



International Actuarial Association
Association Actuarielle Internationale

AI: Is there a future for actuaries?

Charles Cowling
President IAA

Helsinki, February 2024

AI – Is there a future for Actuaries?

1. Background to AI

- Why AI matters to everyone here today
- What AI can already do ... and what it can't (yet!)

2. What AI might mean for Actuaries

- The future is in our hands: How might AI transform actuarial work?

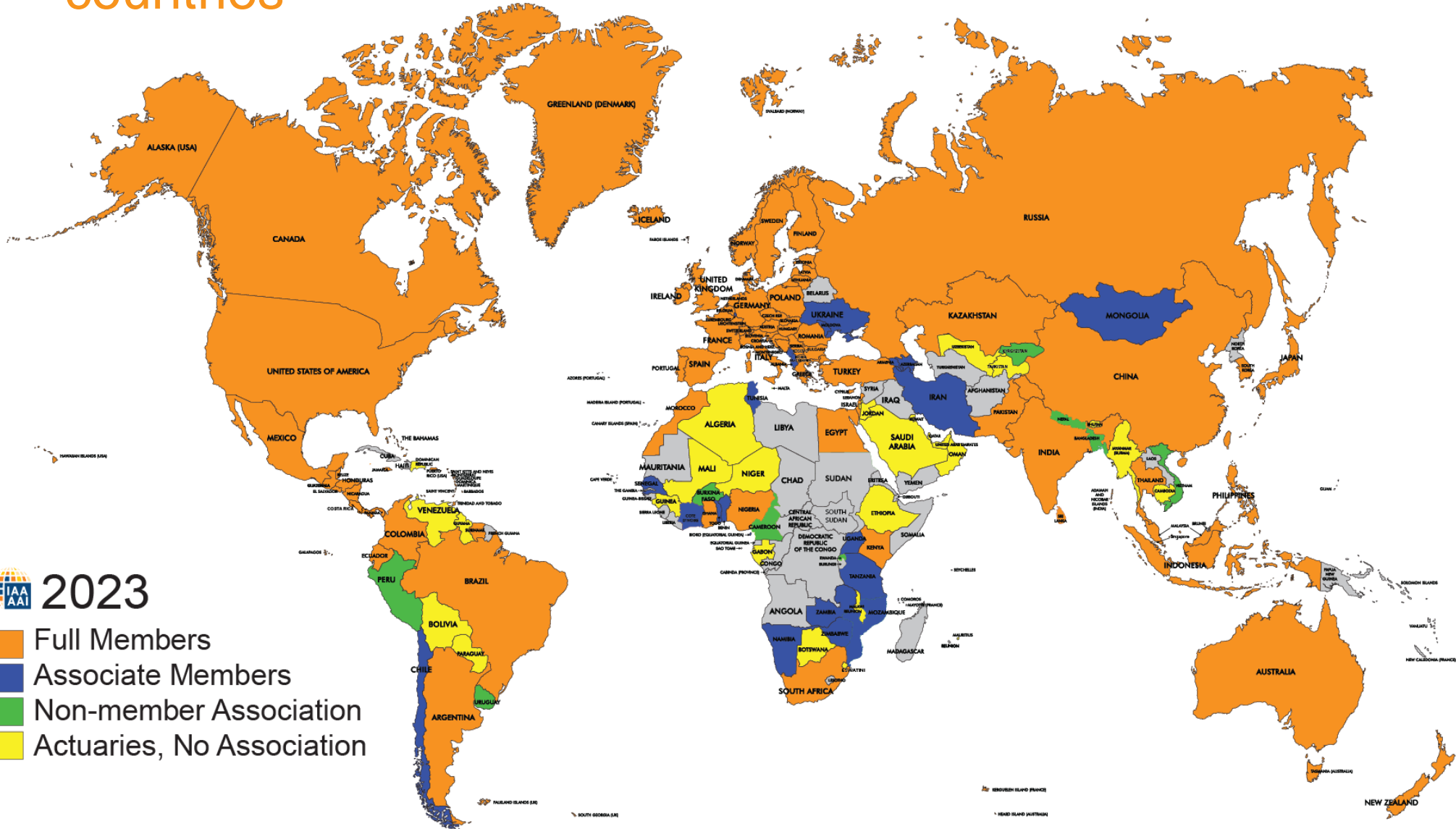
3. International Perspective

- Opportunities for *Actuarial Intelligence*
- The IAA Response





In 2024 the IAA represents 75,000+ actuaries in 115+ countries





The Mission of the IAA

I

Impact global stakeholders

A

Assure the reputation of the profession

A

Advance the competency of the profession



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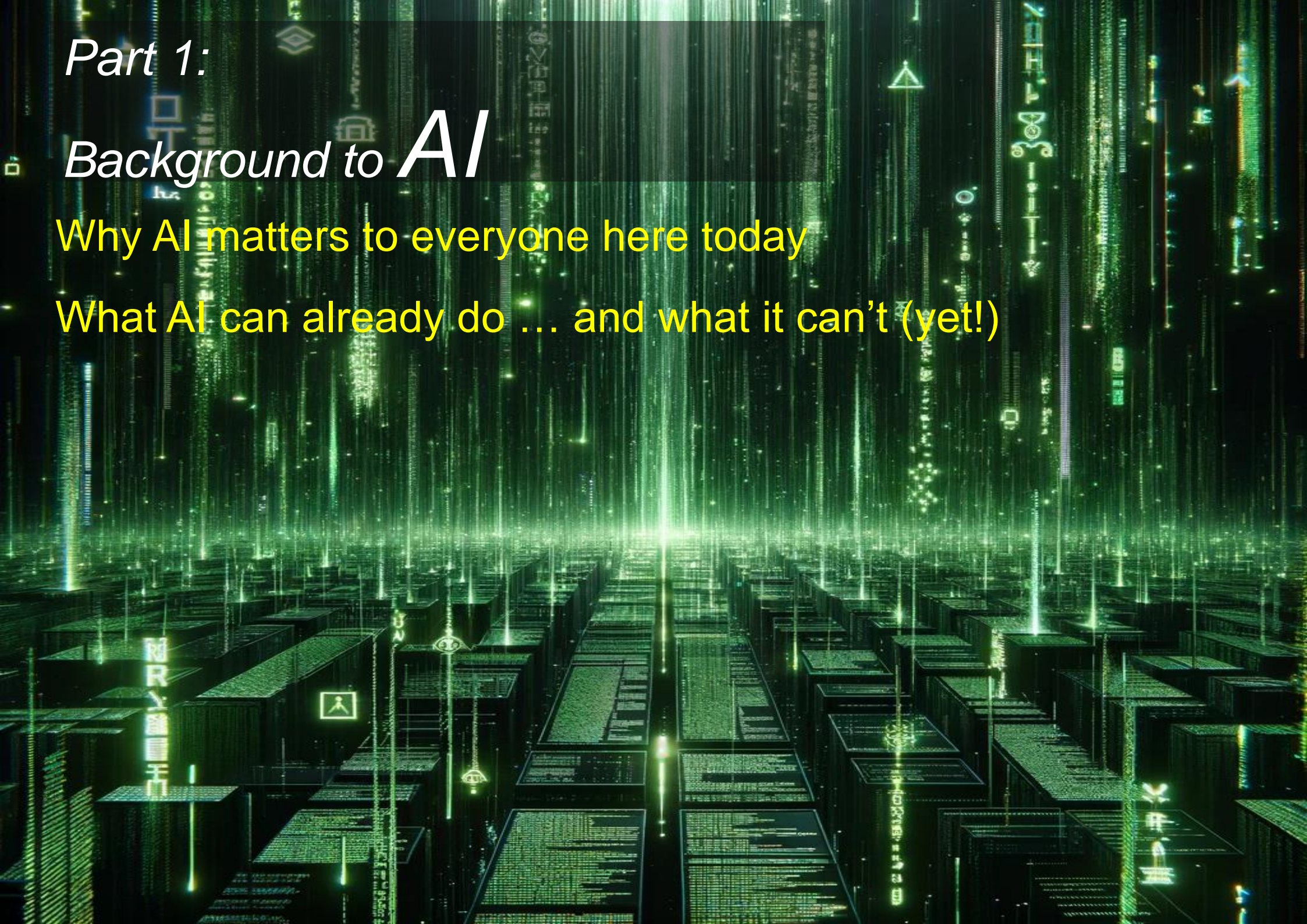
Advance the competency of the profession

Part 1:

Background to AI

Why AI matters to everyone here today

What AI can already do ... and what it can't (yet!)



The AI tidal wave...

Is anyone able to define AI?

Background:

Putting Gen-AI in context

The dawn of useful AI – a “once in a decade” moment

1980



Excel

1990



Email

2000



Google

2010



iPhone

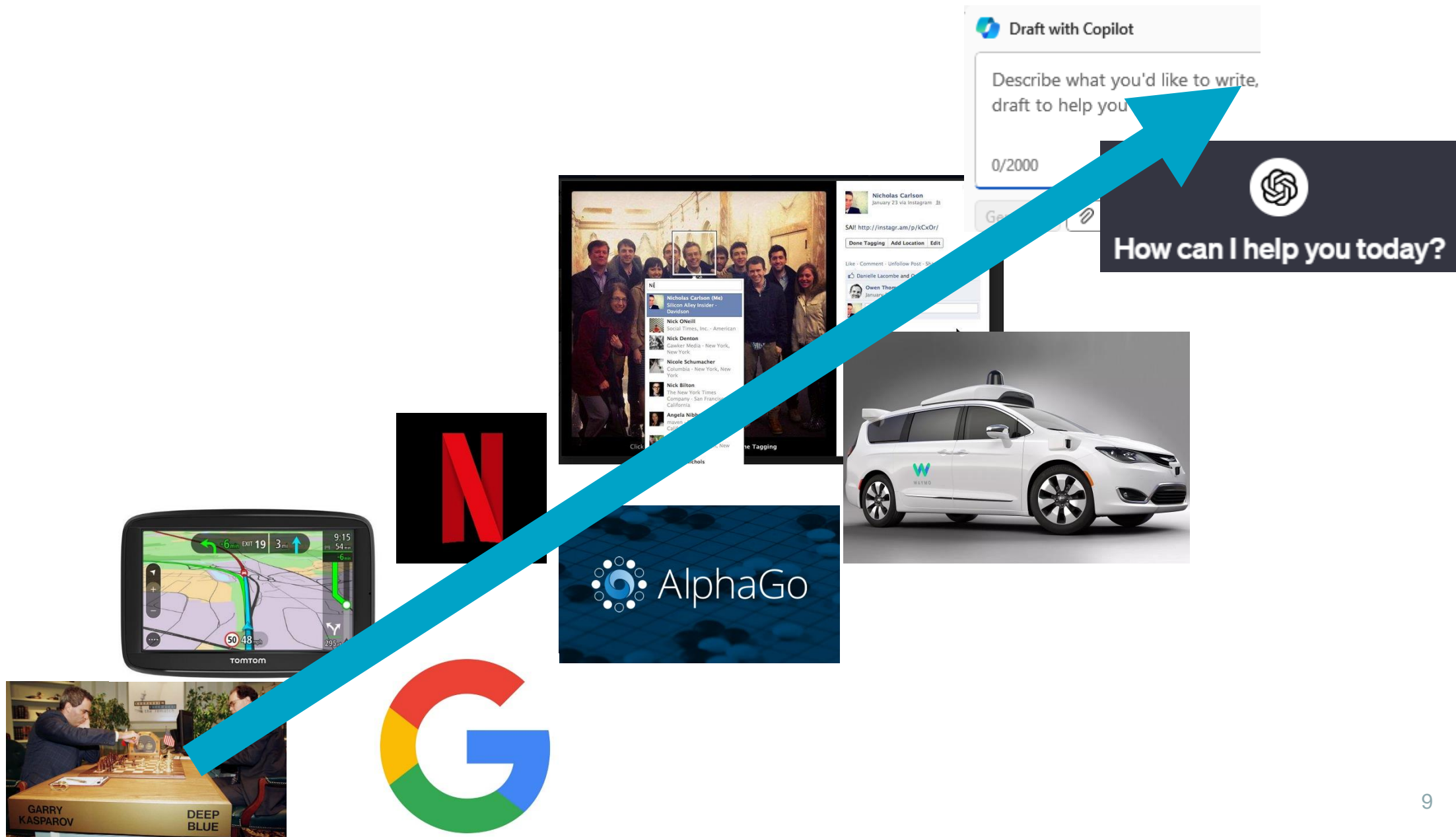
2020



Gen-AI

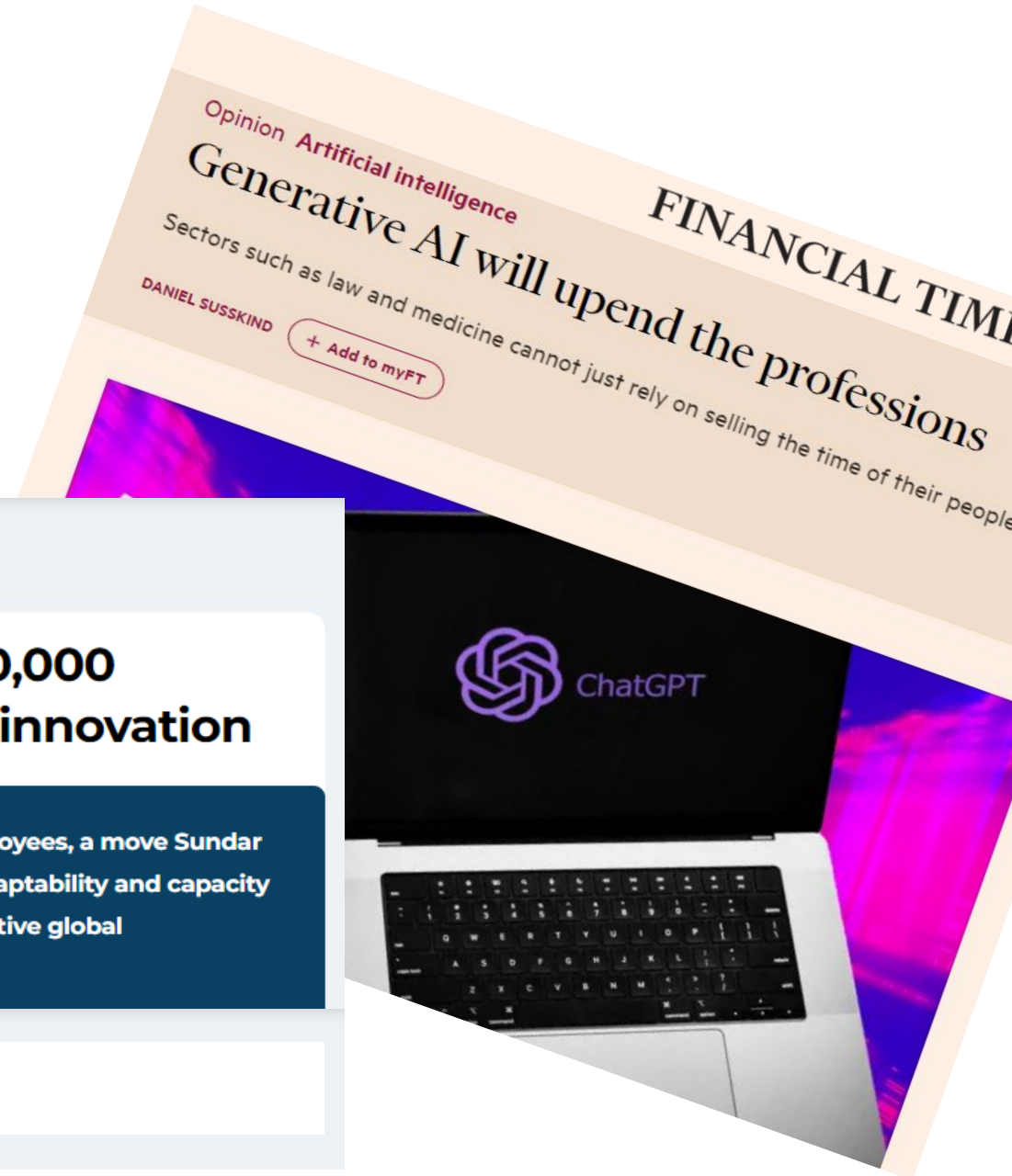
Examples in the real world

We are already interacting with AI every day



AI in the headlines

There is rarely a newspaper without an AI headline



Google likely to layoff 30,000 employees post new AI innovation

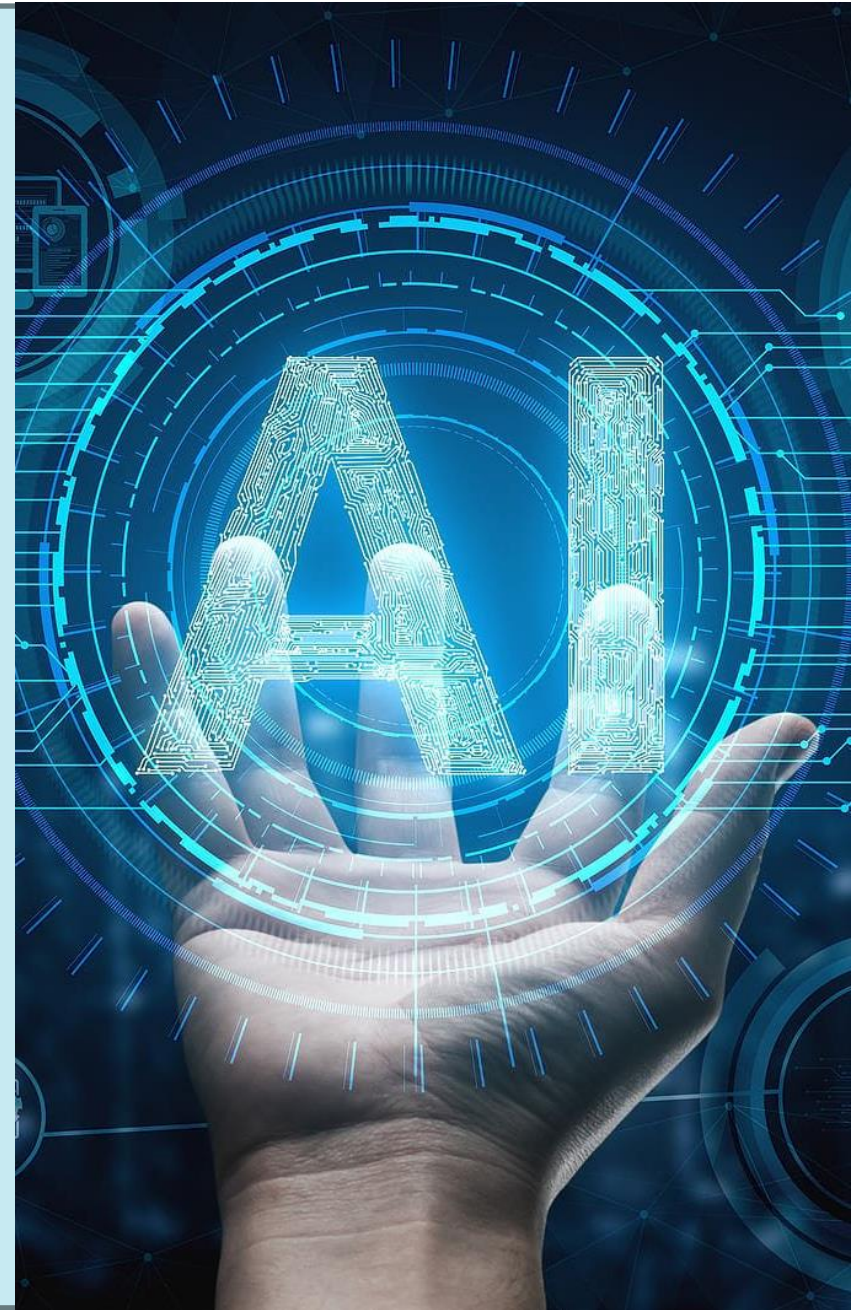
Google had laid off approximately 12,000 employees, a move Sundar Pichai deemed essential for the company's adaptability and capacity to invest in emerging areas amid a transformative global environment.

By CNBCTV18.com
Dec 28, 2023 11:11:14 AM IST (Published)

What can AI already do?

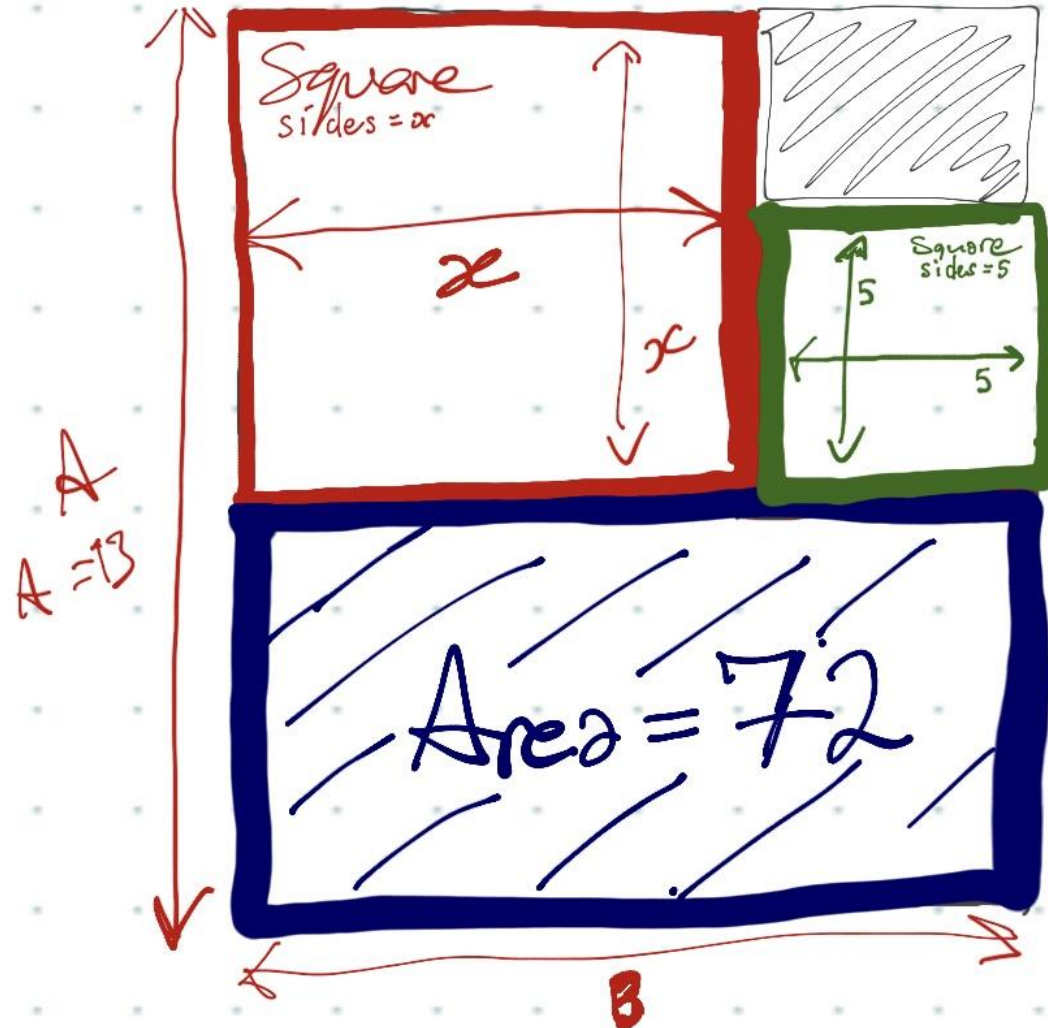
GPT-4 can already:

- Perform rudimentary drafting tasks
- **Pass the general bar exam!**
- Write computer code faster and more reliably than humans – *“Co-Pilot”*
- **Ace “SAT” tests that head teachers said they found “personally challenging”**
- Do maths ... sometimes!



Can Gen-AI do maths problems?

Find x



Yes, ChatGPT can do maths problems...



ChatGPT 4 >



ChatGPT

The picture displays a composite geometric figure comprising a large square (outlined in red), a smaller square (outlined in green), and a rectangle. The smaller square is inside the large square, towards the top right corner. Here's a step-by-step walkthrough of the interpretation and the solution:

1. Identifying the Elements:

- The large square has side lengths labelled as " x ".
- The smaller square has side lengths clearly labelled as " 5 ".
- The rectangle's width is labelled " B ", which we have established is equal to " $x + 5$ ".
- The height of the rectangle is not directly labelled but can be inferred as " $13 - x$ " because it is part of the side of the large square that's not covered by the smaller square.

2. Understanding the Relationships:

- The rectangle and the smaller square share a side, which is part of the larger square's side.
- The length " x " represents the side of the large square, and it must be long enough to include both the width of the rectangle and the side of the smaller square.

3. Establishing the Equation:

- The area of the rectangle is given as " 72 ". This allows us to set up the equation:

$$(x + 5) \times (13 - x) = 72$$

4. Solving the Equation:

- We solved this quadratic equation and found two possible values for " x ": 1 and 7.

5. Verifying the Solutions:

- We then examined both solutions to determine which one would allow the large square to actually be a square.
- If $x = 1$, the side of the large square would be too short to include both the smaller square and the rectangle while still being equal in length to the height of the rectangle.
- If $x = 7$, both the side of the large square and the height of the rectangle would be sufficiently long to include the smaller square and satisfy the area condition.

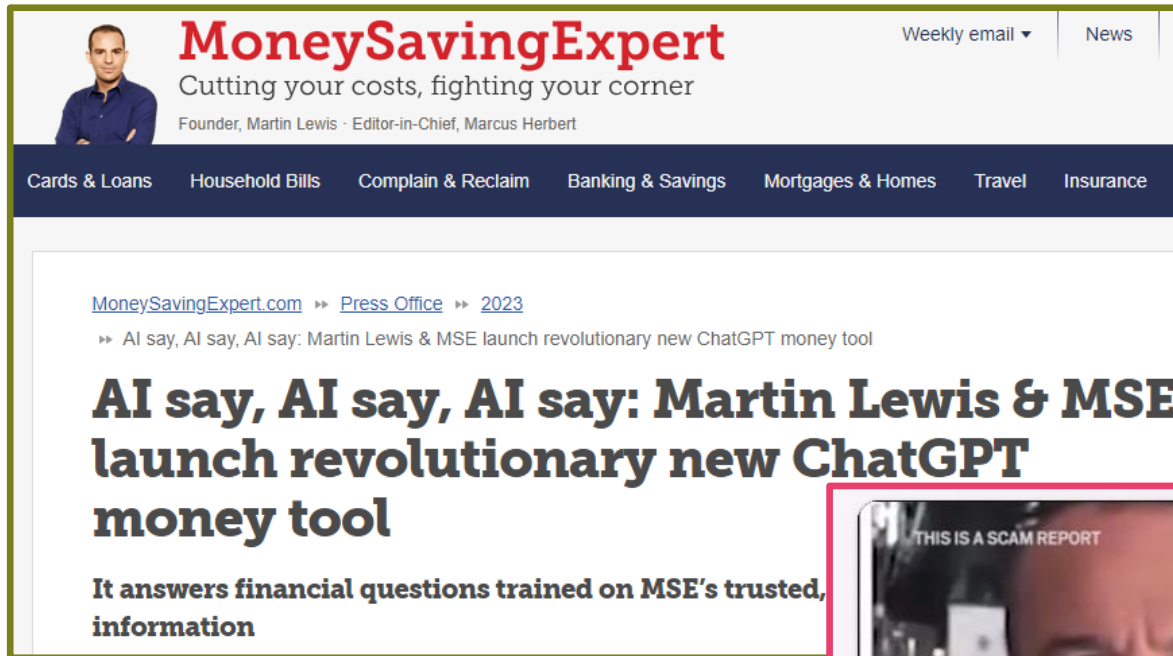
6. Conclusion:

- The only value for x that allows the red figure to be a true square while also satisfying the area condition for the rectangle is $x = 7$.
- This conclusion is based on the logic that for the red figure to be a square, all sides must be equal, and the side that includes the smaller square and the rectangle must be equal in length to the other side of the large square (which is " $13 - x$ " plus the side of the smaller square).

By piecing together these steps, we deduced that the value of x that makes the entire figure consistent and satisfies all given conditions is $x = 7$.

People are probably using AI already

...and AI is already being used to scam people



Scammers are upping their game ... and so must we!

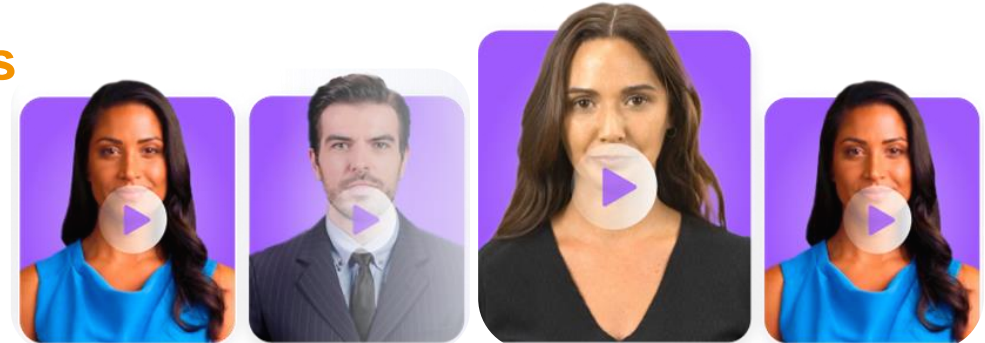
Part 2:
What AI means for Actuaries



How could AI transform our industry?

1) Bespoke / tailored communications

*Driving greater engagement
Communications are key*



2) AI-enabled delivery of advice

*Potentially changing how you review your advice
and interact with your clients*

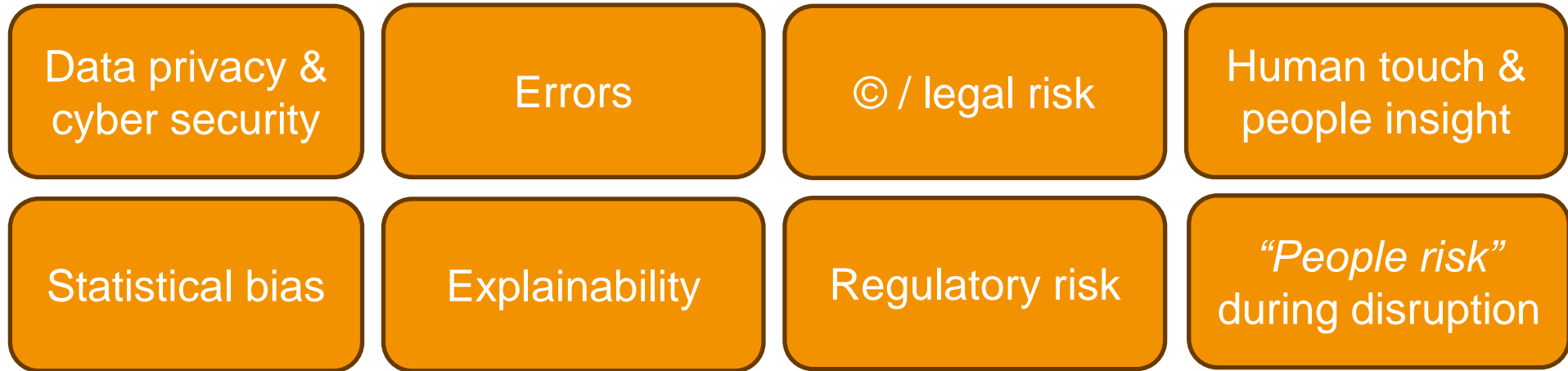
3) Potential transformative new use cases –

Huge opportunities for data analysis



What are the risks?

And how could actuaries help to mitigate them...?



TECHNOLOGY

ChatGPT will always have bias, says OpenAI boss

Sam Altman argues the world will never agree on chatbot's politics



Sam Altman said that there would never be a version of GPT-4 that is not biased. JASON REDMOND/AFP/GETTY IMAGES

RETAIL | OCTOBER 11, 2018 / 12:04 AM / UPDATED 5 YEARS AGO

Amazon scraps secret AI recruiting tool that showed bias against women

By Jeffrey Dastin

8 MIN READ



SAN FRANCISCO (Reuters) - Amazon.com Inc's AMZN.O machine-learning specialists uncovered a big problem: their new recruiting engine did not like women.

Department for Science, Innovation & Technology

AI SAFETY SUMMIT
HOSTED BY THE UK
1-2 NOVEMBER 2023

Capabilities and risks from frontier AI

A discussion paper on the need for further research into AI risk

Potential transformative new use cases

Future gazing...

NewScientist Sign in

News Features Newsletters Podcasts Video Comment Culture Crosswords | **This week's magazine**

Health Space Physics Technology Environment Mind Humans Life Mathematics Chemistry Earth Society

Technology

AI trained on millions of life stories can predict risk of early death

A model trained on 6 million people's health, employment and financial records can predict death more accurately than tools used by the insurance industry

By [Matthew Sparkes](#)

📅 18 December 2023



How AI and technology will reinvent pensions

The emergence of an AI trustee – a permanent member of the board that misses nothing



From Artificial Intelligence to Actuarial Intelligence

What are the opportunities?

Enhanced Decision Making

- Analysing large data sets; identify patterns, trends, correlations

Personalisation and Customer Experience

- Customer preferences and tailored recommendations

Advanced Analytics and Prediction

- Machine Learning; complex data sets, predictive analytics, risk analysis

Innovation and Competitive Advantage

- Development of new products and services

Improved Efficiency and Resource Optimisation

- Optimise processes, streamline workflows, efficient resource allocation

Enhanced Customer Support

- Virtual assistants, round the clock customer support

Part 3: International Perspective

▲ \$ 1,105.97

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LOADING.....

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From Artificial Intelligence to Actuarial Intelligence

Global Opportunities





Artificial Intelligence → Actuarial Intelligence

Opportunities – New Roles

Frank Chang

- Lead Actuary, Google, 2012
- Vice President, Applied Science, Uber

Toby Hall

- Chief Data Officer, Delta Dental of Michigan, 2012
- President & CEO, Roosevelt Innovations

Jacky Ng

- Chapter Lead Data Science APAC, Advanced Analytics CoE, Swiss Re,

Dorothy Andrews

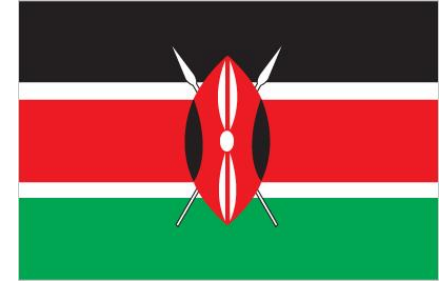
- Senior Behavioral Data Scientist, National Association of Insurance Commissioners

Alice Locatelli

- Managing Director - Technology and Innovation, Society of Actuaries



AI and Machine Learning as opportunities to improve insurance penetration in Africa



Empowering Small Holder Farmers in Kenya and Ghana – Dr J Olukuru





Quantium – World leader in Data Science and Artificial Intelligence



Founded by an actuary, Adam Driussi, in 2002

We bring expertise in two core domains to make the most of opportunities in the ‘big data world’

Data science

- *Translating raw data into actionable insight*
- *Data cleansing and curation*
- *Data ecosystem*
- *Data monetisation*
- *Applied analytics*

Artificial intelligence

- *Build transformative, data-powered solutions*
- *Decision support tools*
- *Decision engines*
- *Machine learning*

2/3rds of Australian actuarial students are specialising in data analytics

>50% of younger actuaries (age<35) see Data Science as their primary or secondary practice area.



From Artificial Intelligence to Actuarial Intelligence

IAA Response – AI Task Force & Work Steams

- **Professionalism and Ethics** - Developing guidelines and principles for actuaries
- **Education** - Developing enhanced curricula and training modules to include AI
- **Changing role of Actuaries** - Developing basic definitions of AI; areas where AI can augment actuarial work; encouraging development of appropriate actuarial expertise
- **Governance** - Monitoring and evaluating governance frameworks, policies, and regulations; engaging with regulators, standard-setting bodies, and policymakers
- **Innovation** - Cultivating a growth mindset among actuaries



From Artificial Intelligence to Actuarial Intelligence

IAA Task Force – Global Summit

Established work streams

- Gathering experts, including non-actuaries
- 100+ volunteers from around the world

Global Summit

- First Global Actuarial Summit on AI, Singapore, 4th/5th April 2024
- Bring experts together; drive activity; share progress, ideas and expertise; establish global network
- Expert chair(s)/speaker(s), including governments / regulators
- Broadcast/record sessions

End 2024 Deadline

- Initial project work
- Propose follow-on work



Is there a future for Actuaries? Maybe, maybe not ... but ...

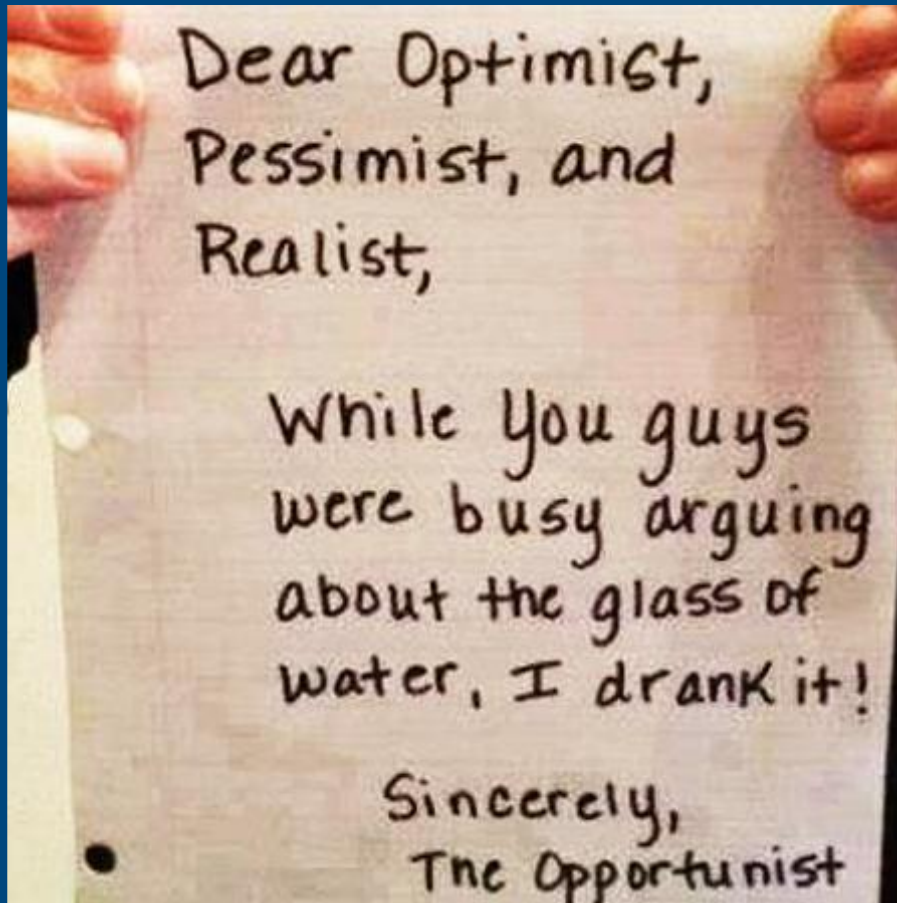
**Actuaries with AI
will replace
Actuaries without AI**

[Four Futures for Actuaries in the Wake
of AI - Actuarial Review Magazine
\(casact.org\)](#)





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Any Questions



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