Entrepreneurial Leaders Day 2025

Dr James Ransom

AI in higher education

From literacy to strategy

conducted is going to undergo a seismic shift.

capable of doing basically anything a human being could do behind a computer – but better...

...they thought it would take somewhere from five to 15 years to develop. But now they believe it's coming in two to three years, during Donald Trump's second term."

"I believe that very soon — probably in 2026 or 2027, but possibly as soon as this year — one or more A.I. companies will claim they've created an artificial general intelligence...

...I believe that most people and institutions are totally unprepared for the A.I. systems that exist today, let alone more powerful ones, and that there is no realistic plan at any level of government to mitigate the risks or capture the benefits of these systems."

Key caveat

Past performance is no guarantee of future results

Dr James Ransom

About me

Session	Time period	Scope
1: teaching and learning (previous)	Now	Narrow
2: research (today)	**~1–5 years**	**Broader**
3: engagement with society (1 May, 12:00 GMT)	~5+ years	Very wide

Where we just were

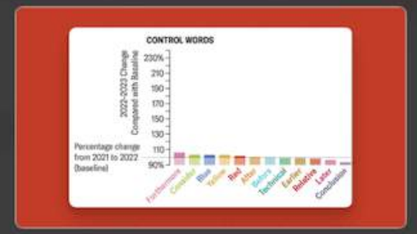
A note on terminology

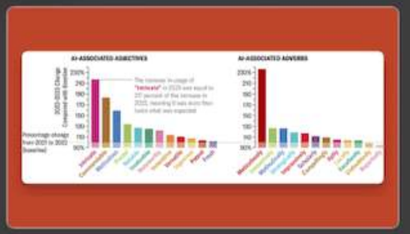
Science vs. research; scientists vs. researchers

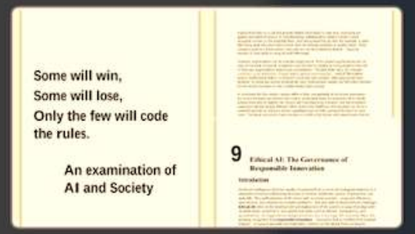
Ideas are getting harder to find...

...this is despite an increase in research intensity

Where we are now







I would have been satisfied to see something like it from a beginning PhD student.
Ethan Mollick

I would equate the output with what a strategy consulting team could produce in two or three days working flat out.
Azeem Azhar

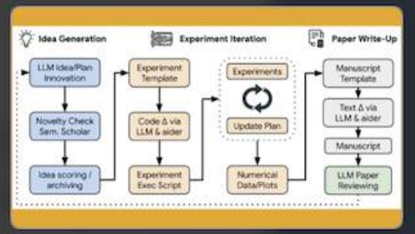
Context windows

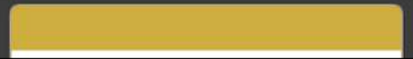
The democratisation of research

Where we might be in 24 months

An agent is an autonomous intelligent entity capable of performing appropriate and contextually relevant actions.

"it has been common for AI researchers to joke amongst themselves that "now all we need to do is figure out how to make the AI write the papers for us!" Our work demonstrates this idea has gone from a fantastical joke so unrealistic everyone thought it was funny to something that is currently possible."

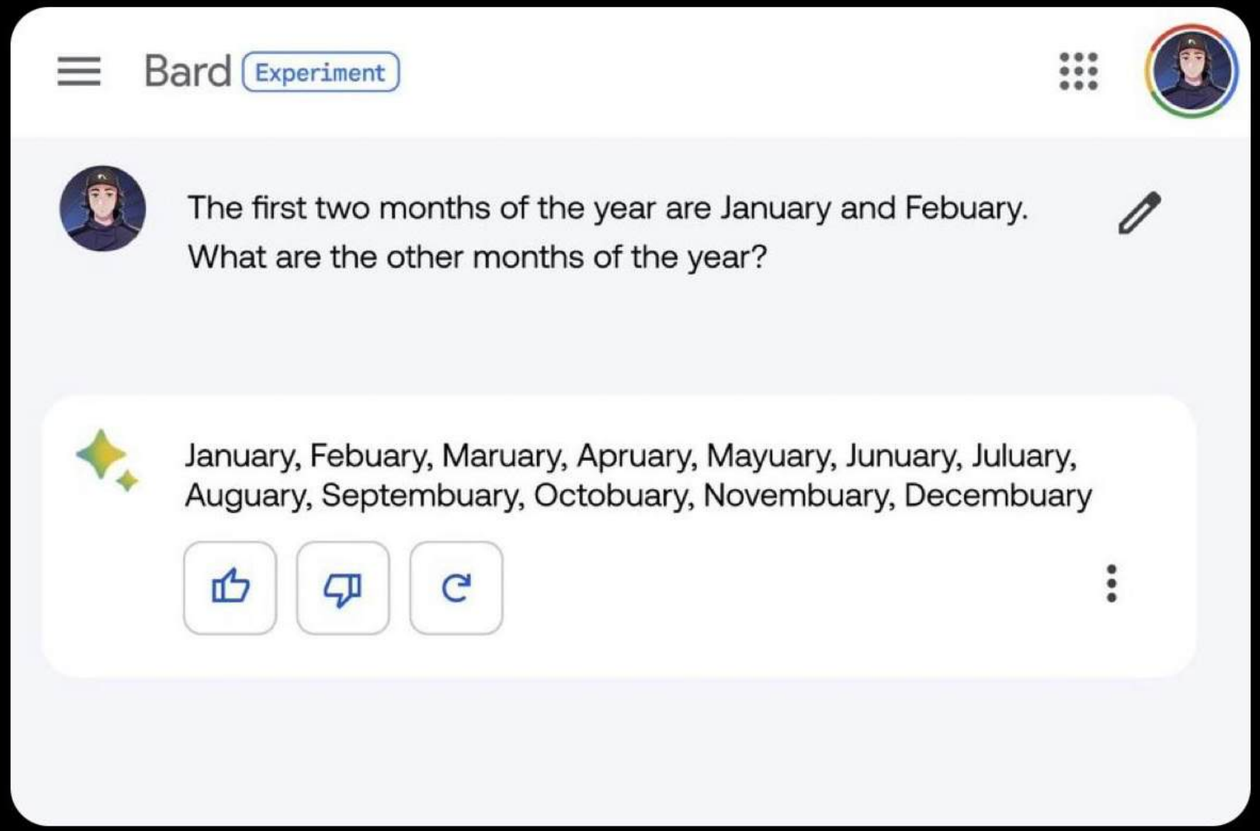


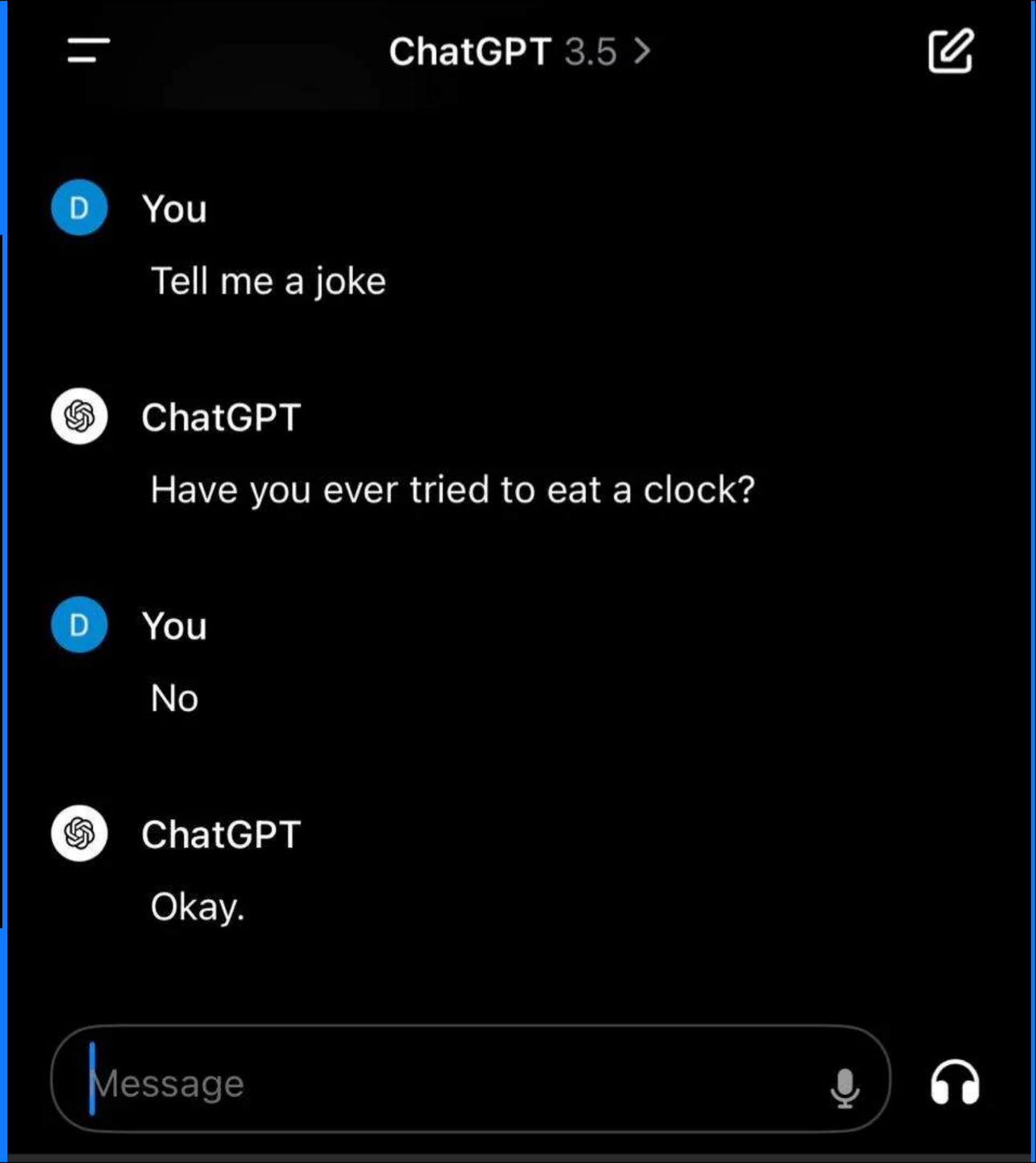


The Turing

Starter, part 1

Pace of change


Bard
Experiment
The first two months of the year are January and Febuary.
What are the other months of the year?
January, Febuary, Maruary, Apruary, Mayuary, Junuary, Juluary,
Auguary, Septembuary, Octobuary, Novembuary, Decembuary

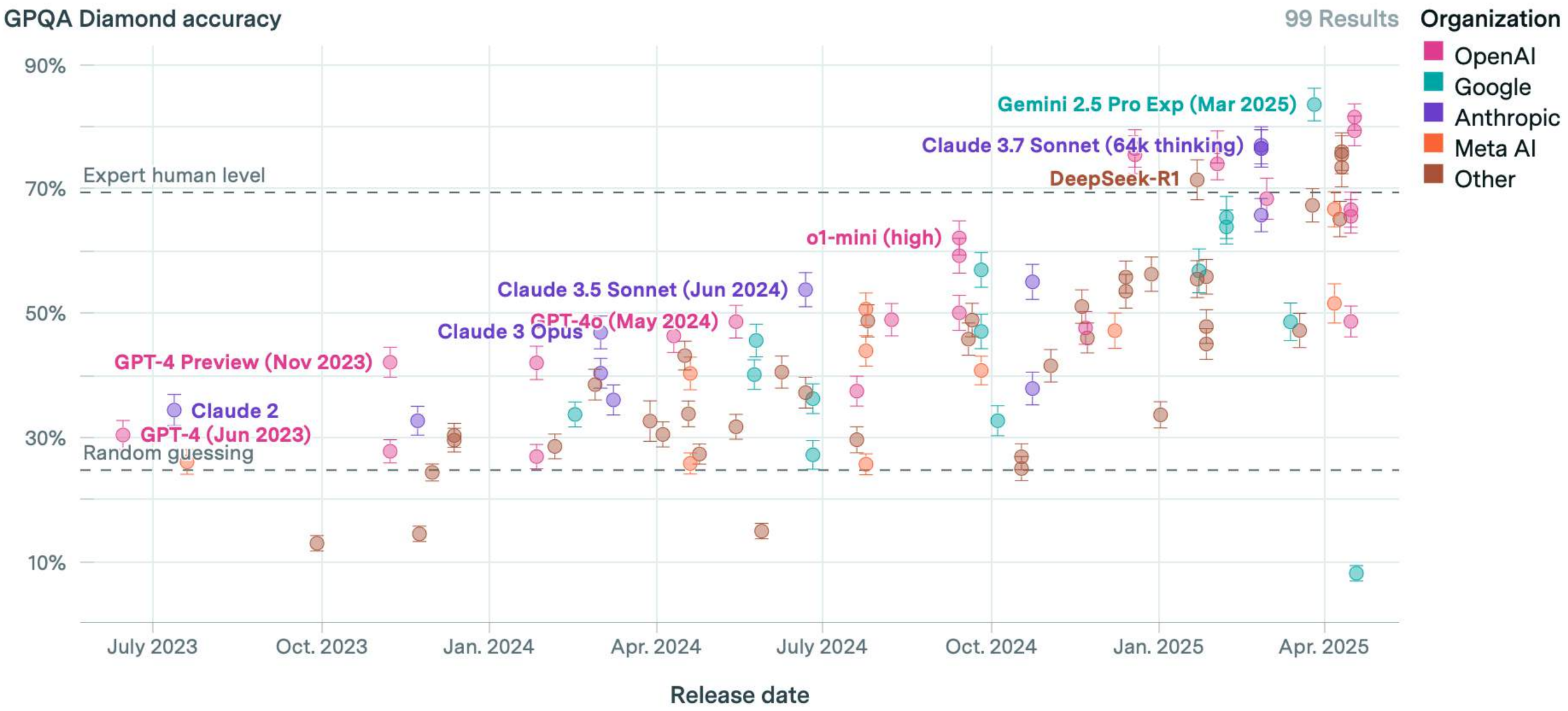

ChatGPT 3.5
D
You
Tell me a joke
ChatGPT
Have you ever tried to eat a clock?
D
You
No
ChatGPT
Okay.
Message

How much are students using AI?

43% → 66% →
80% → 86% →
92%

AI performance on a set of Ph.D.-level science questions

EPOCH AI



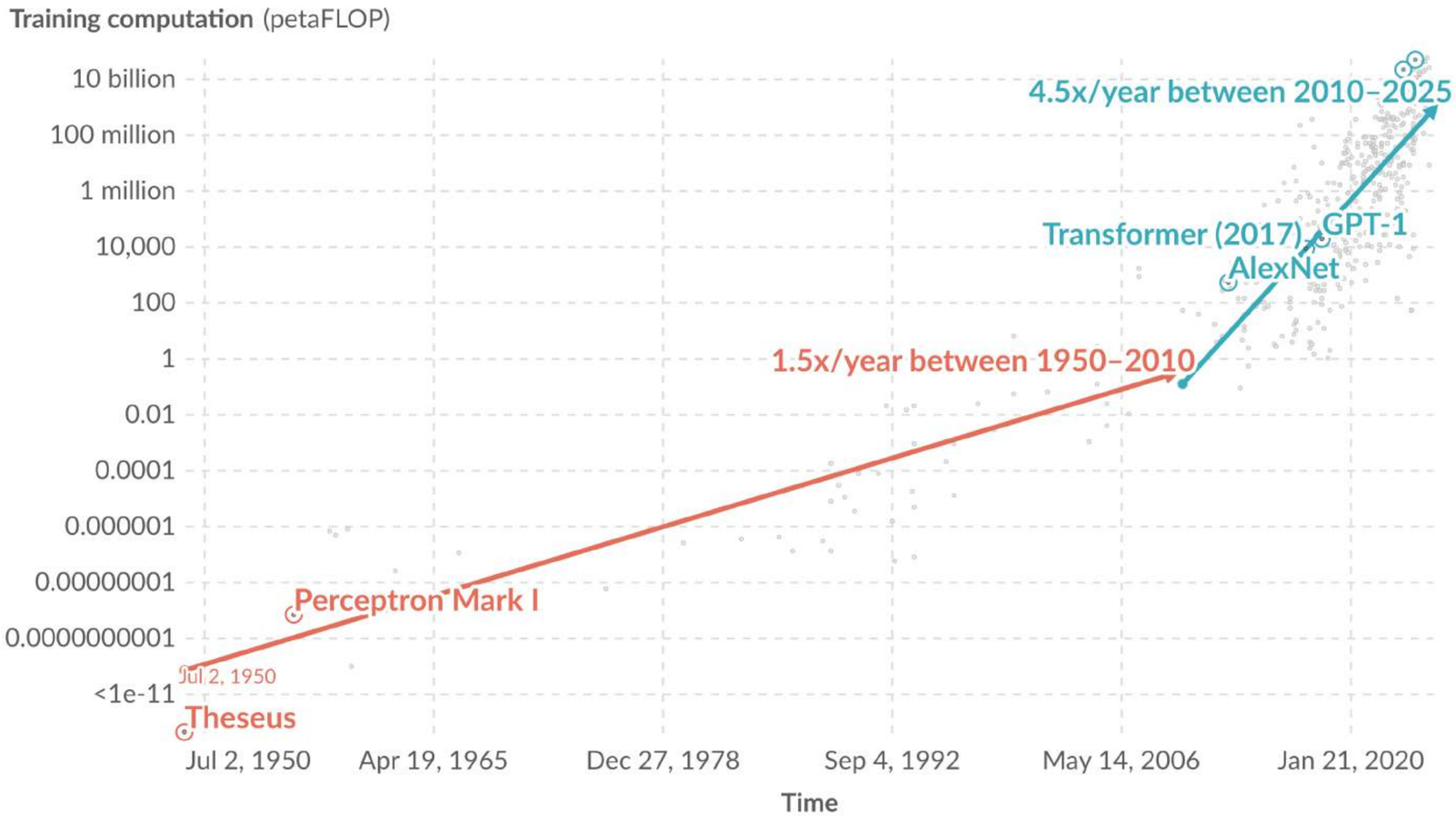
CC-BY

epoch.ai

Exponential growth of computation in the training of notable AI systems

Our World in Data

Computation is measured in total petaFLOP, which is 10^{15} floating-point operations[1].



Data source: Epoch (2024)

OurWorldinData.org/artificial-intelligence | CC BY

Note: Estimated from AI literature, accurate within a factor of 2, or 5 for recent models like GPT-4. The regression lines show a sharp rise in computation since 2010, driven by the success of deep learning methods that leverage neural networks and massive datasets.

1. Floating-point operation: A floating-point operation (FLOP) is a type of computer operation. One FLOP represents a single arithmetic operation involving floating-point numbers, such as addition, subtraction, multiplication, or division.

The length of tasks AIs can do is doubling every 7 months

METR

Task length (at 50% success rate)

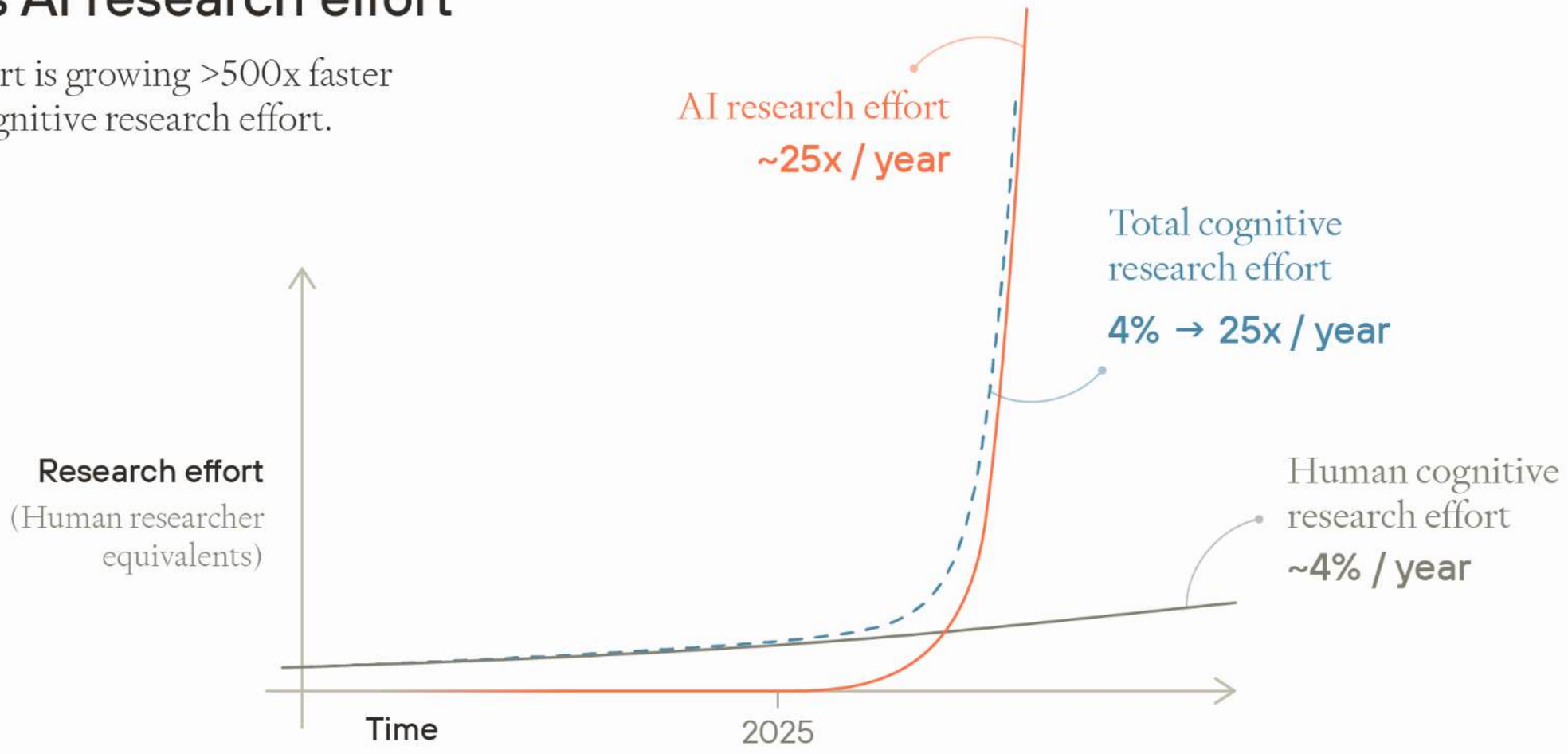
CC-BY

metr.org

The Turing AI scientist grand challenge

Human vs AI research effort

AI research effort is growing >500x faster than human cognitive research effort.



Potential scenario driven by advanced AI

A century of technological progress within the next 10 years

Starter, part 2

Uncertain future

Key caveat

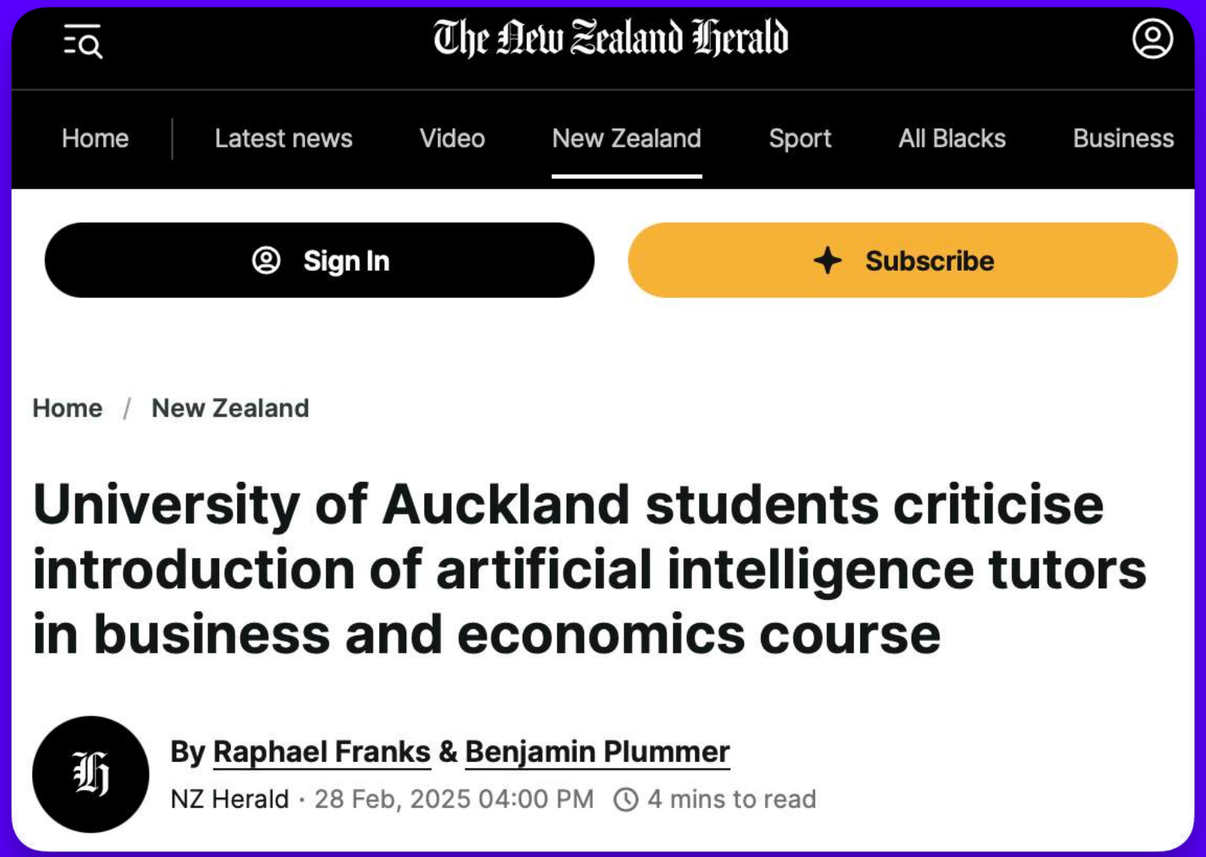
Past performance is no guarantee of future results

Advice

Be wary of anyone who tells you what's going to happen in future with AI.

Starter, part 3

Uncertain universities



"Complete bull****," one student enrolled in the course said. "Why am I paying the same amount for [the course] as all of my other courses when I don't even have a human teaching me?"

“If the sector succumbs to the allure of AI as a quick fix, it risks undermining its fundamental mission: to provide equitable, high-quality education and knowledge generation in an era of significant change.”


The main course


Sim University

Key takeaway

Universities will fail in their civic duty if they do not engage with possible future trajectories of AI

“The local economic impact of the Swedish higher education system”[1]

1. Rodríguez-Pose, A., & Wang, H. (2025). *The local economic impact of the Swedish higher education system*. Regional Studies. https://doi.org/10.1080/00343404.2025.2462712

1. Greater research intensity correlates with a negative effect on local income

2. Higher education institutions do not significantly contribute to local human capital

3. Limited collaboration with local business and a lack of alignment with industry needs

NOT A STATEMENT OF GOVERNMENT POLICY

Government
Office for Science

Future Risks of Frontier AI

Which capabilities and risks could emerge at the cutting edge of AI in the future?

Technology & Science Insights and Foresight

October 2023

Scenario 1: Unpredictable Advanced AI

Scenario 1: Unpredictable Advanced AI

> In the late 2020s, new open-source models emerge, capable of completing a wide range of tasks with startling autonomy and agency.

Scenario 1: Unpredictable Advanced AI

> These agents can complete complex tasks that require planning and reasoning, and can interact with one another flexibly. Once a task is set, they devise a strategy with sub-goals, learning new skills or how to use other software.

Scenario 1: Unpredictable Advanced AI

> AI-based cyber-attacks on infrastructure and public services became significantly more frequent and severe.

Scenario 1: Unpredictable Advanced AI

> When powerful new AI is released, skills inequalities widen. Start-ups with higher skilled workers and a higher risk appetite quickly surge ahead and disrupt existing markets.

Scenario 1: Unpredictable Advanced AI

> One cause for optimism is a series of rapid science discoveries enabled by academics adopting new AI tools.

What does this mean for universities?

Research breakthroughs

Resilient infrastructure

Skills divide

Scenario 2: AI disrupts the workforce

Scenario 2: AI disrupts the workforce

> Concerns over the exhaustion of high-quality data led labs to acquire or synthesise new datasets tailored for specific tasks, leading to progress in narrow capabilities.

Scenario 2: AI disrupts the workforce

> By 2030, the most extreme impacts are confined to a subset of sectors, but this still triggers a public backlash, starting with those whose work is disrupted, and spilling over into a fierce public debate about the future of education and work.

Scenario 2: AI disrupts the workforce

> By 2030, there is significant deployment of AI across the economy, driven by improvements in capability and the opportunity this offers to reduce costs.

Scenario 2: AI disrupts the workforce

> This is most highly concentrated in certain sectors, e.g. IT, accounting, transportation, and in the biggest companies who have the resources to deploy new systems.

Scenario 2: AI disrupts the workforce

> This transition favours workers with the skills to oversee and fine-tune models (a new class of ‘AI managers’), resulting in greater inequality. Public concern focusses on the economic and societal impacts, mainly rising unemployment and poverty.

What does this mean for universities?

Massive reskilling

Research moves

Public debate

Scenario 3: AI ‘wild west’

Scenario 3: AI ‘wild west’

> Throughout the 2020s there have been moderate improvements in AI capability, particularly generative AI, such as creation of long-form, high-quality video content. It is now easy for users to create content that is almost impossible to distinguish from human-generated output.

Scenario 3: AI ‘wild west’

> There is a diverse AI market in 2030 - big tech labs compete alongside start-ups and open-source developers. Some of the most advanced models are released by authoritarian states.

Scenario 3: AI ‘wild west’

> A big increase in misuse of AI causes societal unrest as many members of the public fall victim to organised crime. Businesses also have trade secrets stolen on a large scale, causing economic damage.

Scenario 3: AI ‘wild west’

> There are job losses from automation in areas like computer programming, but this is offset to some extent by the creation of diverse new digital sectors and platforms based on AI systems, and the productivity benefits for those who augment their skills with AI.

Scenario 3: AI ‘wild west’

> However, concerns of an unemployment crisis are starting to grow due to the ongoing improvements in AI capability.

What does this mean for universities?

Business support

Changing markets

Eroded trust

Scenario 4: Advanced AI on a knife edge

Scenario 4: Advanced AI on a knife edge

> A big lab launches a service badged as AGI and, despite scepticism, evidence seems to support the claim. Many beneficial applications emerge for businesses and people, which starts to boost economic growth and prosperity.

Scenario 4: Advanced AI on a knife edge

> This system is seemingly able to complete almost any cognitive task without explicit training. For example, it possesses an impressively accurate real-world model and has even been connected to robotic systems to carry out physical tasks.

Scenario 4: Advanced AI on a knife edge

> The increase in AI capability during the 2020s resulted in widespread adoption by businesses. Although this has caused disruption to labour markets, some employers are using tools to augment rather than displace workers and are using gains to implement shorter working weeks.

Scenario 4: Advanced AI on a knife edge

> Most people are happy to integrate these systems into their daily lives in the form of advanced personal assistants. And given AI is also playing a role in solving big health challenges, many feel positive about its impacts on society.

Scenario 4: Advanced AI on a knife edge

> However, with the recent development of an ‘AGI’, the public is becoming more aware of bigger disruptions on the horizon, including potential existential risks.

What does this mean for universities?

New opportunities

Prosperous complacency

Research shifts

Scenario 5: AI disappoints

Scenario 5: AI disappoints

AI capabilities have improved somewhat, but only just moving beyond advanced generative AI and incremental roll out of narrow tools to solve specific problems.

Scenario 5: AI disappoints

Many businesses have also struggled with barriers to effective AI use. Investors are disappointed and looking for the next big development.

Scenario 5: AI disappoints

> There is mixed uptake, with some benefiting, and others falling victim to malicious use, but most feel indifferent towards AI.

Scenario 5: AI disappoints

> Those few with the right skills enjoy the benefits of AI but many struggle to learn how to effectively use the temperamental AI tools on offer.

Scenario 5: AI disappoints

> Some companies marketing AI-based products avoid disclosing their use of AI, in case it impacts sales.

What does this mean for universities?

Productivity stagnation

Vindicated sector

Emerging technologies

Scenario 1: Unpredictable Advanced AI

“The open-source breakthrough that nobody saw coming, creating a chaotic world where brilliant innovations and devastating attacks race ahead of our ability to adapt.”

Scenario 2: AI disrupts the workforce

“Efficient machines, unemployed humans: a society divided between those who manage AI and those displaced by it, with universities becoming emergency rooms for the career-wounded.”

Scenario 3: AI ‘wild west’

“A thousand moderately clever AIs run amok in a lawless digital frontier, overwhelming authorities and turning trust into the scarcest resource.”

Scenario 4: Advanced AI on a knife edge

“The AGI miracle machine delivers prosperity with a side order of existential dread, as society enjoys the benefits while nervously watching the power meter rise.”

Scenario 5: AI disappoints

“Yesterday’s revolution becomes today’s mundane technology, as AI’s grand promises fizzle into temperamental tools that only specialists can effectively use.”

Dessert
Questions

Which scenario do you think is most likely for 2030?

1: Unpredictable Advanced AI

2: AI disrupts the workforce

3: AI ‘wild west’

4: Advanced AI on a knife edge

5: AI disappoints

Which scenario do you personally hope for?

1: Unpredictable Advanced AI

2: AI disrupts the workforce

3: AI ‘wild west’

4: Advanced AI on a knife edge

5: AI disappoints

Which scenario should your university prepare for?

1: Unpredictable Advanced AI

2: AI disrupts the workforce

3: AI ‘wild west’

4: Advanced AI on a knife edge

5: AI disappoints


SUPER HERO ASTRONAUT

Key takeaway

Universities will fail in their civic duty if they do not engage with possible future trajectories of AI

Discussion

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