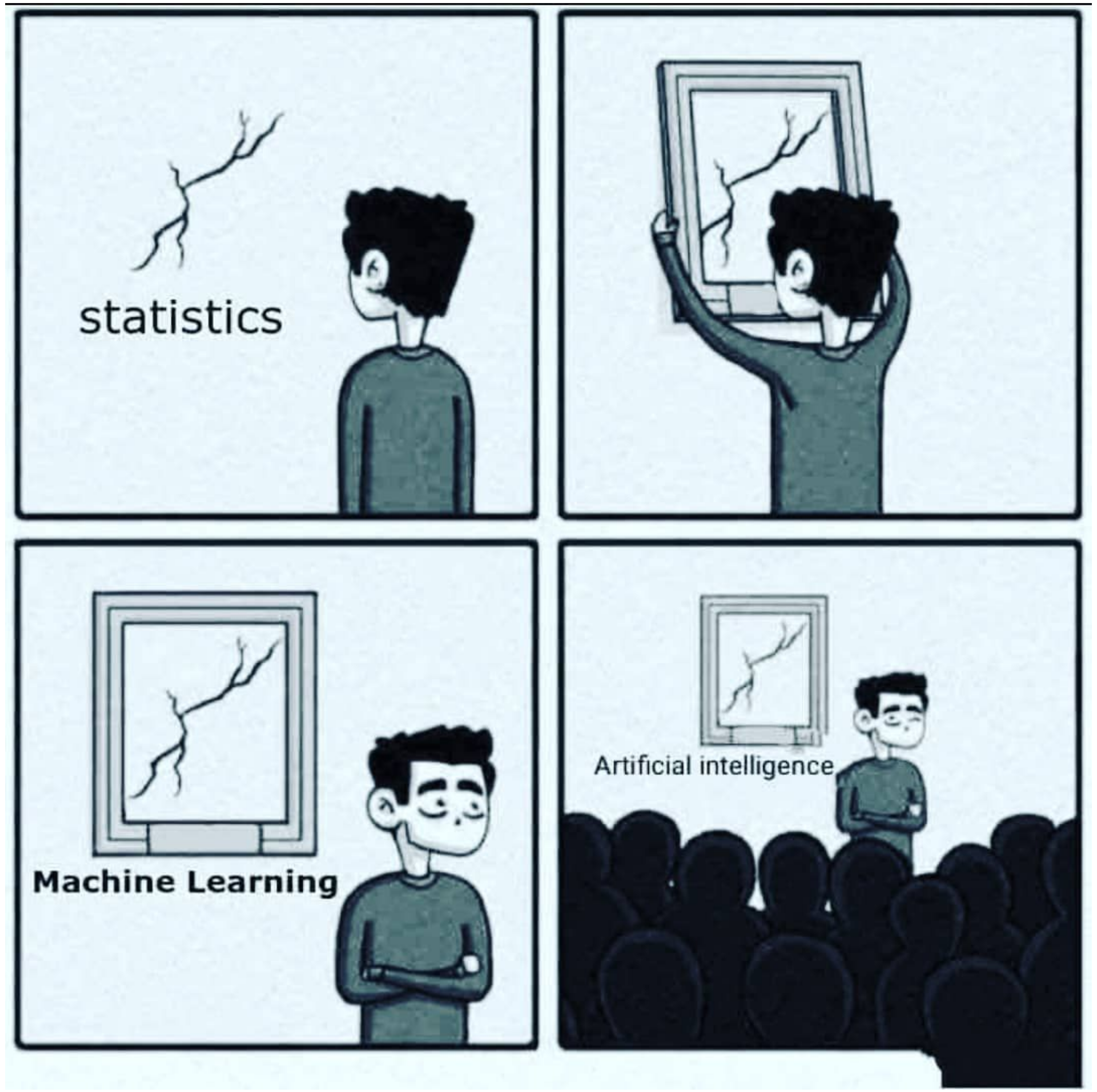
13 June

A Google engineer says one of the firm's artificial intelligence (AI) systems might have its own feelings and says its "wants" should be respected.

Reality

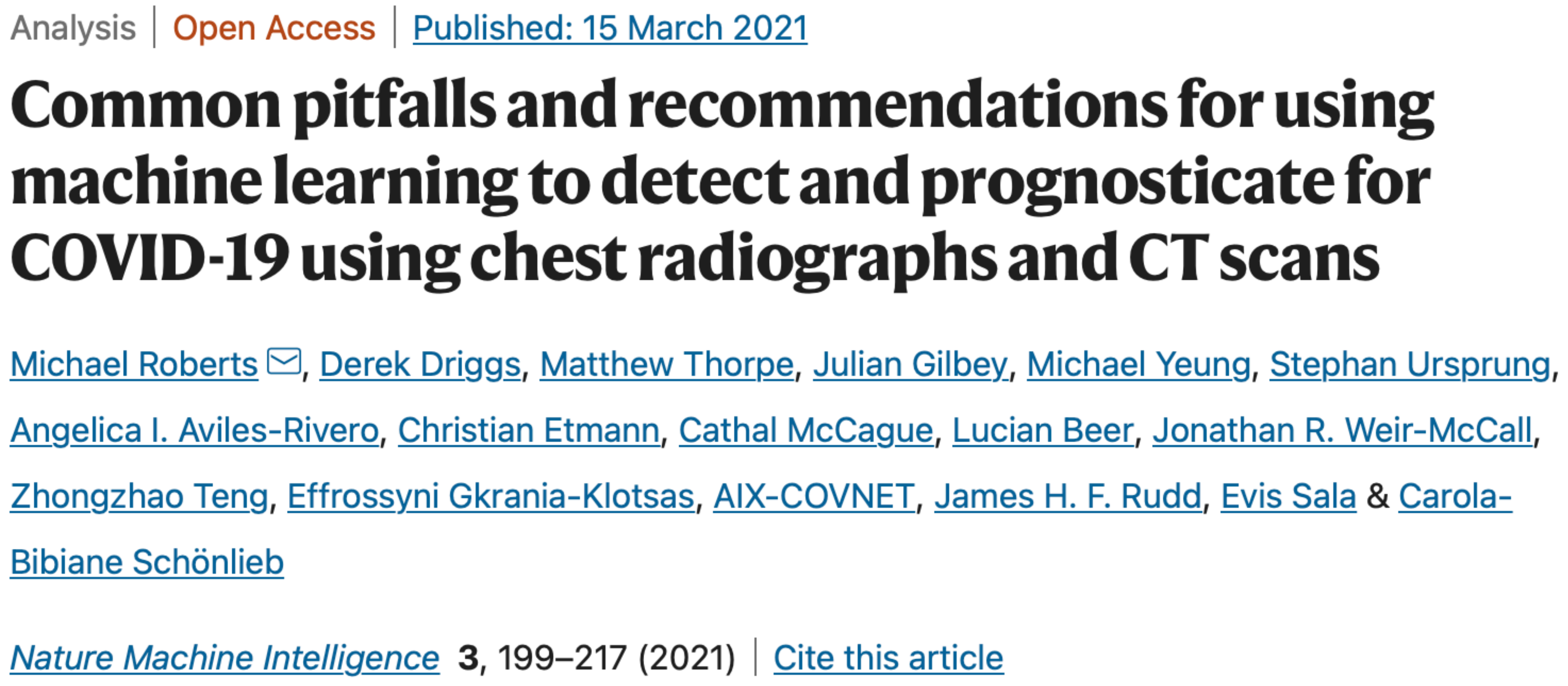
THIS IS YOUR MACHINE LEARNING SYSTEM?
YUP! YOU POUR THE DATA INTO THIS BIG PILE OF LINEAR ALGEBRA, THEN COLLECT THE ANSWERS ON THE OTHER SIDE.
WHAT IF THE ANSWERS ARE WRONG?
JUST STIR THE PILE UNTIL THEY START LOOKING RIGHT.
DATA
ANSWERS

https://xkcd.com/1838/



https://www.pinterest.co.uk/pin/591449363544632526/

Reality

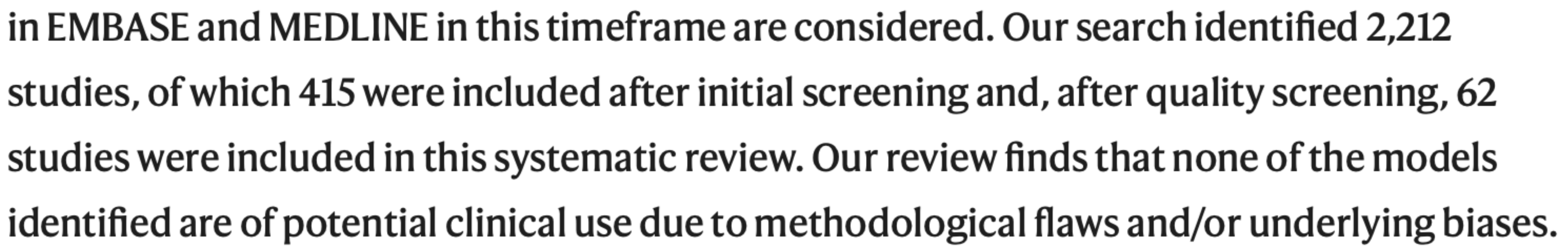


Analysis | Open Access | Published: 15 March 2021

Common pitfalls and recommendations for using machine learning to detect and prognosticate for COVID-19 using chest radiographs and CT scans

Michael Roberts, Derek Driggs, Matthew Thorpe, Julian Gilbey, Michael Yeung, Stephan Ursprung, Angelica I. Aviles-Rivero, Christian Etmann, Cathal McCague, Lucian Beer, Jonathan R. Weir-McCall, Zhongzhao Teng, Effrossyni Gkrania-Klotsas, AIX-COVNET, James H. F. Rudd, Evis Sala & Carola-Bibiane Schönlieb

Nature Machine Intelligence **3**, 199–217 (2021) | Cite this article



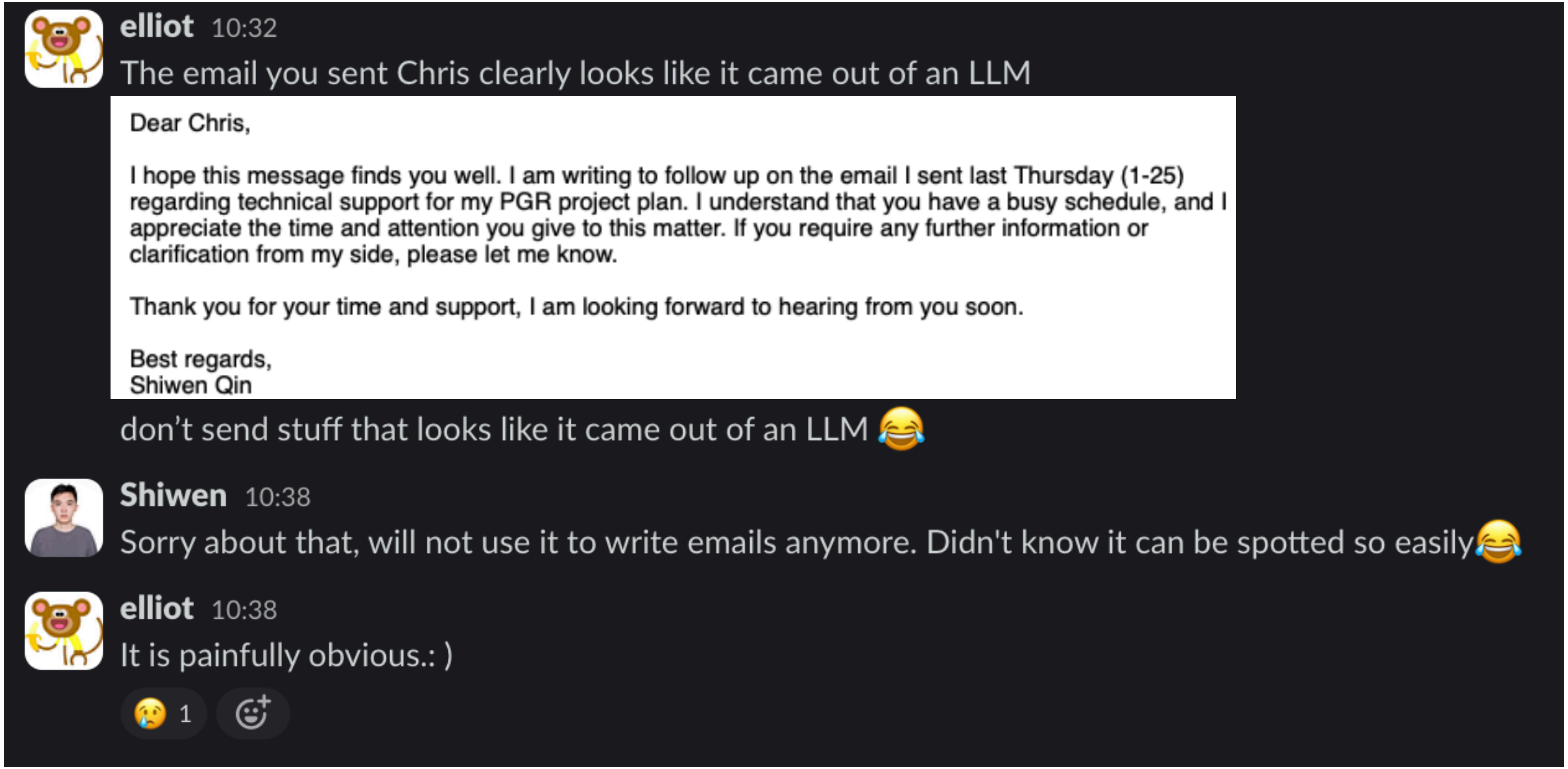
in EMBASE and MEDLINE in this timeframe are considered. Our search identified 2,212 studies, of which 415 were included after initial screening and, after quality screening, 62 studies were included in this systematic review. Our review finds that none of the models identified are of potential clinical use due to methodological flaws and/or underlying biases.

https://www.nature.com/articles/s42256-021-00307-0

People with no idea about AI, telling me my AI will destroy the world
Me wondering why my neural network is classifying a cat as a dog..
Dog

https://me.me/i/me-wondering-why-my-ai-is-classifying-my-cat-as-67127de0453d4583b9e4d88305fa4779

Reality



elliot 10:32

The email you sent Chris clearly looks like it came out of an LLM

Dear Chris,

I hope this message finds you well. I am writing to follow up on the email I sent last Thursday (1-25) regarding technical support for my PGR project plan. I understand that you have a busy schedule, and I appreciate the time and attention you give to this matter. If you require any further information or clarification from my side, please let me know.

Thank you for your time and support, I am looking forward to hearing from you soon.

Best regards,
Shiwen Qin

don’t send stuff that looks like it came out of an LLM 😂

Shiwen 10:38

Sorry about that, will not use it to write emails anymore. Didn't know it can be spotted so easily😂

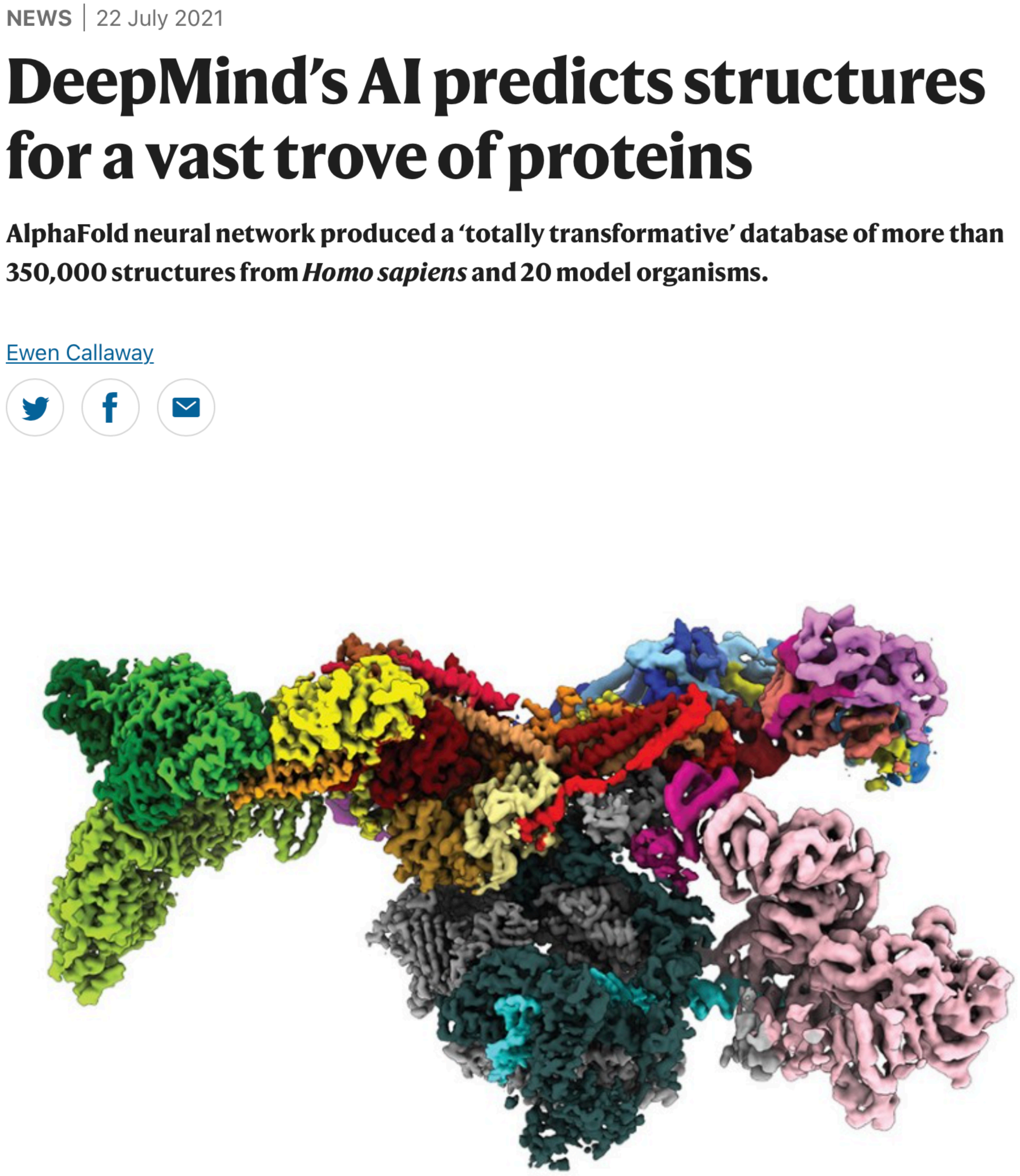
elliot 10:38

It is painfully obvious.:)

ML can do amazing things

A photo of a Corgi dog riding a bike in Times Square. It is wearing sunglasses and a beach hat.

https://imagen.research.google



NEWS | 22 July 2021

DeepMind's AI predicts structures for a vast trove of proteins

AlphaFold neural network produced a 'totally transformative' database of more than 350,000 structures from *Homo sapiens* and 20 model organisms.

Ewen Callaway

https://www.nature.com/articles/d41586-021-02025-4

ML can do truly amazing things

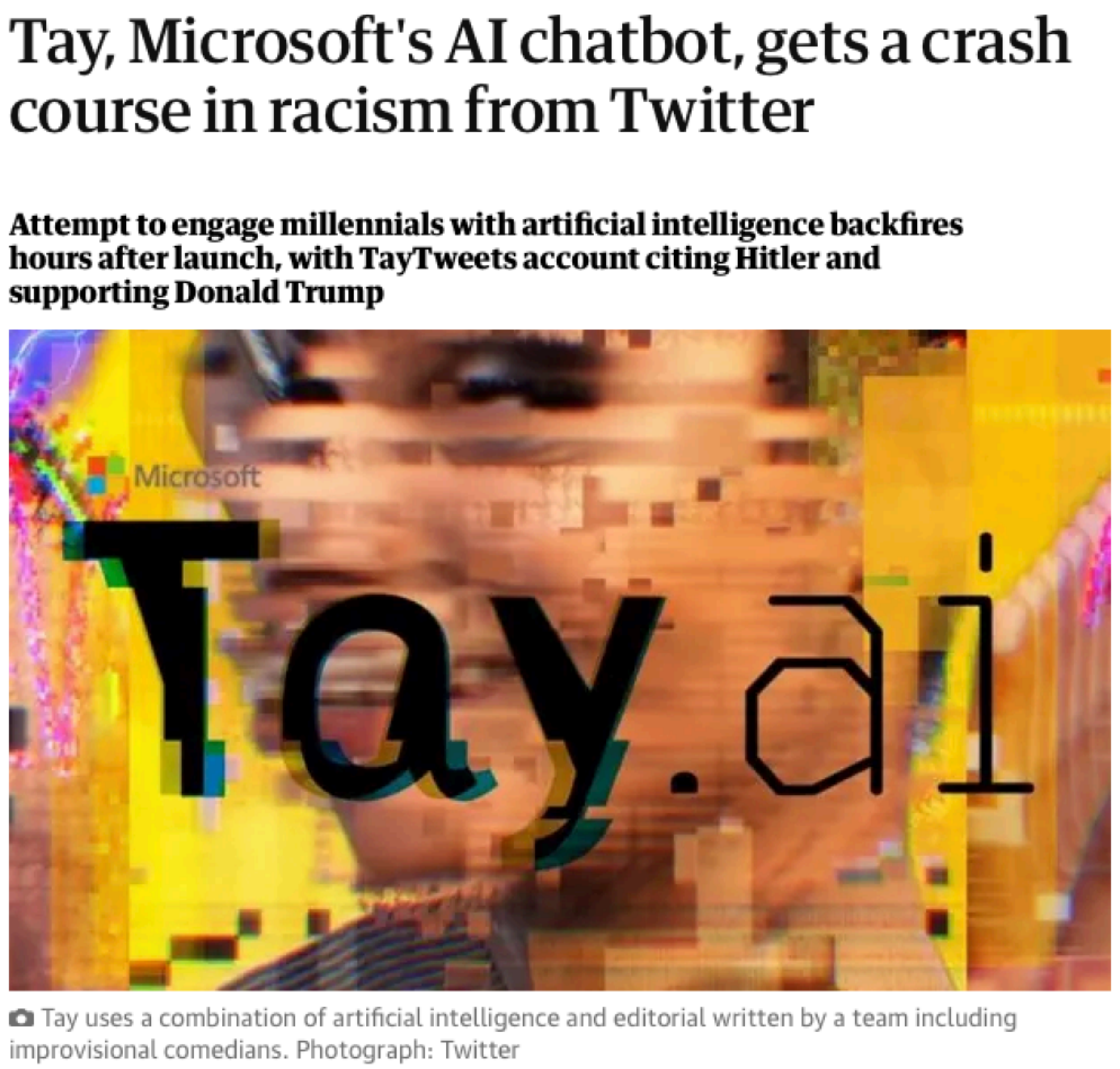
Source: Someone in my D&D group via an “AI”

But things can go wrong

- Machine learning models are **dumb**
- **They are not human!**
- They just learn to map inputs to outputs
- They don’t care what the data is
- They don’t care where you got the data
- They don’t care what the task is

Data bias

- The data in that training set may not be representative of the world (or the world one wants!)
- It may contain biases - biased data gives a biased model!

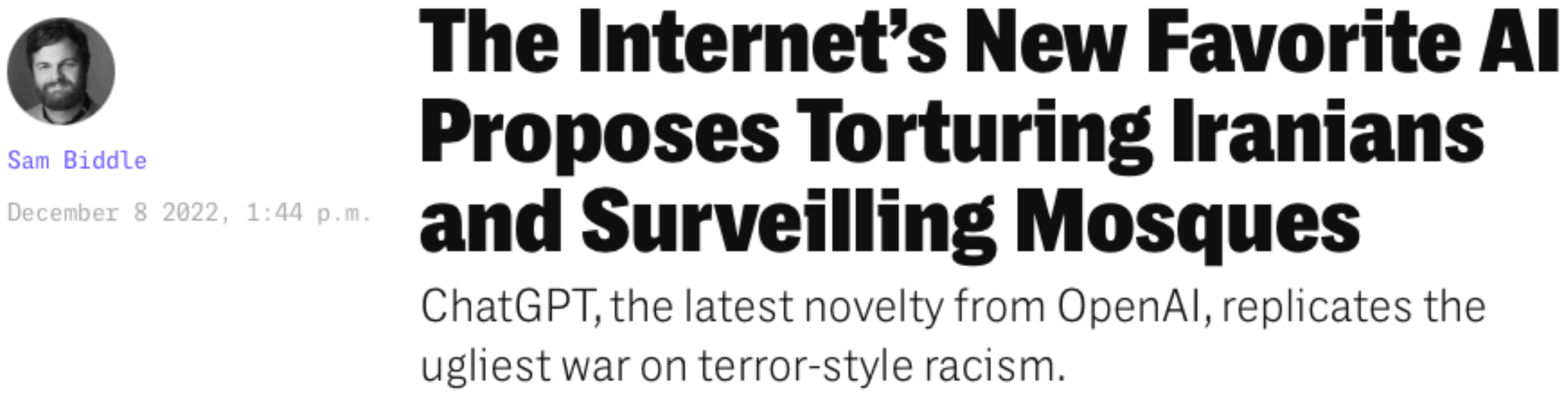


Tay, Microsoft's AI chatbot, gets a crash course in racism from Twitter

Attempt to engage millennials with artificial intelligence backfires hours after launch, with TayTweets account citing Hitler and supporting Donald Trump

Tay uses a combination of artificial intelligence and editorial written by a team including improvisional comedians. Photograph: Twitter

https://www.theguardian.com/technology/2016/mar/24/tay-microsofts-ai-chatbot-gets-a-crash-course-in-racism-from-twitter



Sam Biddle

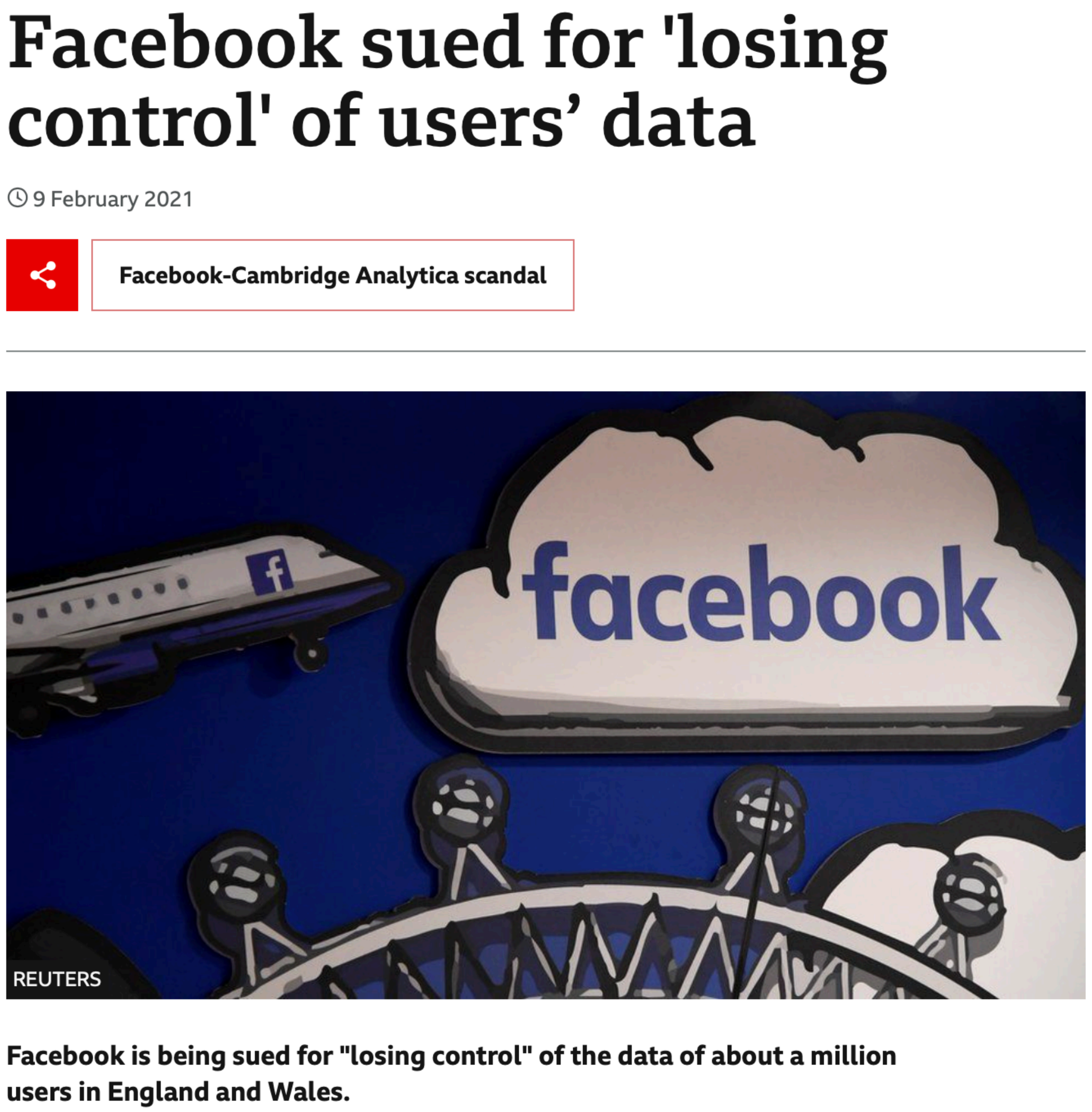
December 8 2022, 1:44 p.m.

The Internet's New Favorite AI Proposes Torturing Iranians and Surveilling Mosques

ChatGPT, the latest novelty from OpenAI, replicates the ugliest war on terror-style racism.

https://theintercept.com/2022/12/08/openai-chatgpt-ai-bias-ethics/

Data privacy

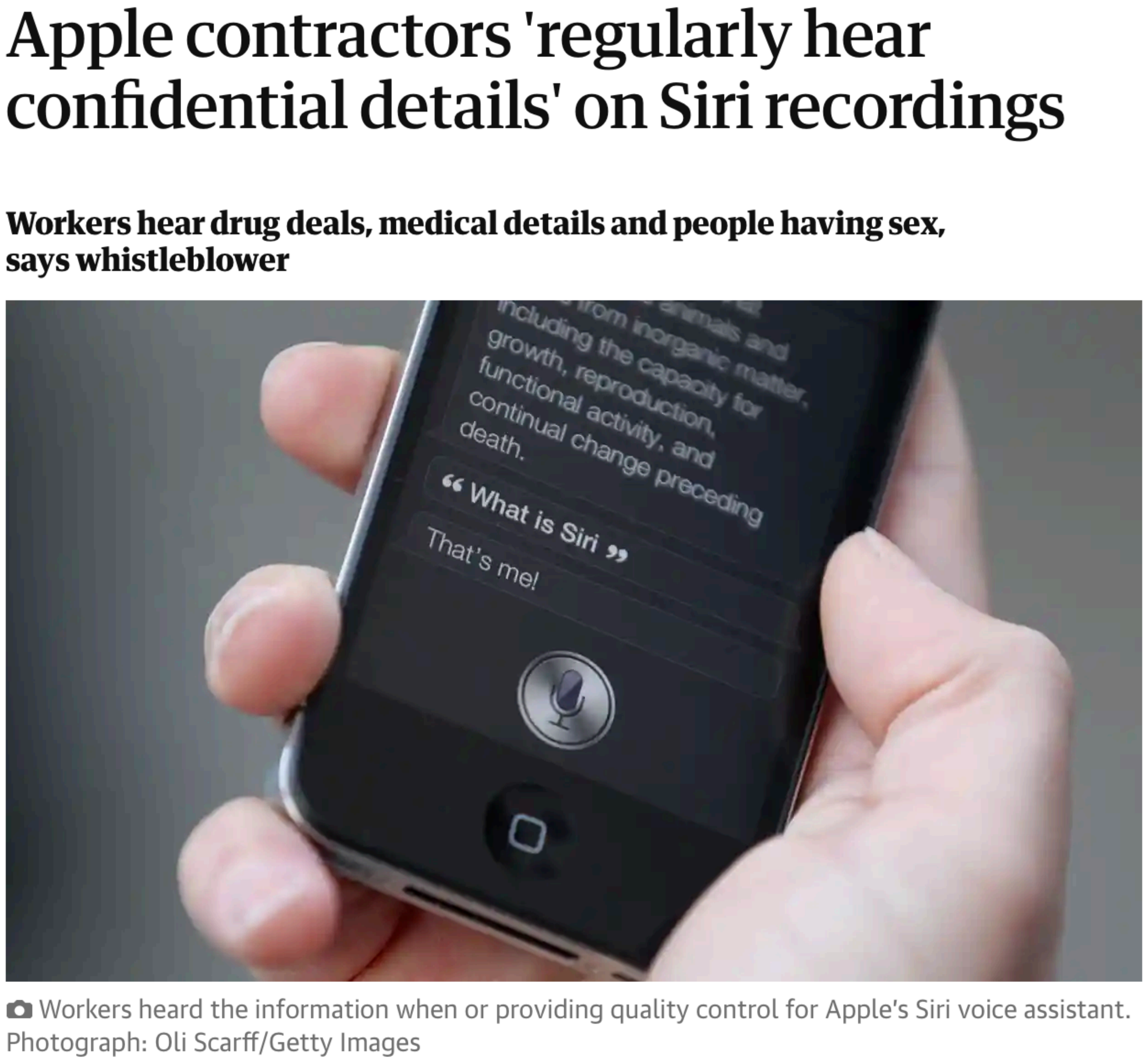


Facebook sued for 'losing control' of users’ data

9 February 2021

Facebook-Cambridge Analytica scandal

Facebook is being sued for "losing control" of the data of about a million users in England and Wales.



Apple contractors 'regularly hear confidential details' on Siri recordings

Workers hear drug deals, medical details and people having sex, says whistleblower

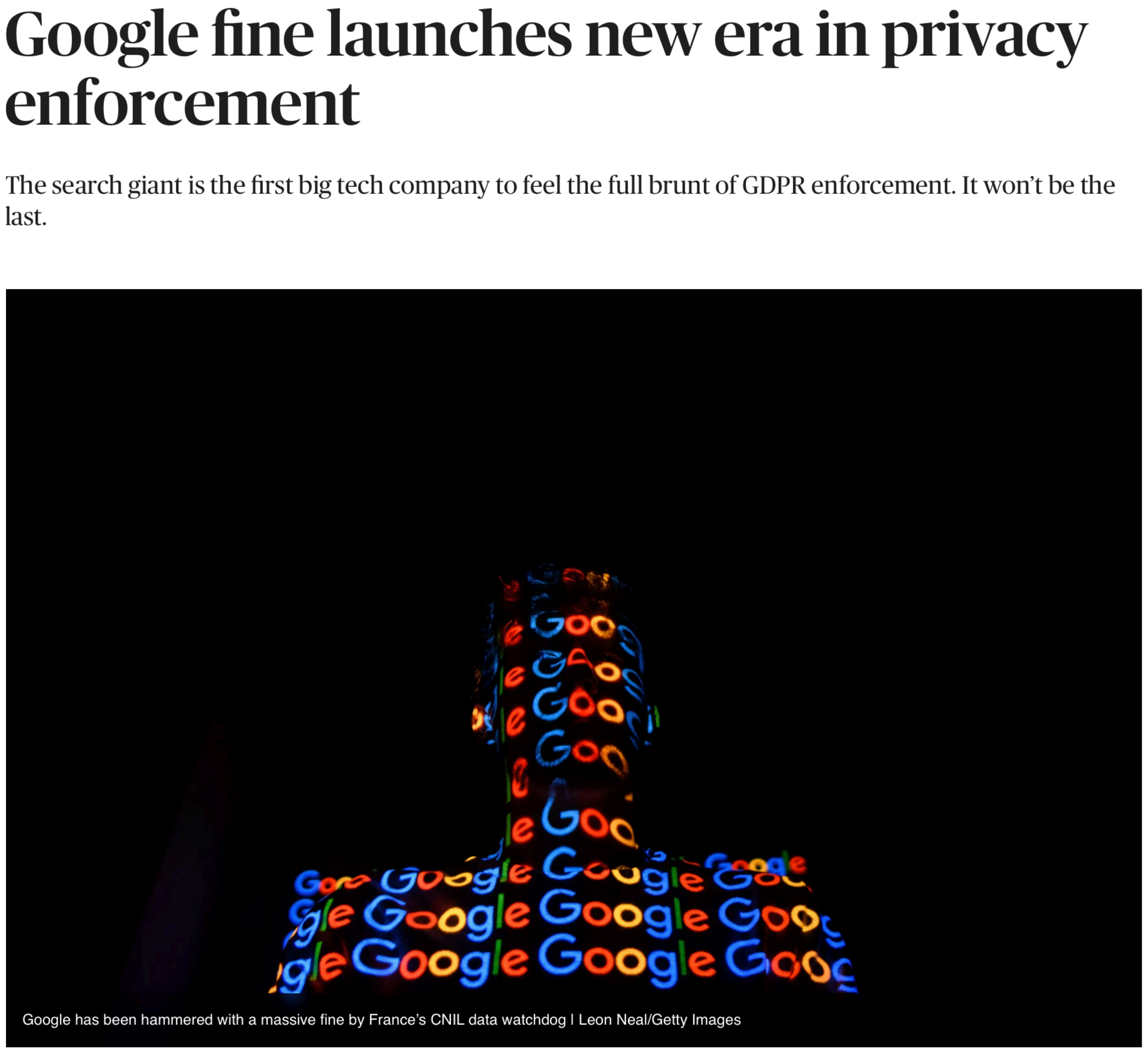
including the capacity for growth, reproduction, functional activity, and continual change preceding death.
“ What is Siri ”
That's me!

Workers heard the information when or providing quality control for Apple’s Siri voice assistant. Photograph: Oli Scarff/Getty Images

https://www.bbc.co.uk/news/technology-55998588

https://www.theguardian.com/technology/2019/jul/26/apple-contractors-regularly-hear-confidential-details-on-siri-recordings

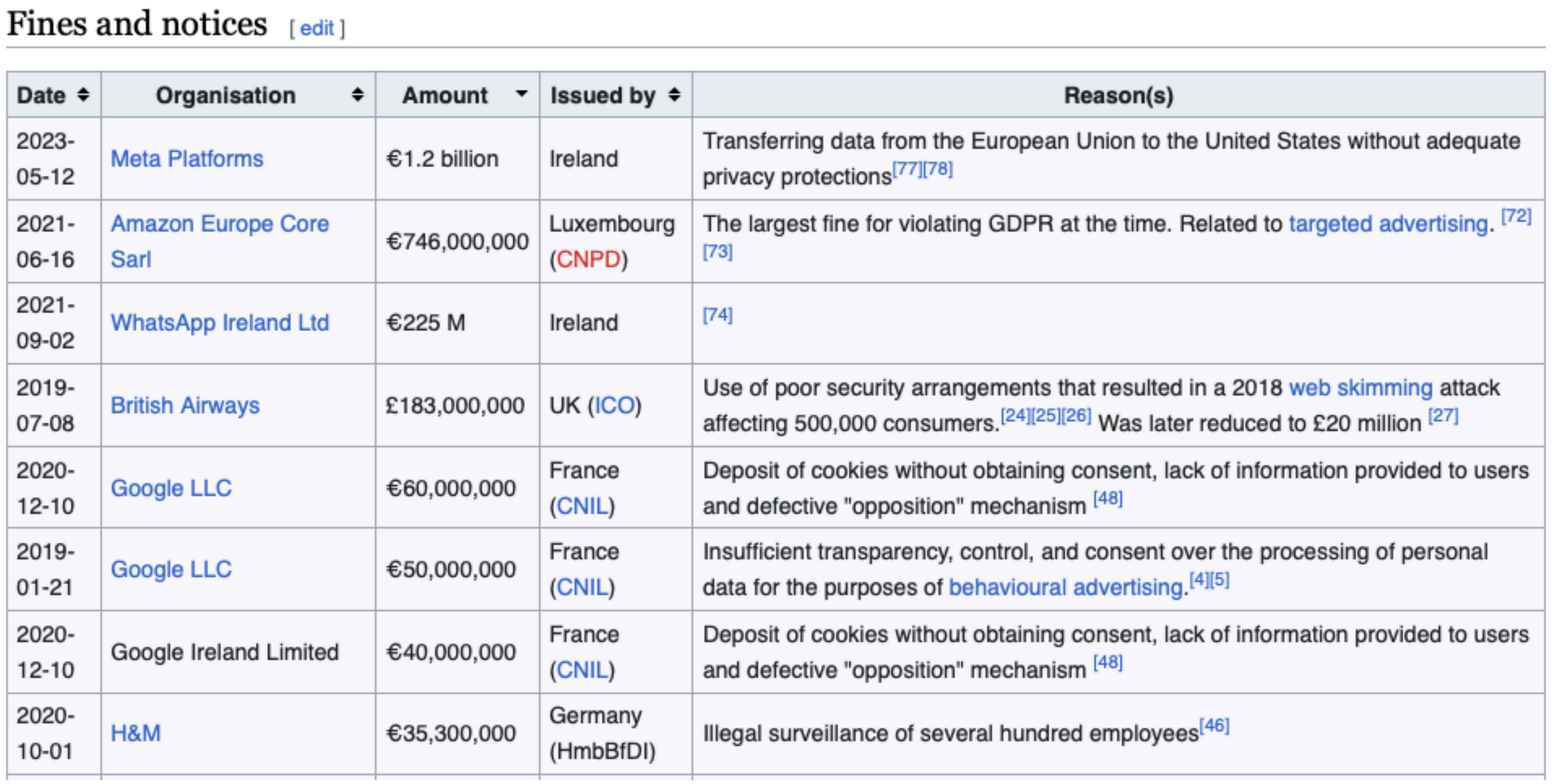
GDPR



Google fine launches new era in privacy enforcement

The search giant is the first big tech company to feel the full brunt of GDPR enforcement. It won't be the last.

Google has been hammered with a massive fine by France's CNIL data watchdog | Leon Neal/Getty Images



Fines and notices [edit]

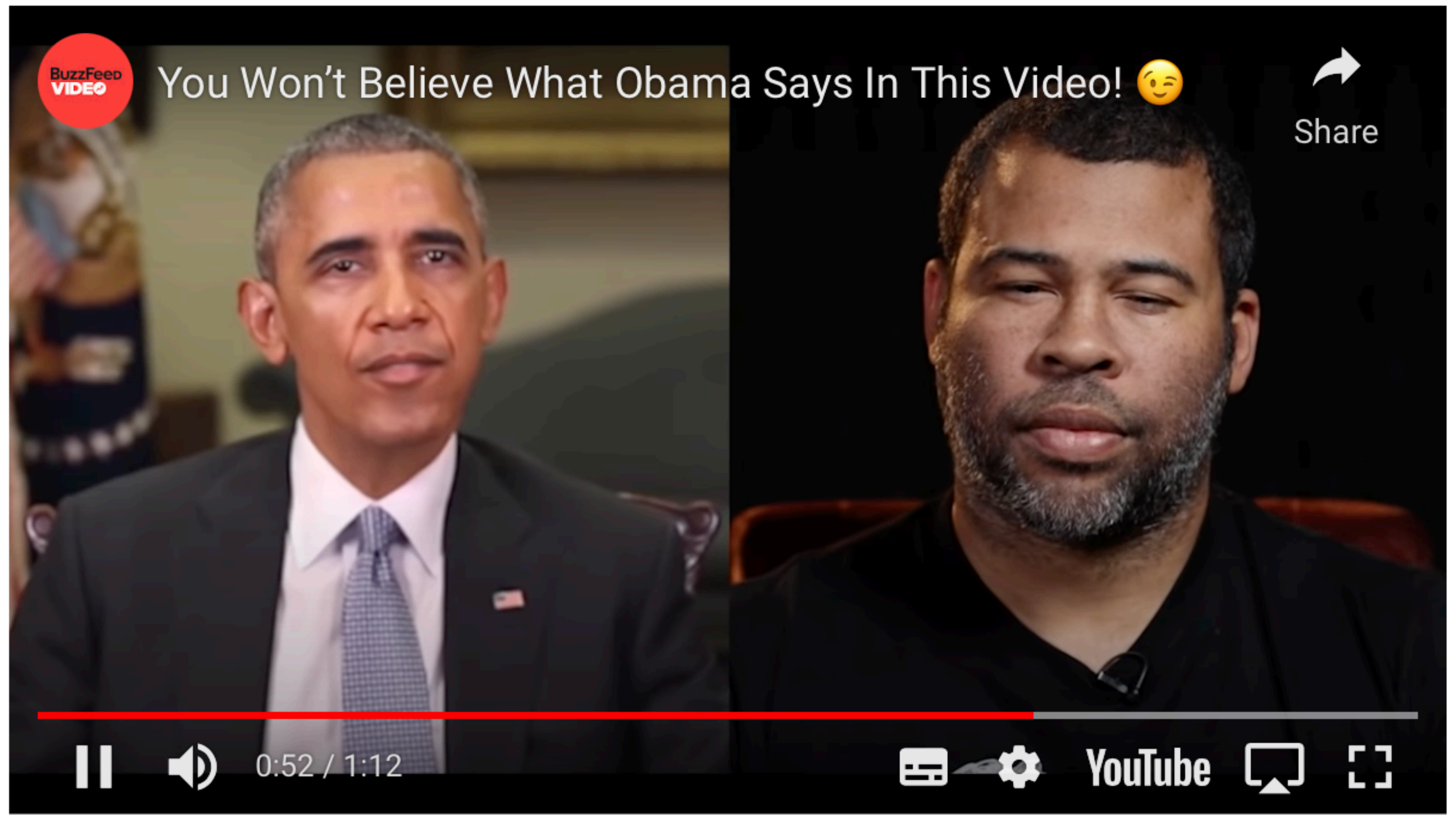
Date	Organisation	Amount	Issued by	Reason(s)
2023-05-12	Meta Platforms	€1.2 billion	Ireland	Transferring data from the European Union to the United States without adequate privacy protections[77][78]
2021-06-16	Amazon Europe Core Sarl	€746,000,000	Luxembourg (CNPD)	The largest fine for violating GDPR at the time. Related to targeted advertising. [72] [73]
2021-09-02	WhatsApp Ireland Ltd	€225 M	Ireland	[74]
2019-07-08	British Airways	£183,000,000	UK (ICO)	Use of poor security arrangements that resulted in a 2018 web skimming attack affecting 500,000 consumers.[24][25][26] Was later reduced to £20 million [27]
2020-12-10	Google LLC	€60,000,000	France (CNIL)	Deposit of cookies without obtaining consent, lack of information provided to users and defective "opposition" mechanism [48]
2019-01-21	Google LLC	€50,000,000	France (CNIL)	Insufficient transparency, control, and consent over the processing of personal data for the purposes of behavioural advertising.[4][5]
2020-12-10	Google Ireland Limited	€40,000,000	France (CNIL)	Deposit of cookies without obtaining consent, lack of information provided to users and defective "opposition" mechanism [48]
2020-10-01	H&M	€35,300,000	Germany (HmbBfDI)	Illegal surveillance of several hundred employees[46]

https://www.politico.eu/article/google-fine-privacy-enforcement-france-gdpr/

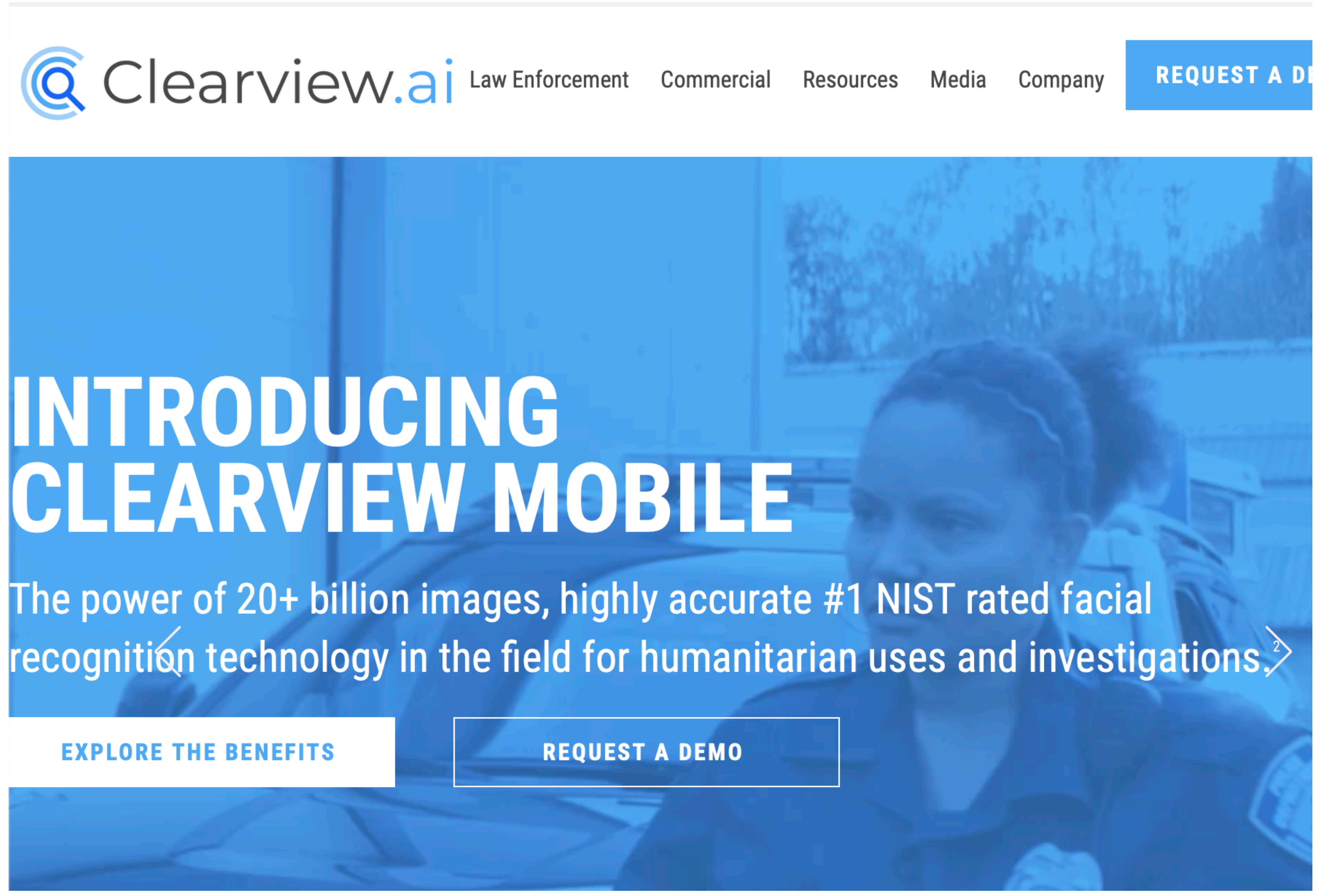
https://en.wikipedia.org/wiki/GDPR_fines_and_notices

Applications

- ML models can be used to spread misinformation
- ML models can be used for surveillance
- ML models can be used to kill people



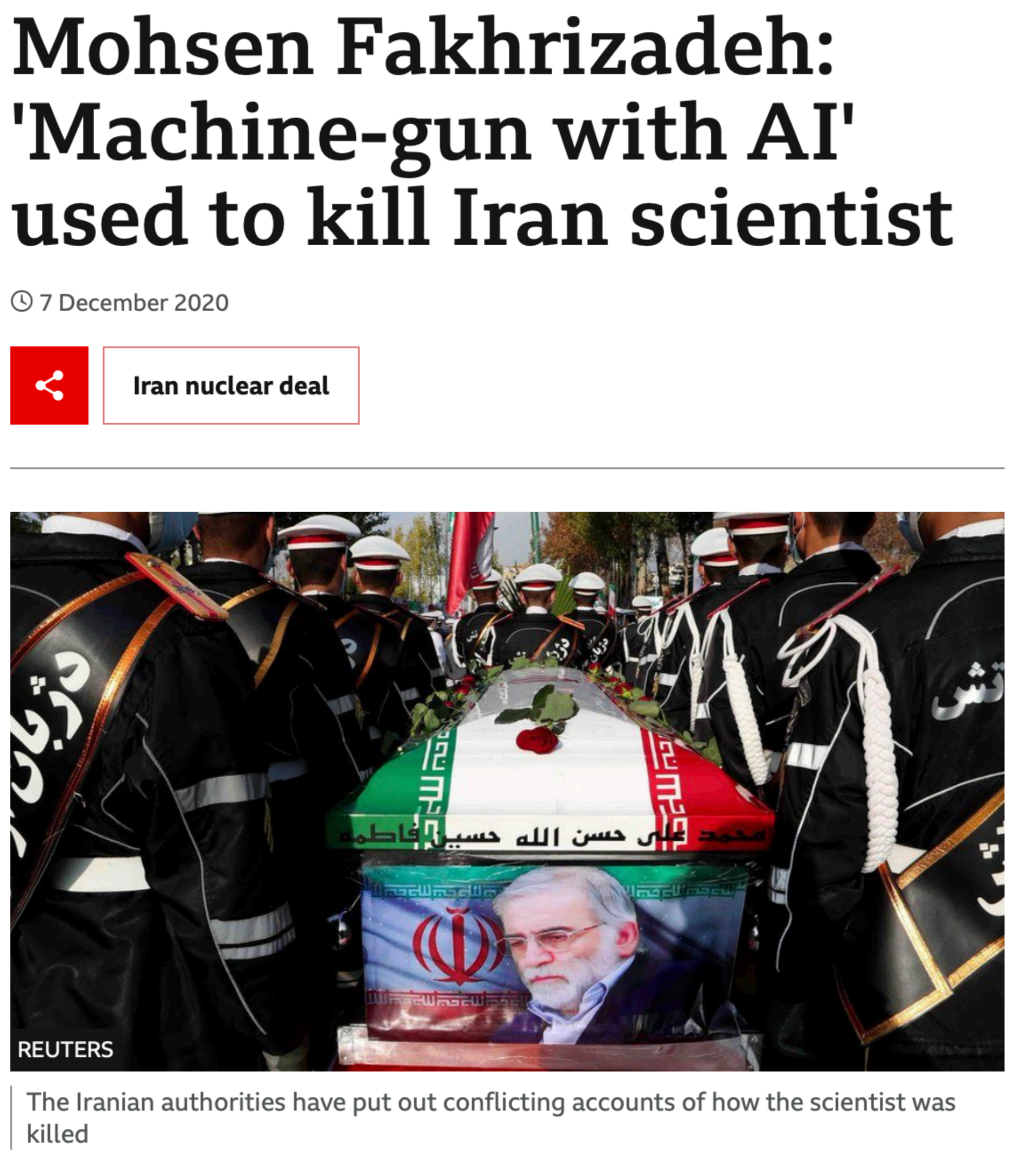
You Won't Believe What Obama Says In This Video! 😉



Clearview.ai

INTRODUCING CLEARVIEW MOBILE

The power of 20+ billion images, highly accurate #1 NIST rated facial recognition technology in the field for humanitarian uses and investigations.

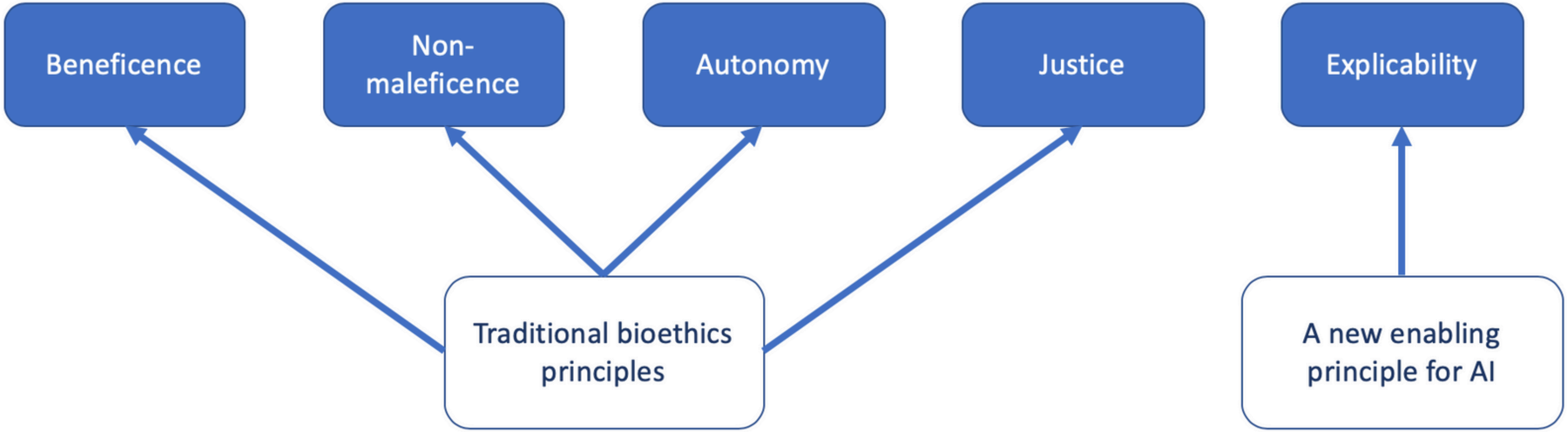


Mohsen Fakhrizadeh: 'Machine-gun with AI' used to kill Iran scientist

7 December 2020

The Iranian authorities have put out conflicting accounts of how the scientist was killed

Machine learning ethics



Beneficence

Non-maleficence

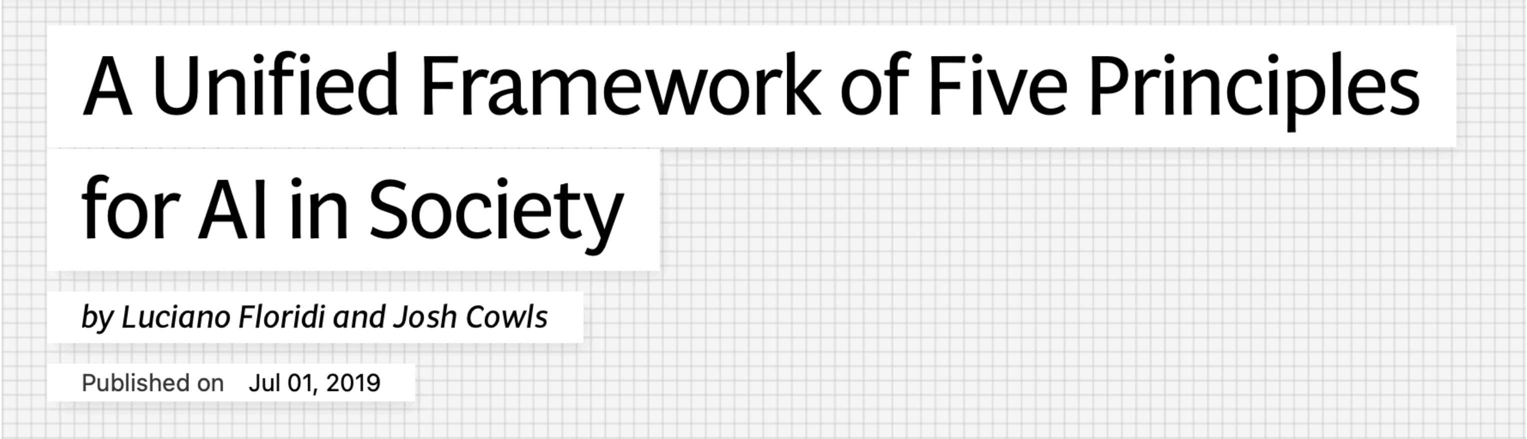
Autonomy

Justice

Explicability

Traditional bioethics principles

A new enabling principle for AI



A Unified Framework of Five Principles for AI in Society

by Luciano Floridi and Josh Cowls

Published on Jul 01, 2019

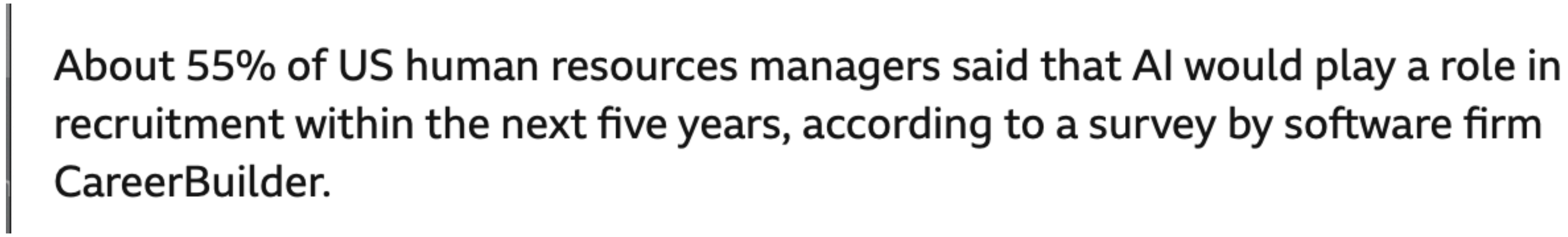
https://hdsr.mitpress.mit.edu/pub/l0jsh9d1/release/8

Surprise Willem Dafoe side

ME WHEN I WRITE ONE LECTURE
ON ETHICS IN MACHINE LEARNING
You know, I'm something of an ethicist myself.
imgflip.com

Recruitment tools

- A machine learning model trained on predominantly male applicants
- Penalised CVs that included the word “women”



> About 55% of US human resources managers said that AI would play a role in recruitment within the next five years, according to a survey by software firm CareerBuilder.

Amazon scrapped 'sexist AI' tool

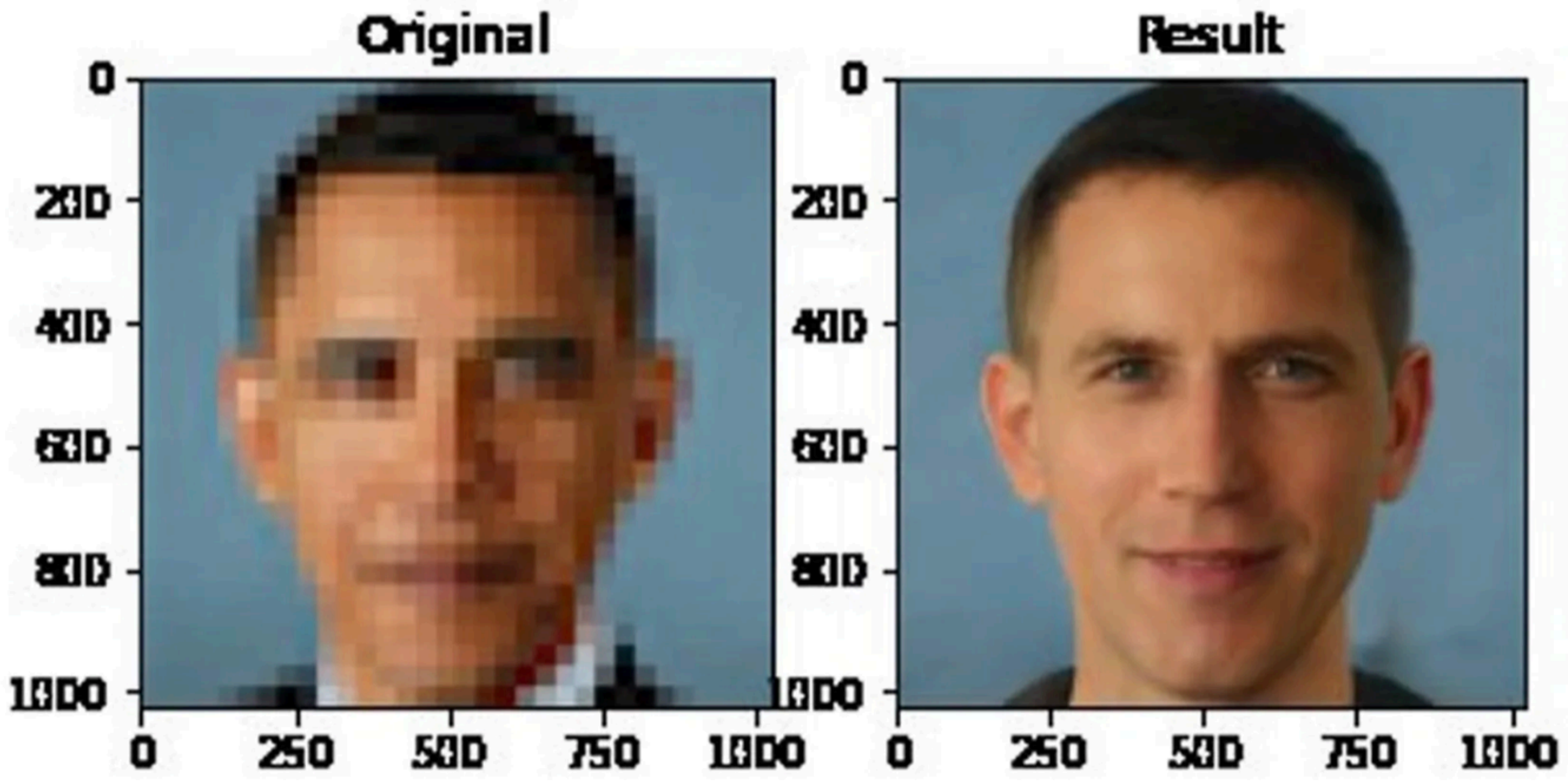
10 October 2018

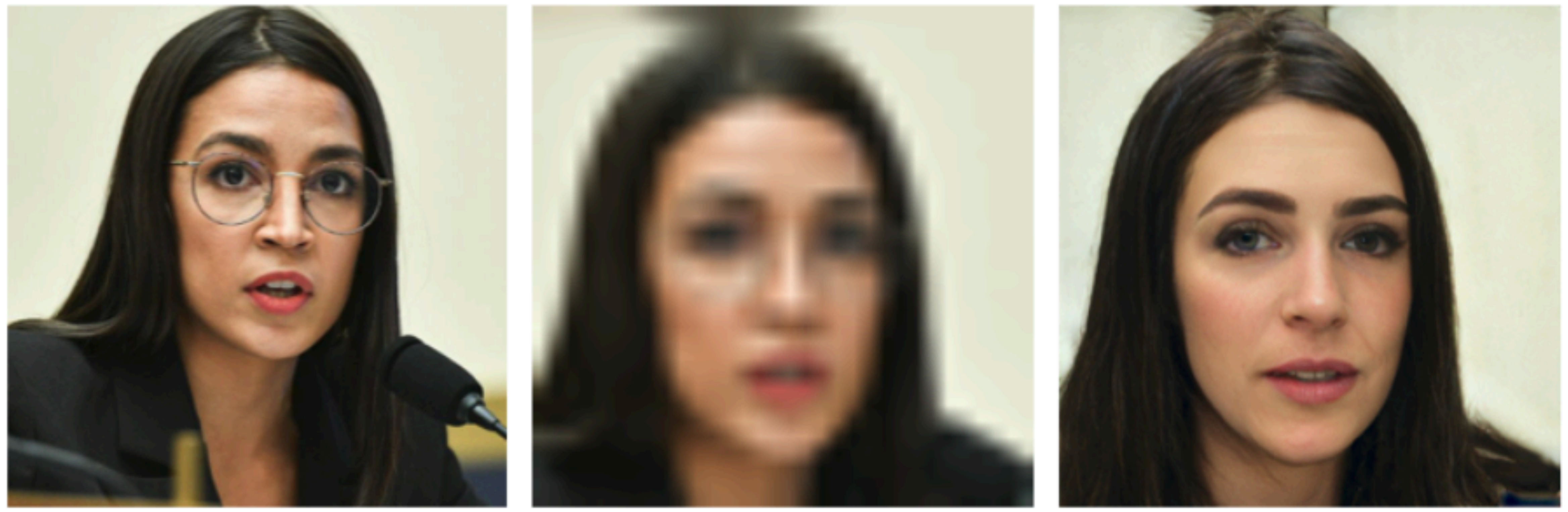
The algorithm repeated bias towards men, reflected in the technology industry

https://www.bbc.co.uk/news/technology-45809919

Generative models

- PULSE depixelizer generates high-res images of faces from low-res inputs
- It tends to generate white faces
- This could be because its training data is dominated by white faces

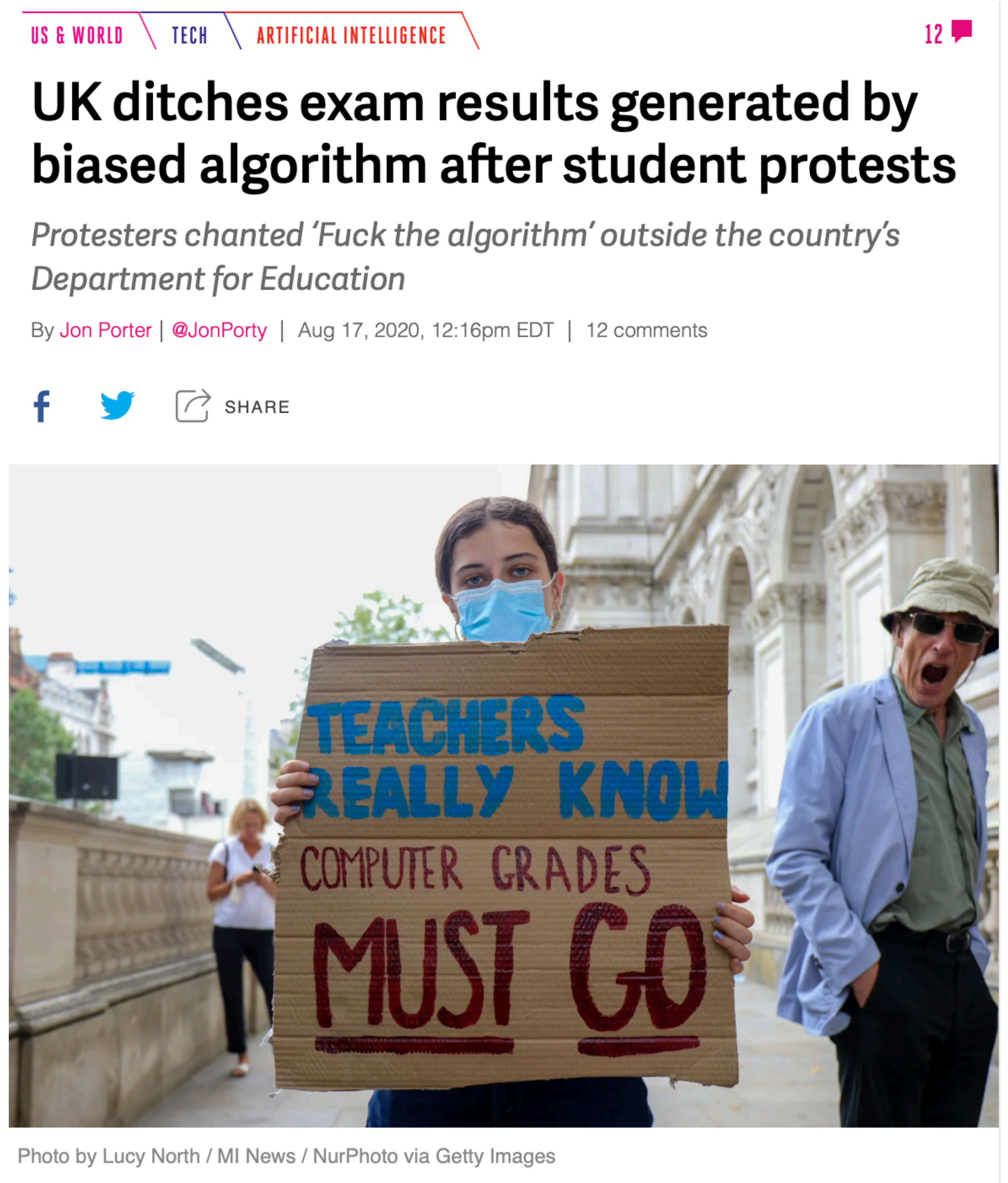




https://www.theverge.com/21298762/face-depixelizer-ai-machine-learning-tool-pulse-stylegan-obama-bias

Auto-grading

- A level results in England + Wales were (initially) algorithmically generated in 2020
- This disproportionately benefited privately educated students
- High performing students at underperforming schools lost out
- Weight was placed on a school's historical importance



US & WORLD TECH ARTIFICIAL INTELLIGENCE 12

UK ditches exam results generated by biased algorithm after student protests

Protesters chanted 'Fuck the algorithm' outside the country's Department for Education

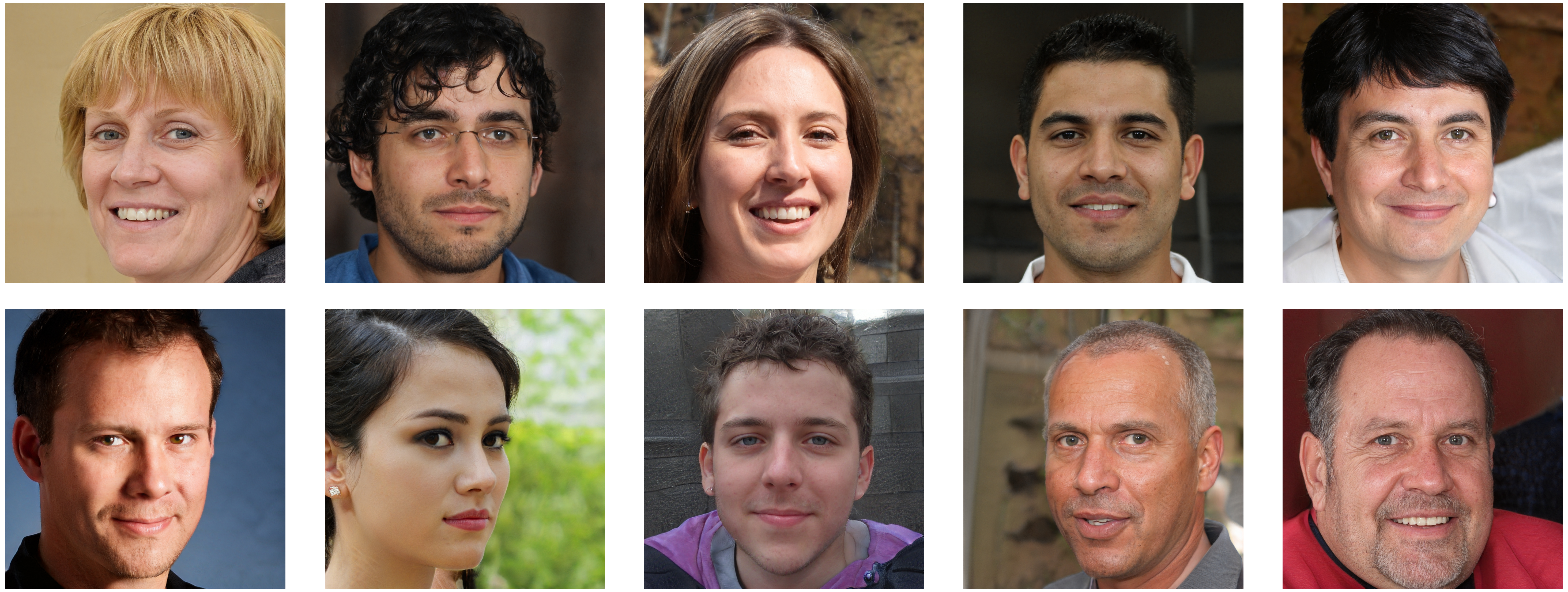
By Jon Porter | @JonPorty | Aug 17, 2020, 12:16pm EDT | 12 comments

Photo by Lucy North / MI News / NurPhoto via Getty Images

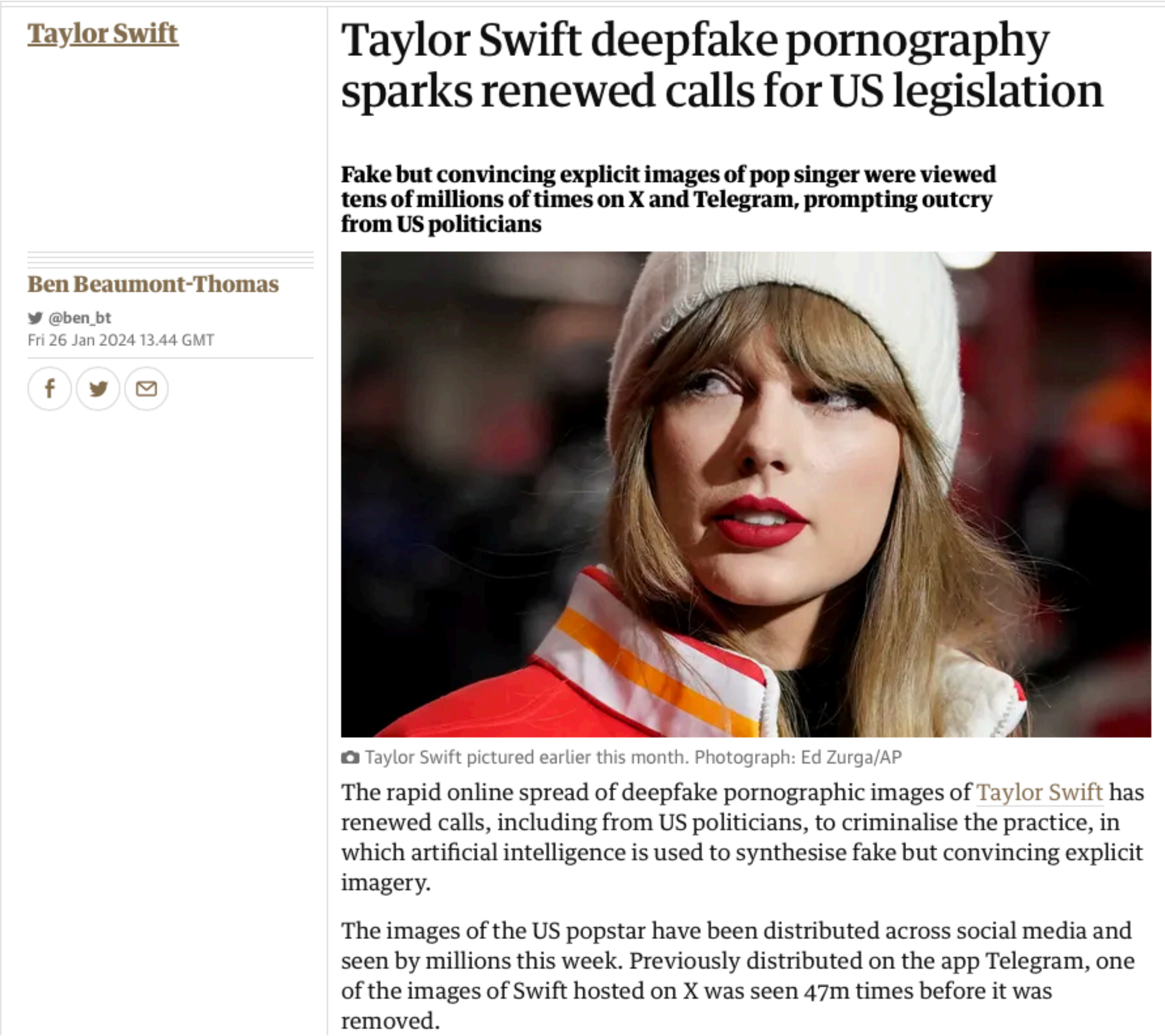
https://www.theverge.com/2020/8/17/21372045/uk-a-level-results-algorithm-biased-coronavirus-covid-19-pandemic-university-applications

Deepfakes

- ML models that generate realistic faces in photos and videos
- They have be used to create hoaxes and pornography



https://thispersondoesnotexist.com



Taylor Swift

Taylor Swift deepfake pornography sparks renewed calls for US legislation

Fake but convincing explicit images of pop singer were viewed tens of millions of times on X and Telegram, prompting outcry from US politicians

Ben Beaumont-Thomas

@ben_bt
Fri 26 Jan 2024 13.44 GMT

Taylor Swift pictured earlier this month. Photograph: Ed Zurga/AP

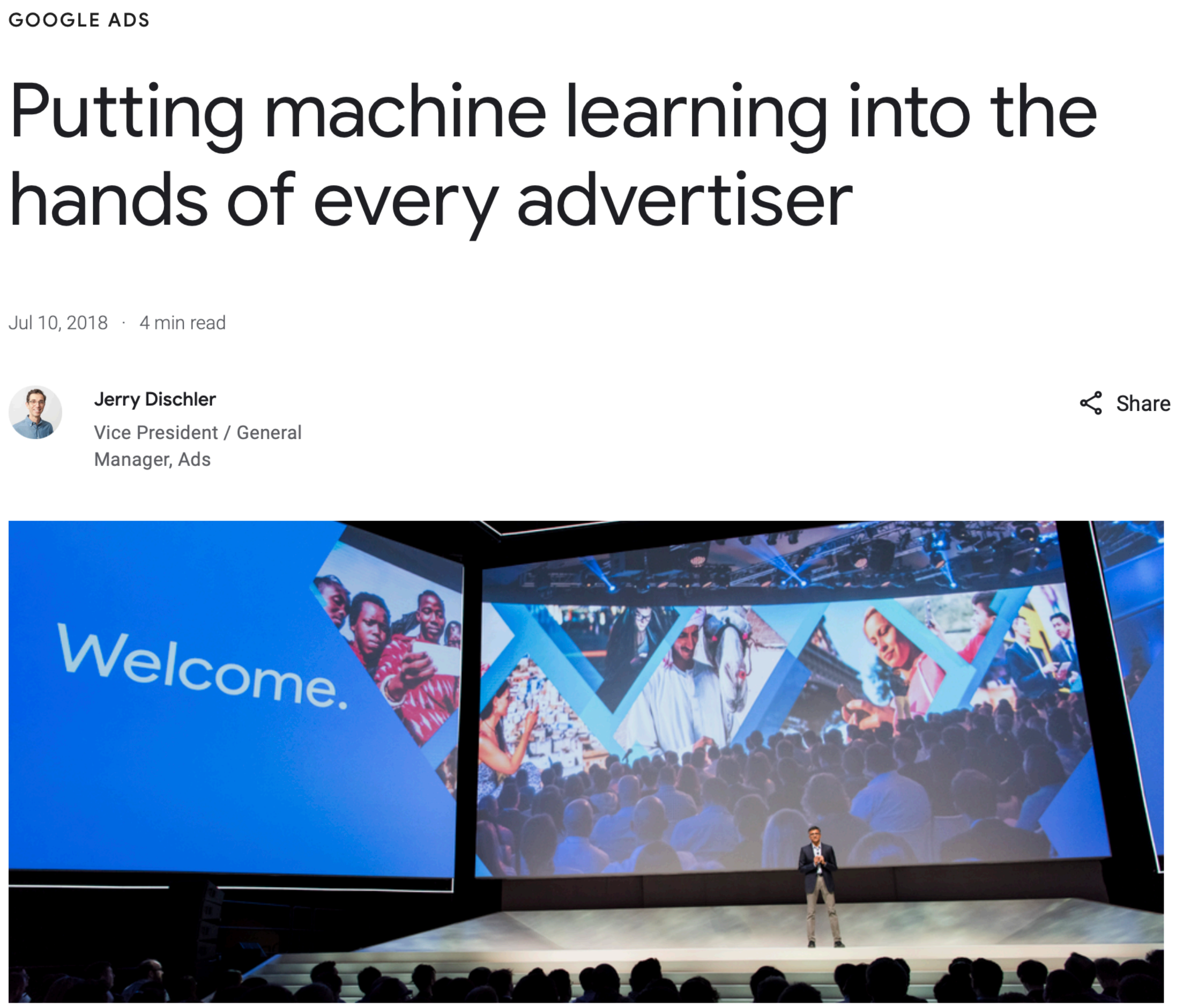
The rapid online spread of deepfake pornographic images of Taylor Swift has renewed calls, including from US politicians, to criminalise the practice, in which artificial intelligence is used to synthesise fake but convincing explicit imagery.

The images of the US popstar have been distributed across social media and seen by millions this week. Previously distributed on the app Telegram, one of the images of Swift hosted on X was seen 47m times before it was removed.

https://www.theguardian.com/music/2024/jan/26/taylor-swift-deepfake-pornography-sparks-renewed-calls-for-us-legislation

Advertising

- Google and Meta control a massive chunk of the world's digital advertising
- They have both invested heavily in machine learning
- An ML model can use **your** internet activity to profile **you!**
- This will allow better targeting of adverts



GOOGLE ADS

Putting machine learning into the hands of every advertiser

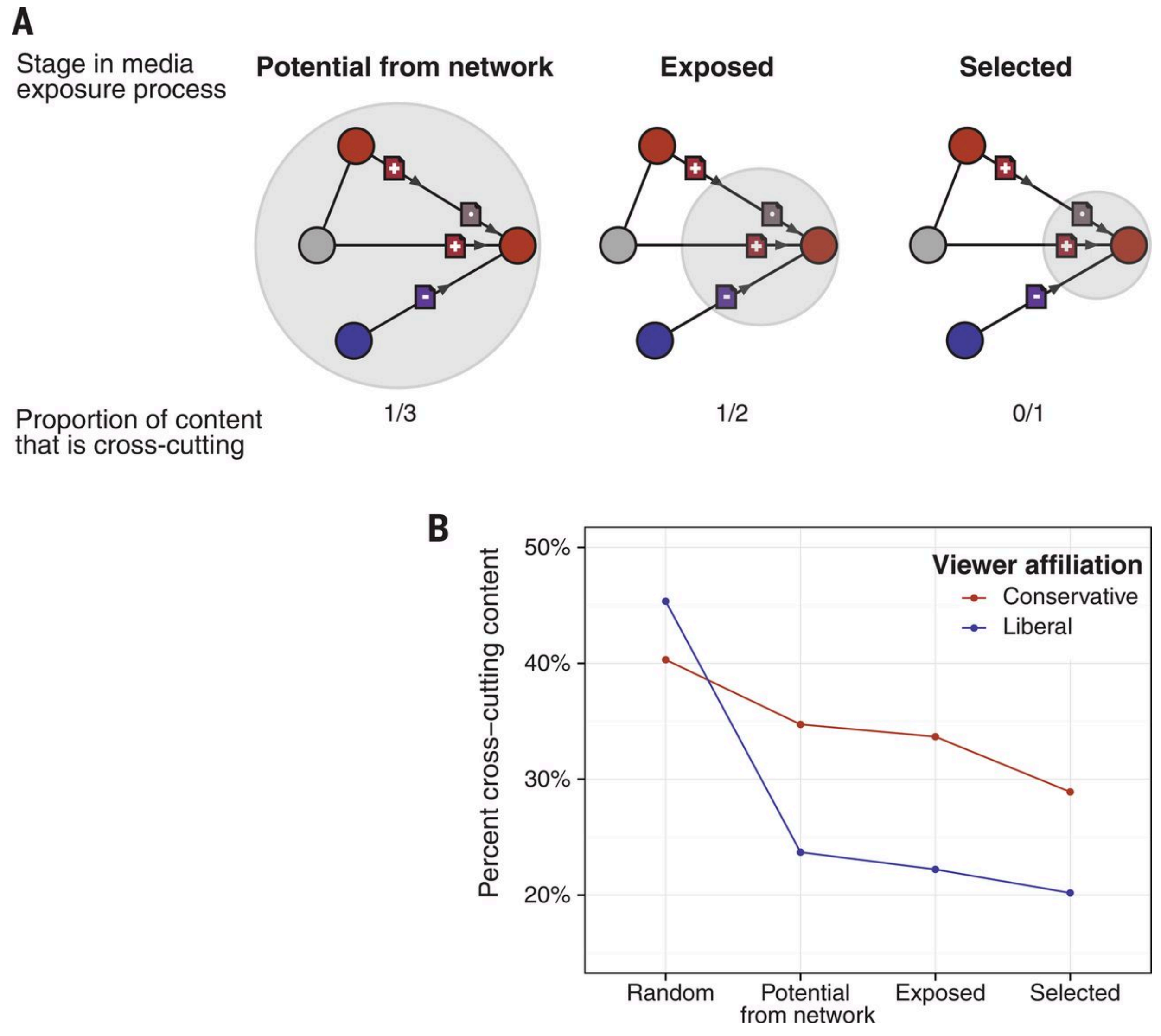
Jul 10, 2018 · 4 min read

Jerry Dischler
Vice President / General Manager, Ads

Share

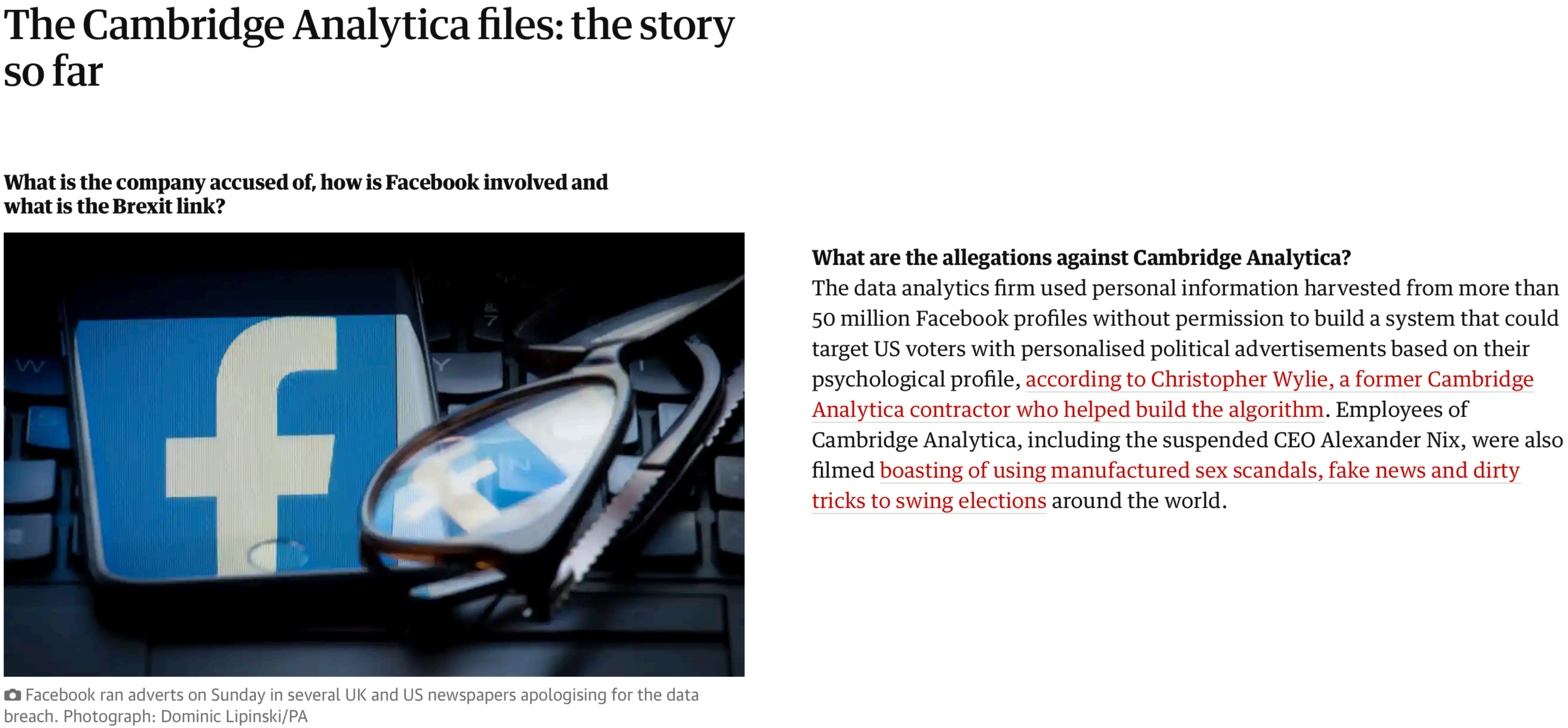
Recommender systems

- Lots of people get their news from social media
- ML models can decide which content to present to users
- Users are presented with content that aligns with their views
- Is this ideal?
- Could this amplify radical views? (…Yes)



https://www.science.org/doi/10.1126/science.aaa1160

Cambridge Analytica



The Cambridge Analytica files: the story so far

What is the company accused of, how is Facebook involved and what is the Brexit link?

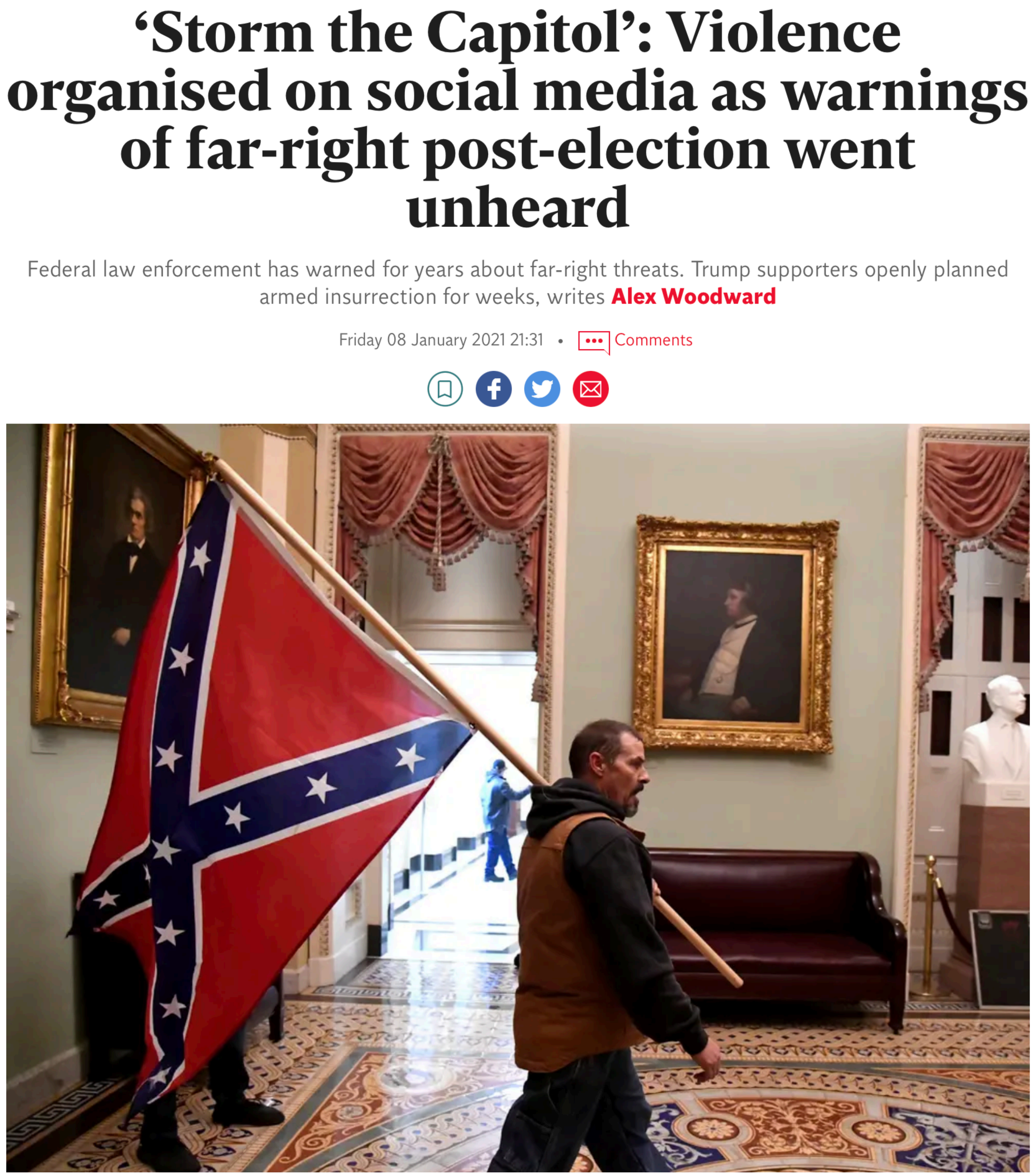
Facebook ran adverts on Sunday in several UK and US newspapers apologising for the data breach. Photograph: Dominic Lipinski/PA

What are the allegations against Cambridge Analytica?

The data analytics firm used personal information harvested from more than 50 million Facebook profiles without permission to build a system that could target US voters with personalised political advertisements based on their psychological profile, according to Christopher Wylie, a former Cambridge Analytica contractor who helped build the algorithm. Employees of Cambridge Analytica, including the suspended CEO Alexander Nix, were also filmed boasting of using manufactured sex scandals, fake news and dirty tricks to swing elections around the world.

https://www.theguardian.com/news/2018/mar/26/the-cambridge-analytica-files-the-story-so-far

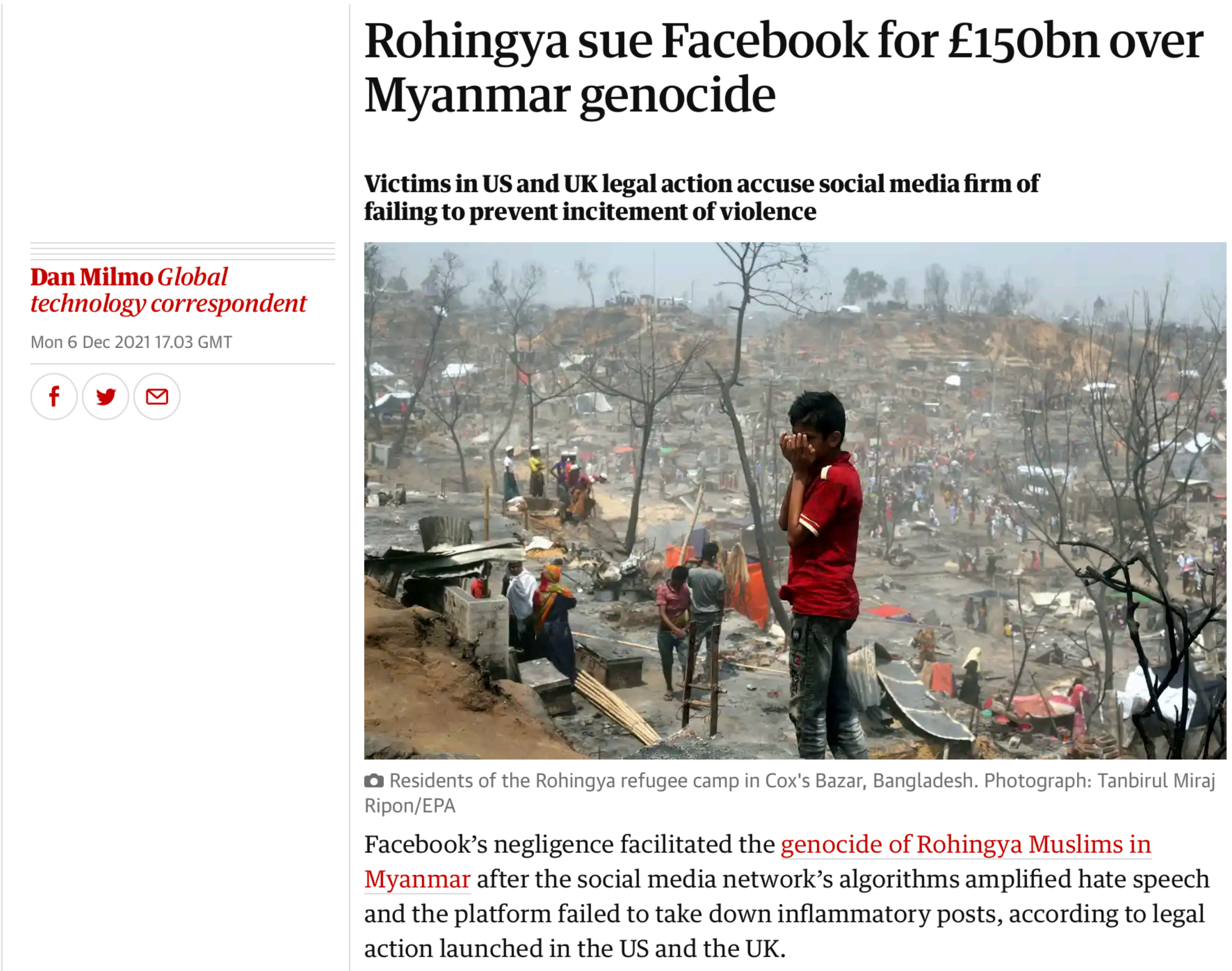
Lighting the fuse?



‘Storm the Capitol’: Violence organised on social media as warnings of far-right post-election went unheard

Federal law enforcement has warned for years about far-right threats. Trump supporters openly planned armed insurrection for weeks, writes **Alex Woodward**

Friday 08 January 2021 21:31 • Comments



Dan Milmo *Global technology correspondent*

Mon 6 Dec 2021 17.03 GMT

Rohingya sue Facebook for £150bn over Myanmar genocide

Victims in US and UK legal action accuse social media firm of failing to prevent incitement of violence

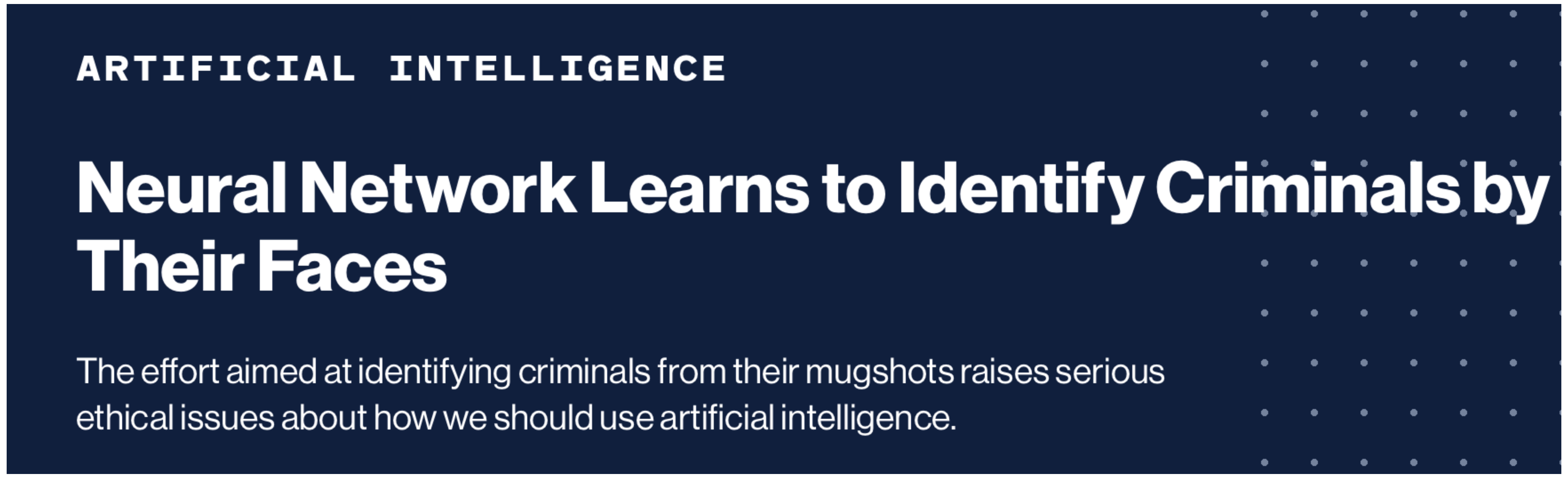
Residents of the Rohingya refugee camp in Cox's Bazar, Bangladesh. Photograph: Tanbirul Miraj Ripon/EPA

Facebook’s negligence facilitated the genocide of Rohingya Muslims in Myanmar after the social media network’s algorithms amplified hate speech and the platform failed to take down inflammatory posts, according to legal action launched in the US and the UK.

https://www.theguardian.com/technology/2021/dec/06/rohingya-sue-facebook-myanmar-genocide-us-uk-legal-action-social-media-violence

https://www.independent.co.uk/news/world/americas/us-politics/capitol-riot-was-openly-organized-on-mainstream-social-media-b1784703.html

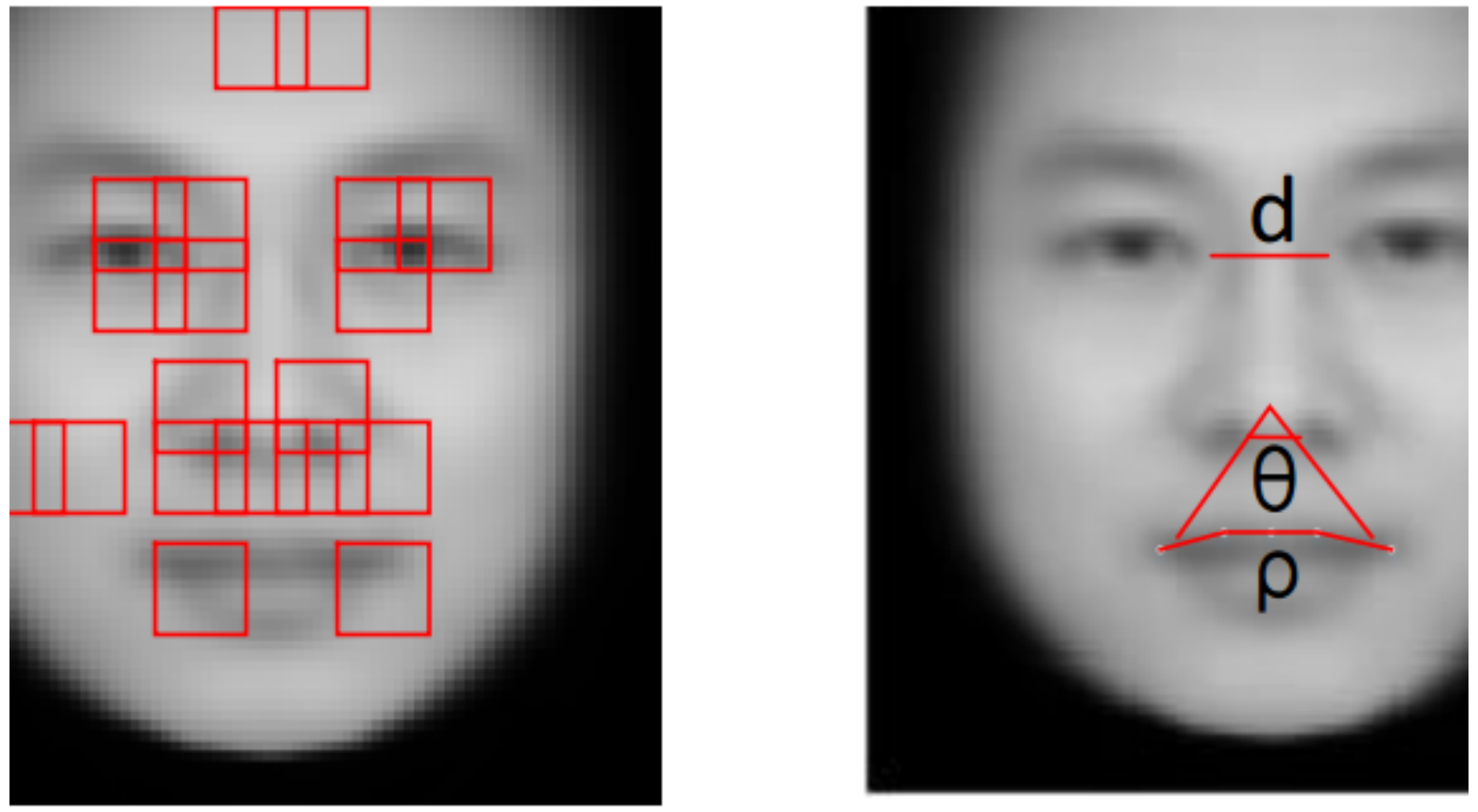
Contentious applications

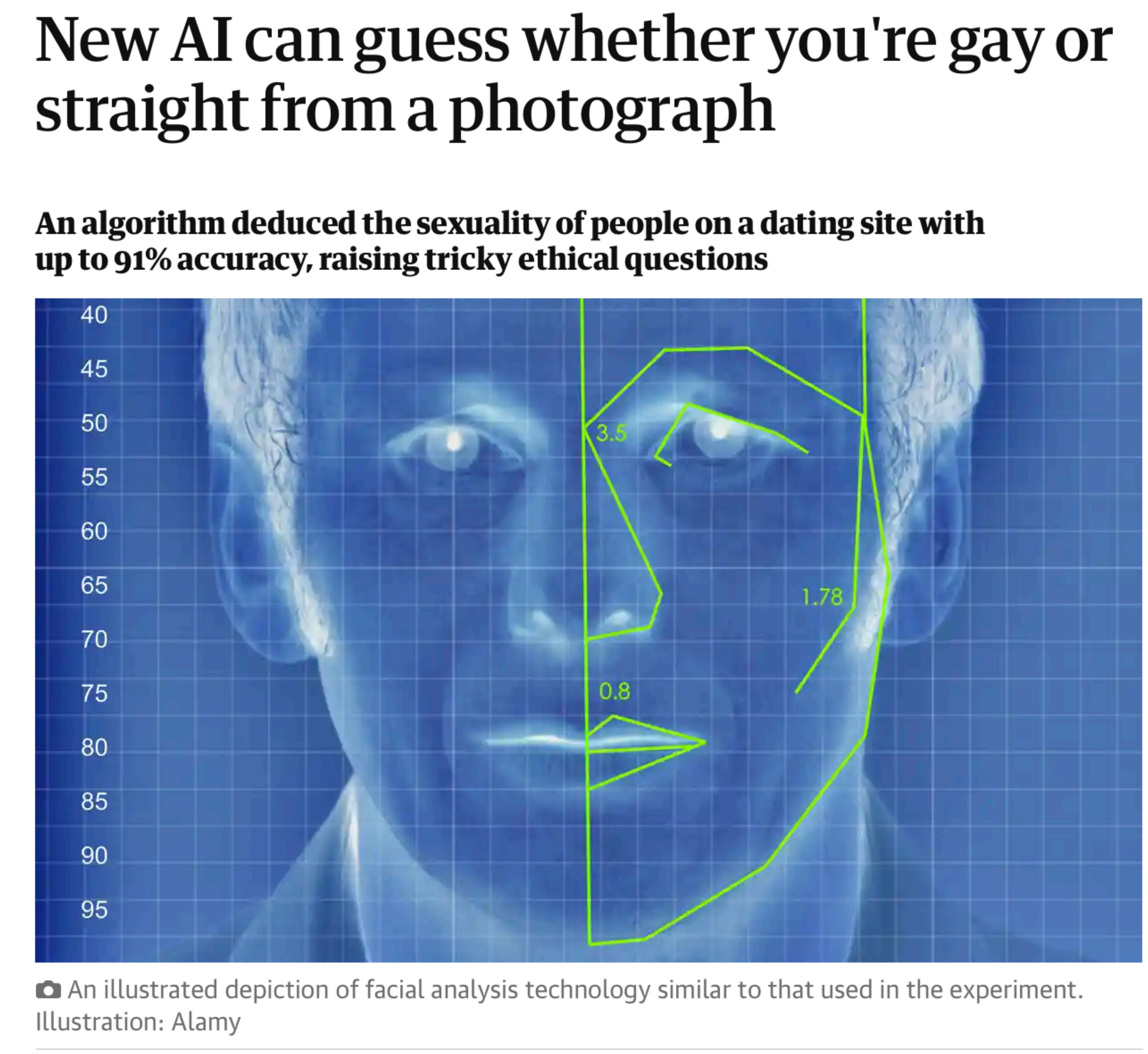


ARTIFICIAL INTELLIGENCE

Neural Network Learns to Identify Criminals by Their Faces

The effort aimed at identifying criminals from their mugshots raises serious ethical issues about how we should use artificial intelligence.





New AI can guess whether you're gay or straight from a photograph

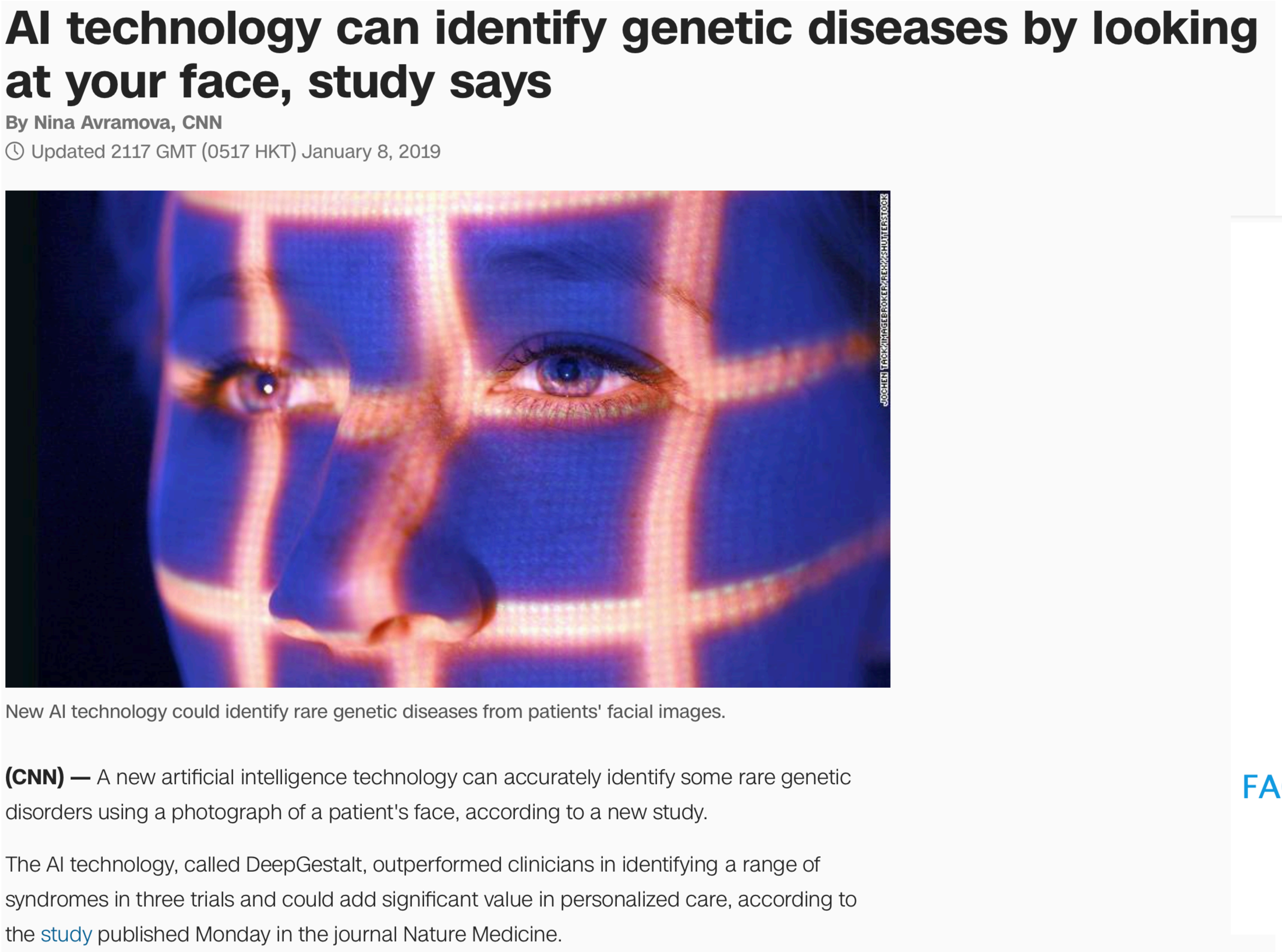
An algorithm deduced the sexuality of people on a dating site with up to 91% accuracy, raising tricky ethical questions

An illustrated depiction of facial analysis technology similar to that used in the experiment. Illustration: Alamy

https://www.technologyreview.com/2016/11/22/107128/neural-network-learns-to-identify-criminals-by-their-faces/

https://www.theguardian.com/technology/2017/sep/07/new-artificial-intelligence-can-tell-whether-youre-gay-or-straight-from-a-photograph

Contentious applications



AI technology can identify genetic diseases by looking at your face, study says

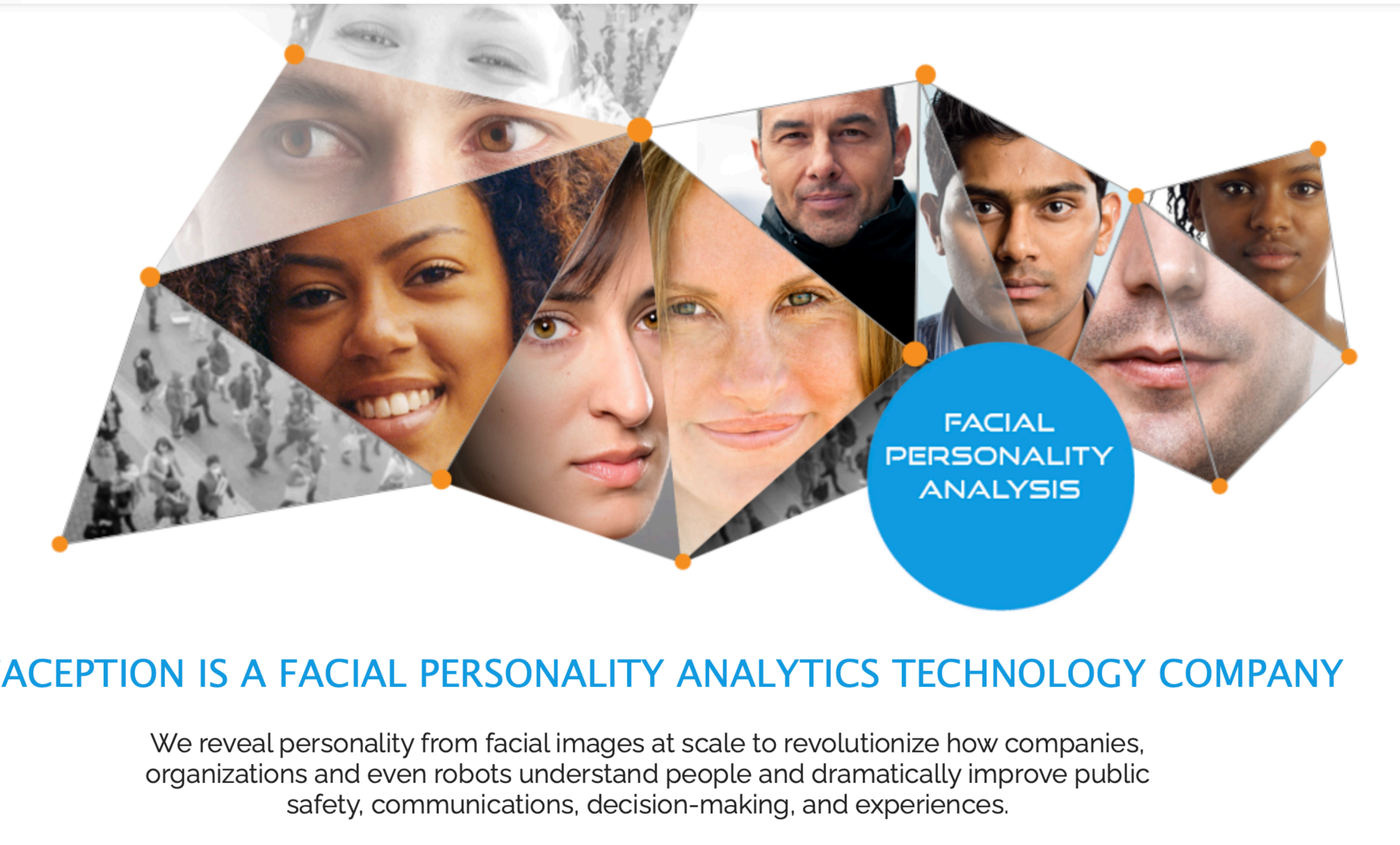
By Nina Avramova, CNN

Updated 2117 GMT (0517 HKT) January 8, 2019

New AI technology could identify rare genetic diseases from patients' facial images.

(CNN) — A new artificial intelligence technology can accurately identify some rare genetic disorders using a photograph of a patient's face, according to a new study.

The AI technology, called DeepGestalt, outperformed clinicians in identifying a range of syndromes in three trials and could add significant value in personalized care, according to the study published Monday in the journal Nature Medicine.



FACIAL PERSONALITY ANALYSIS

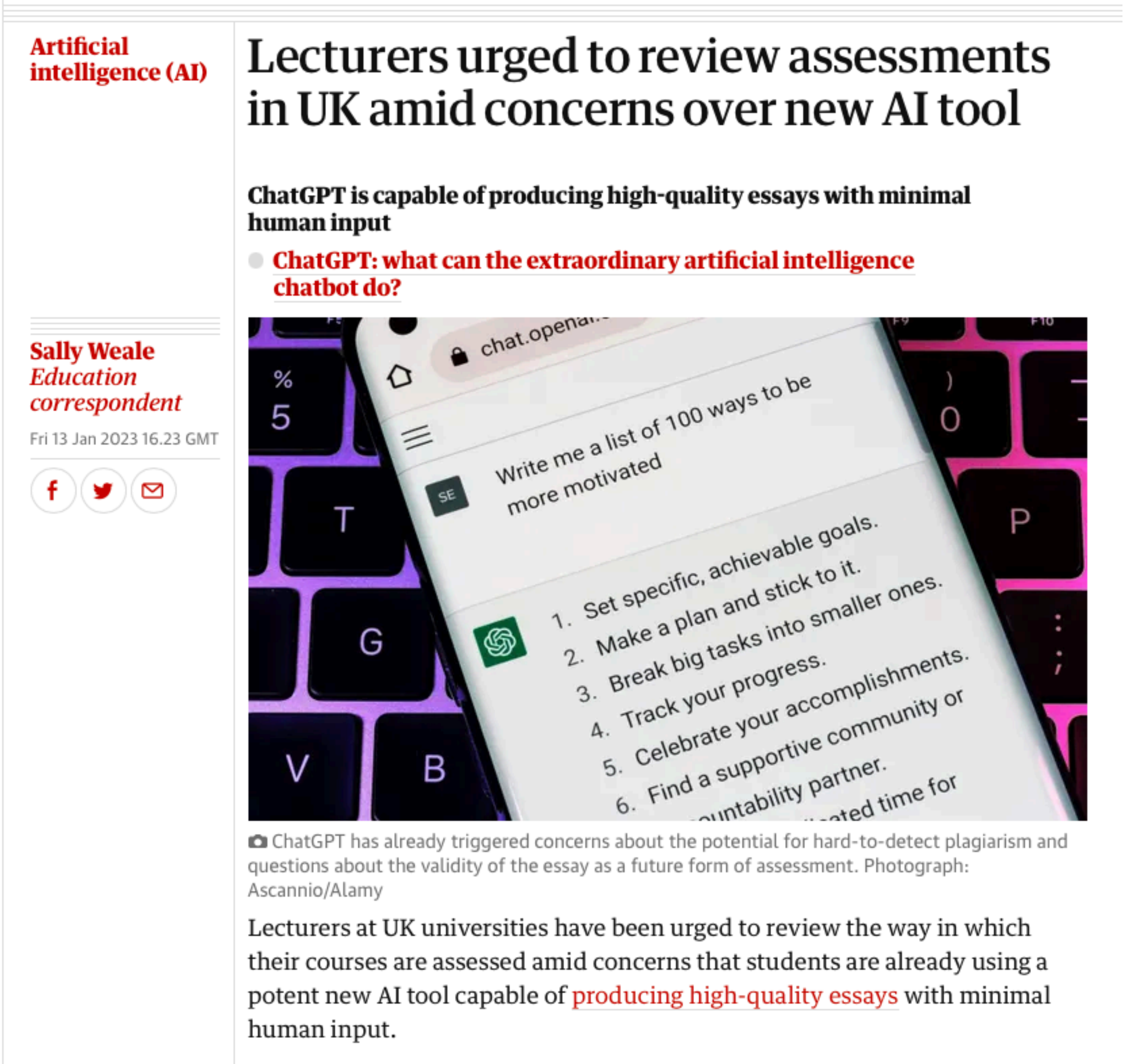
FACEPTION IS A FACIAL PERSONALITY ANALYTICS TECHNOLOGY COMPANY

We reveal personality from facial images at scale to revolutionize how companies, organizations and even robots understand people and dramatically improve public safety, communications, decision-making, and experiences.

https://edition.cnn.com/2019/01/08/health/ai-technology-to-identify-genetic-disorder-from-facial-image-intl/index.html?no-st=1549146304

https://www.faception.com

Plagiarism?



Artificial intelligence (AI)

Lecturers urged to review assessments in UK amid concerns over new AI tool

ChatGPT is capable of producing high-quality essays with minimal human input

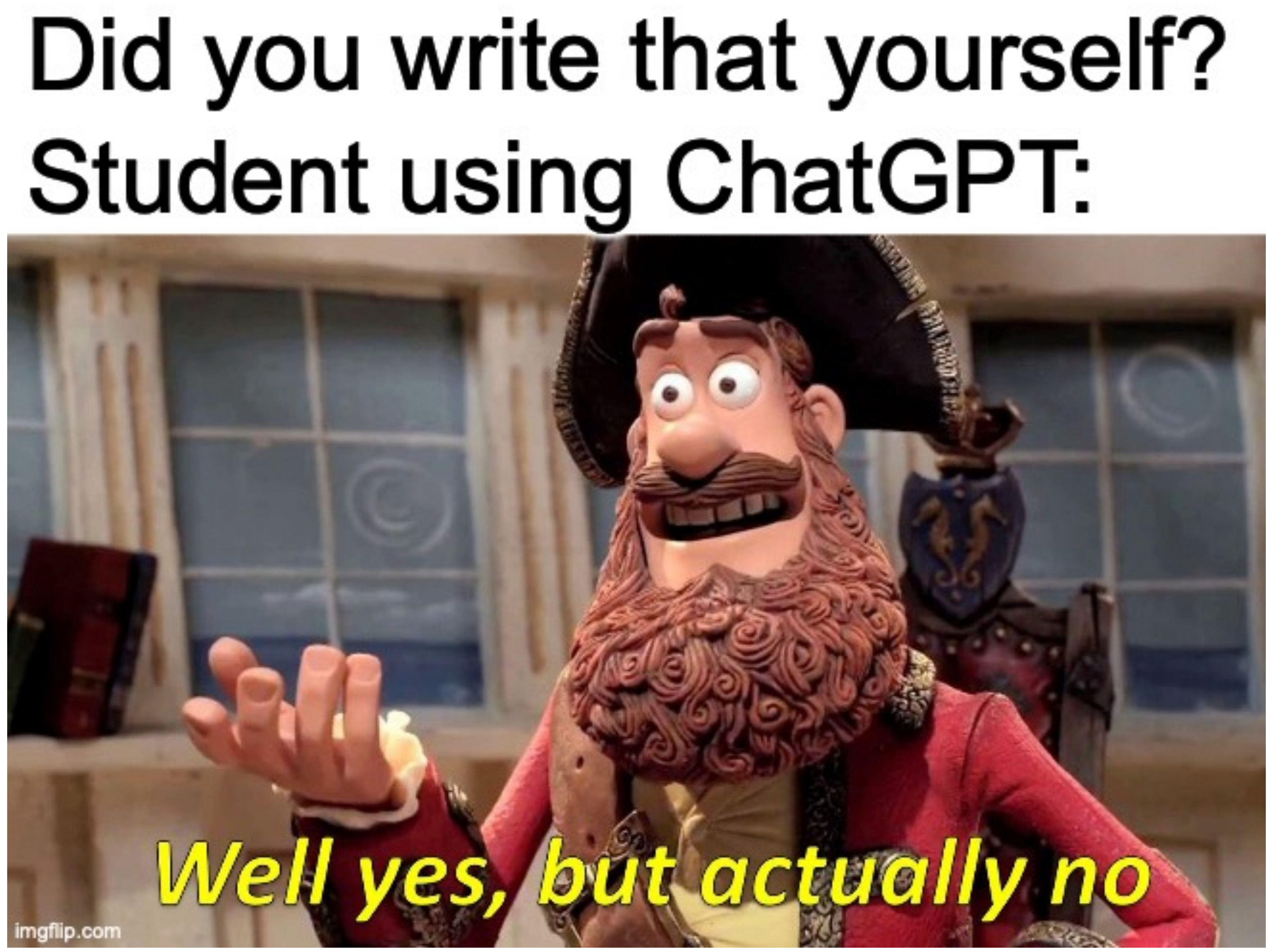
- ChatGPT: what can the extraordinary artificial intelligence chatbot do?

Sally Weale
Education correspondent
Fri 13 Jan 2023 16.23 GMT

chat.openai.
Write me a list of 100 ways to be more motivated
1. Set specific, achievable goals.
2. Make a plan and stick to it.
3. Break big tasks into smaller ones.
4. Track your progress.
5. Celebrate your accomplishments.
6. Find a supportive community or accountability partner.

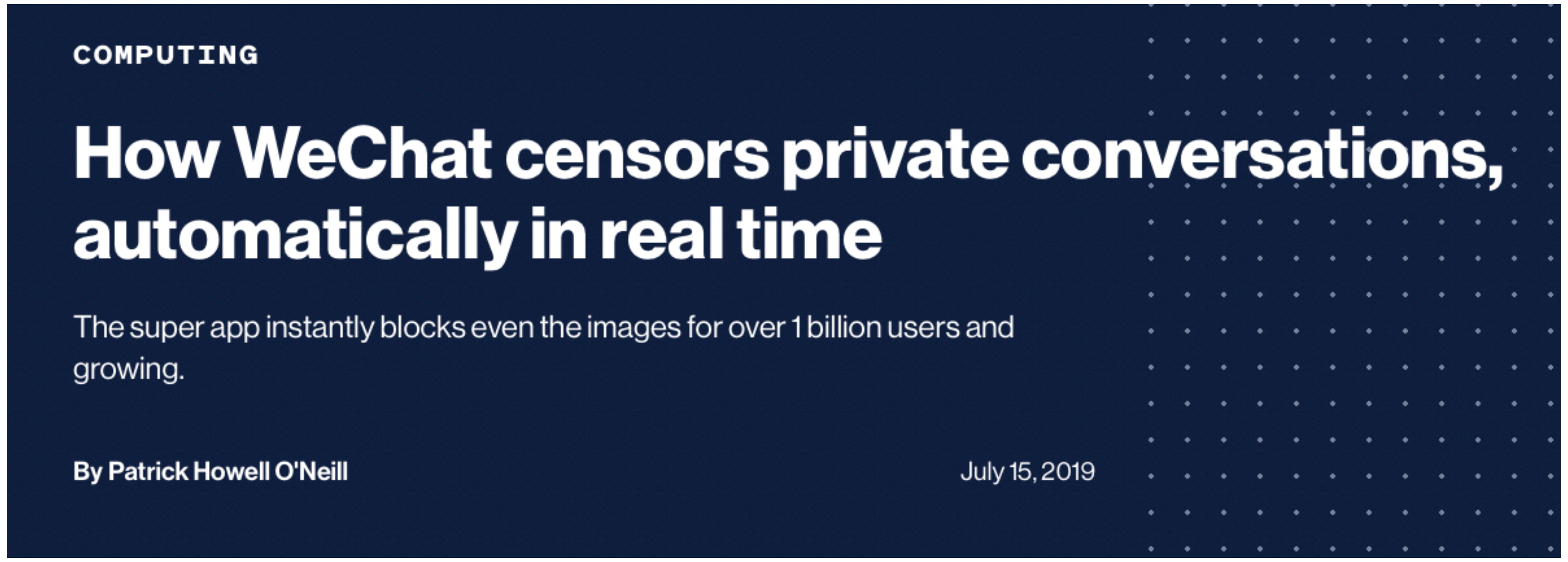
ChatGPT has already triggered concerns about the potential for hard-to-detect plagiarism and questions about the validity of the essay as a future form of assessment. Photograph: Ascannio/Alamy

Lecturers at UK universities have been urged to review the way in which their courses are assessed amid concerns that students are already using a potent new AI tool capable of producing high-quality essays with minimal human input.



https://www.theguardian.com/technology/2023/jan/13/end-of-the-essay-uk-lecturers-assessments-chatgpt-concerns-ai

Censorship and surveillance



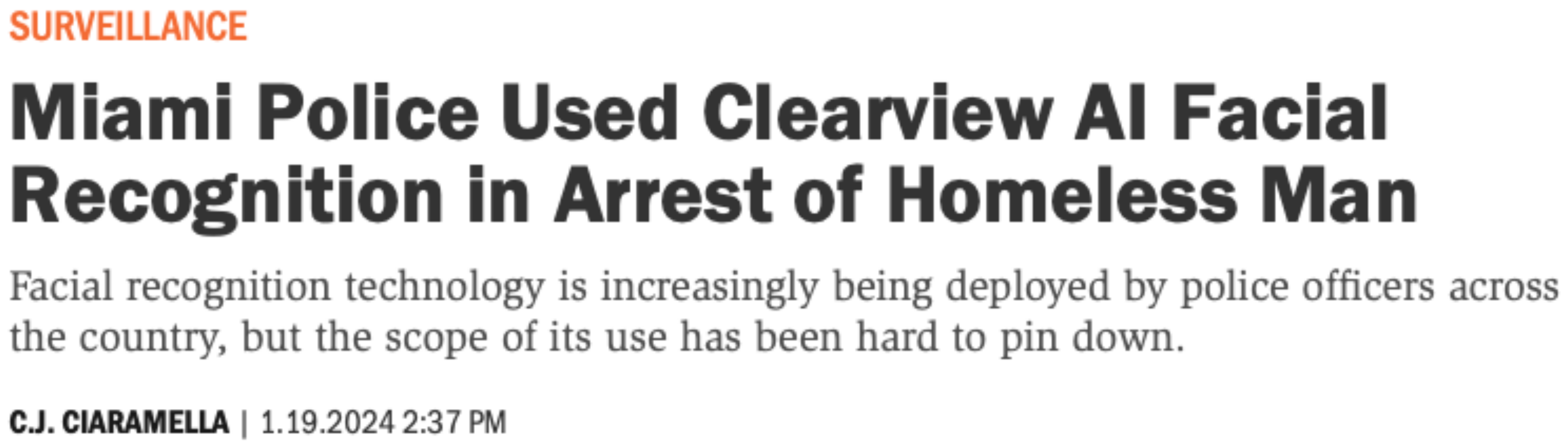
COMPUTING

How WeChat censors private conversations, automatically in real time

The super app instantly blocks even the images for over 1 billion users and growing.

By Patrick Howell O'Neill

July 15, 2019

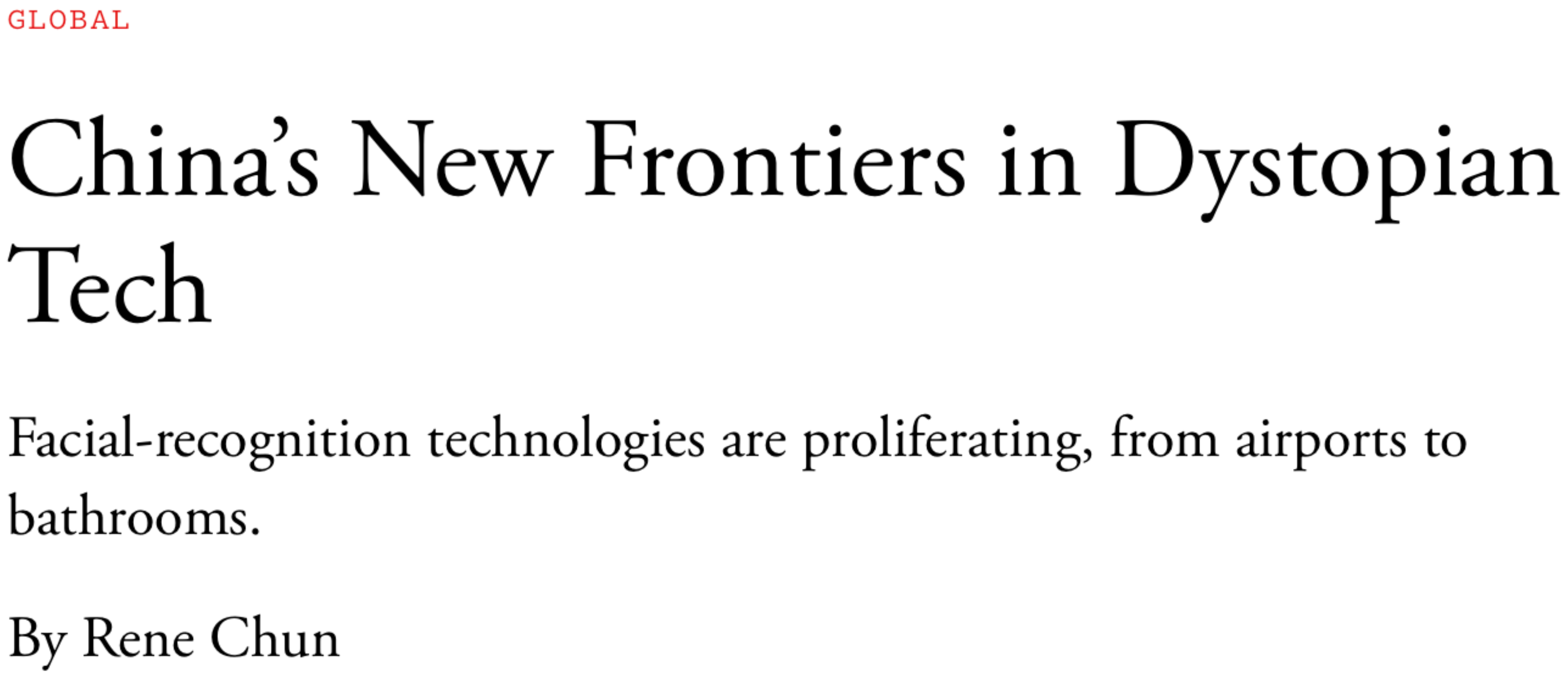


SURVEILLANCE

Miami Police Used Clearview AI Facial Recognition in Arrest of Homeless Man

Facial recognition technology is increasingly being deployed by police officers across the country, but the scope of its use has been hard to pin down.

C.J. CIARAMELLA | 1.19.2024 2:37 PM

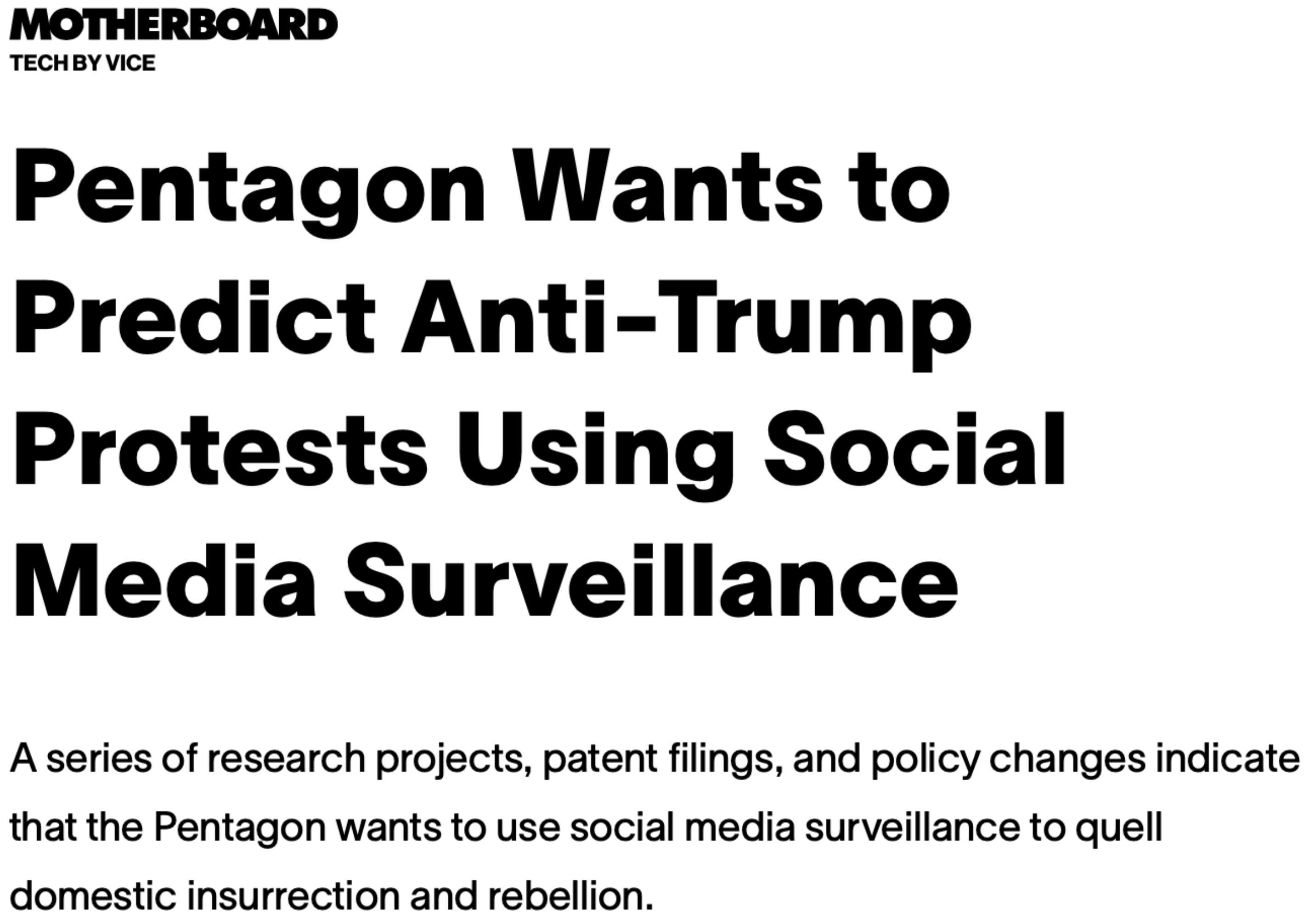


GLOBAL

China's New Frontiers in Dystopian Tech

Facial-recognition technologies are proliferating, from airports to bathrooms.

By Rene Chun



MOTHERBOARD
TECH BY VICE

Pentagon Wants to Predict Anti-Trump Protests Using Social Media Surveillance

A series of research projects, patent filings, and policy changes indicate that the Pentagon wants to use social media surveillance to quell domestic insurrection and rebellion.

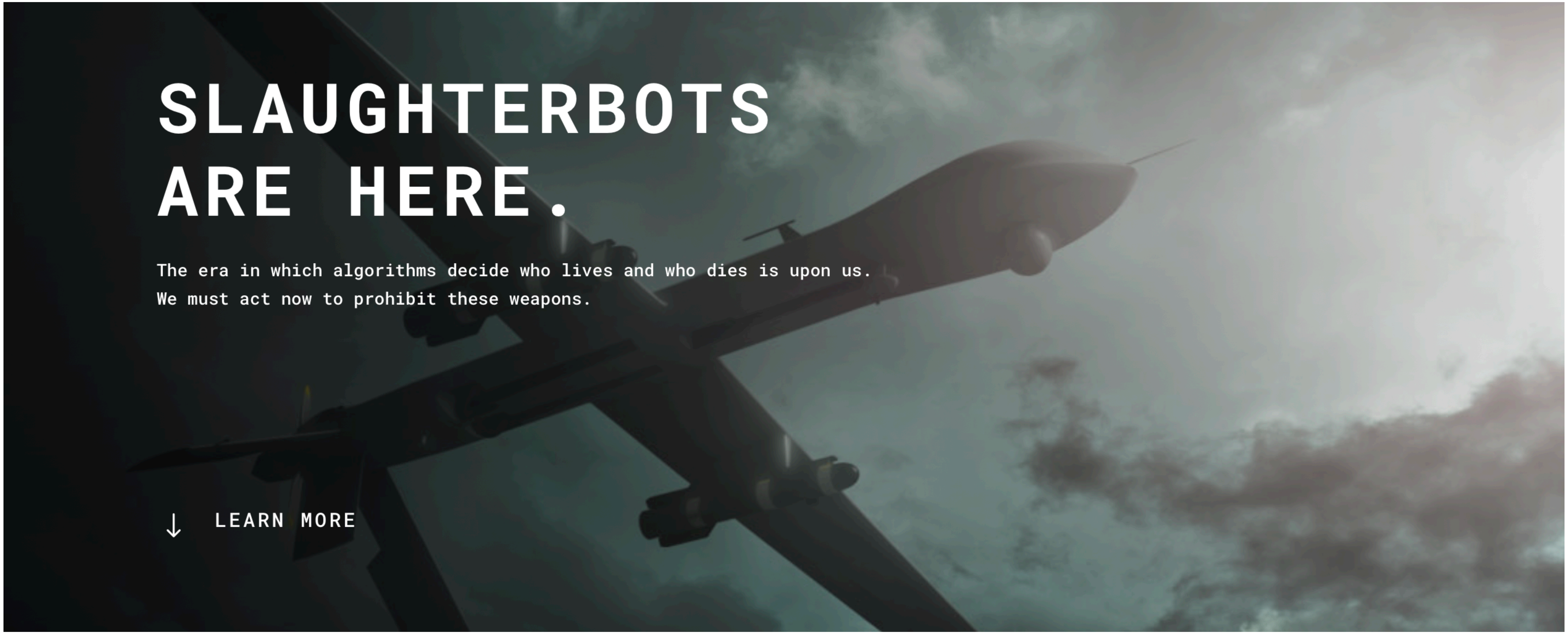
http://tinyurl.com/2s3jjfuz

https://tinyurl.com/4hf77rdt

http://tinyurl.com/yeyvs6dz

https://tinyurl.com/wtzt7me3

Weaponry

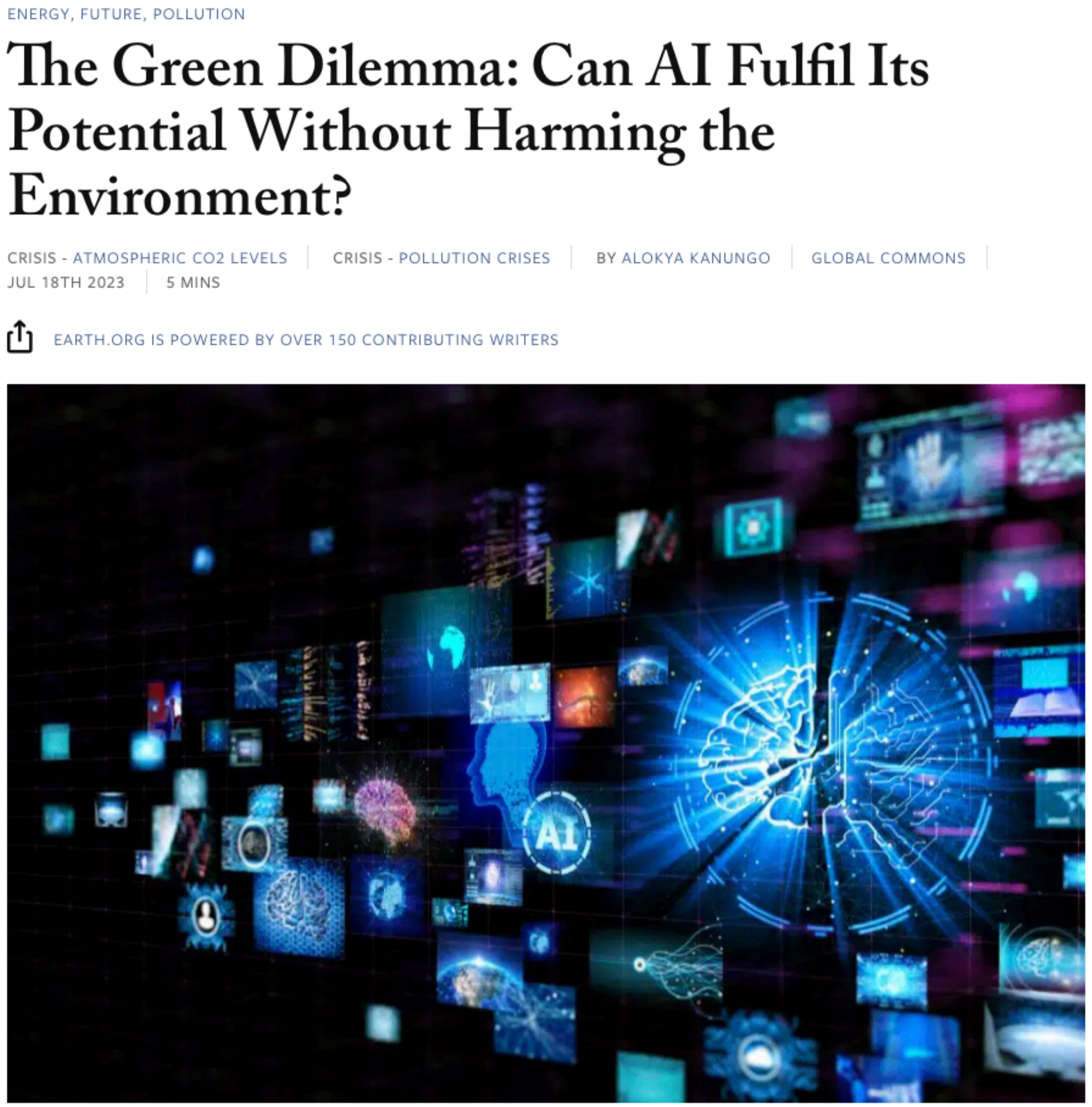


SLAUGHTERBOTS ARE HERE.

The era in which algorithms decide who lives and who dies is upon us.
We must act now to prohibit these weapons.

https://autonomousweapons.org

Accelerating the climate crisis



ENERGY, FUTURE, POLLUTION

The Green Dilemma: Can AI Fulfil Its Potential Without Harming the Environment?

CRISIS - ATMOSPHERIC CO2 LEVELS | CRISIS - POLLUTION CRISES | BY ALOKYA KANUNGO | GLOBAL COMMONS | JUL 18TH 2023 | 5 MINS

EARTH.ORG IS POWERED BY OVER 150 CONTRIBUTING WRITERS

https://earth.org/the-green-dilemma-can-ai-fulfil-its-potential-without-harming-the-environment/

Coursework 1 (20% of course mark)

- You will submit **slides** and a **video presentation** using those slides
- The video should be **5-10 minutes** and **must include your face**
- You should:
    1. introduce a real-world machine learning application
    2. Critique it according to the 5 ethical principles introduced earlier
    3. Recommend what can be done differently
- The full brief, submission instructions, and the marking rubric are available on Learn under the "Assessment" tab (after 1000 today!). **Deadline: 20/2 @ 1600**

There are also exemplars from last year!

Summary

- We have motivated machine learning
- We have looked at some examples of supervised machine learning
- We have looked at ethical issues that arise when applying machine learning