

Artificial Intelligence & Expert Evidence

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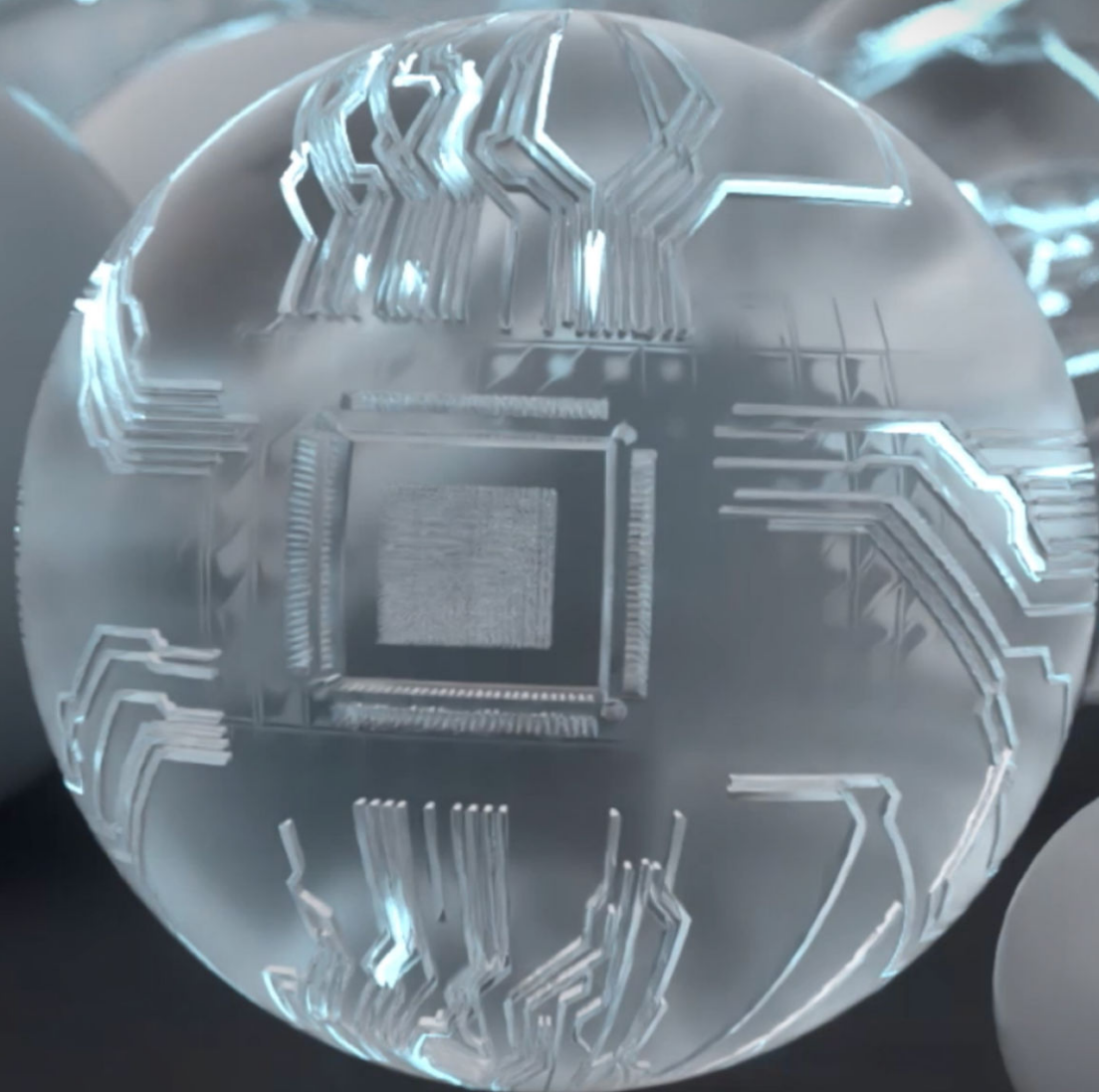
21 March 2023

Agenda




- 1 Overview of AI
- 2 Use cases
- 3 Generative AI v predictive AI
- 4 Impact of AI on expert witness work

1. Overview of AI



What is AI?

- Traditional computing = rule-based
- Limitation – humans. Consider a rule-based autonomous driving system.
- AI = computer autonomy
- Why now? Computer processing power and “big data”



Machine
learning

Natural
language
processing
(NLP)

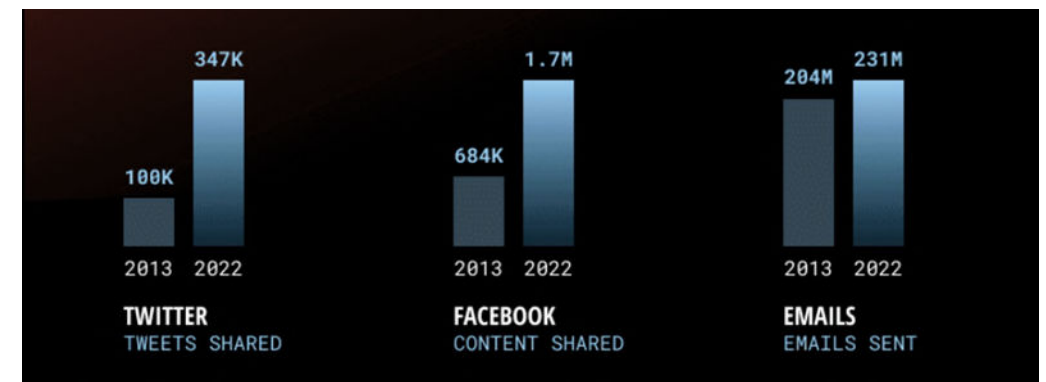
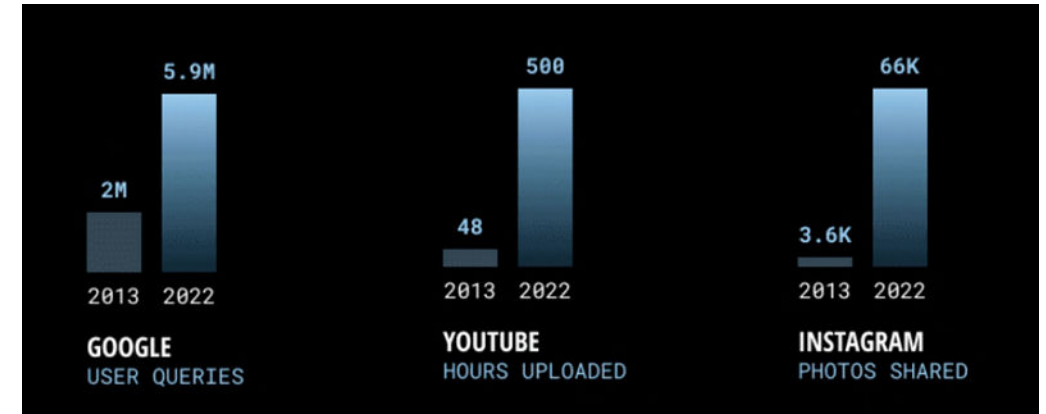
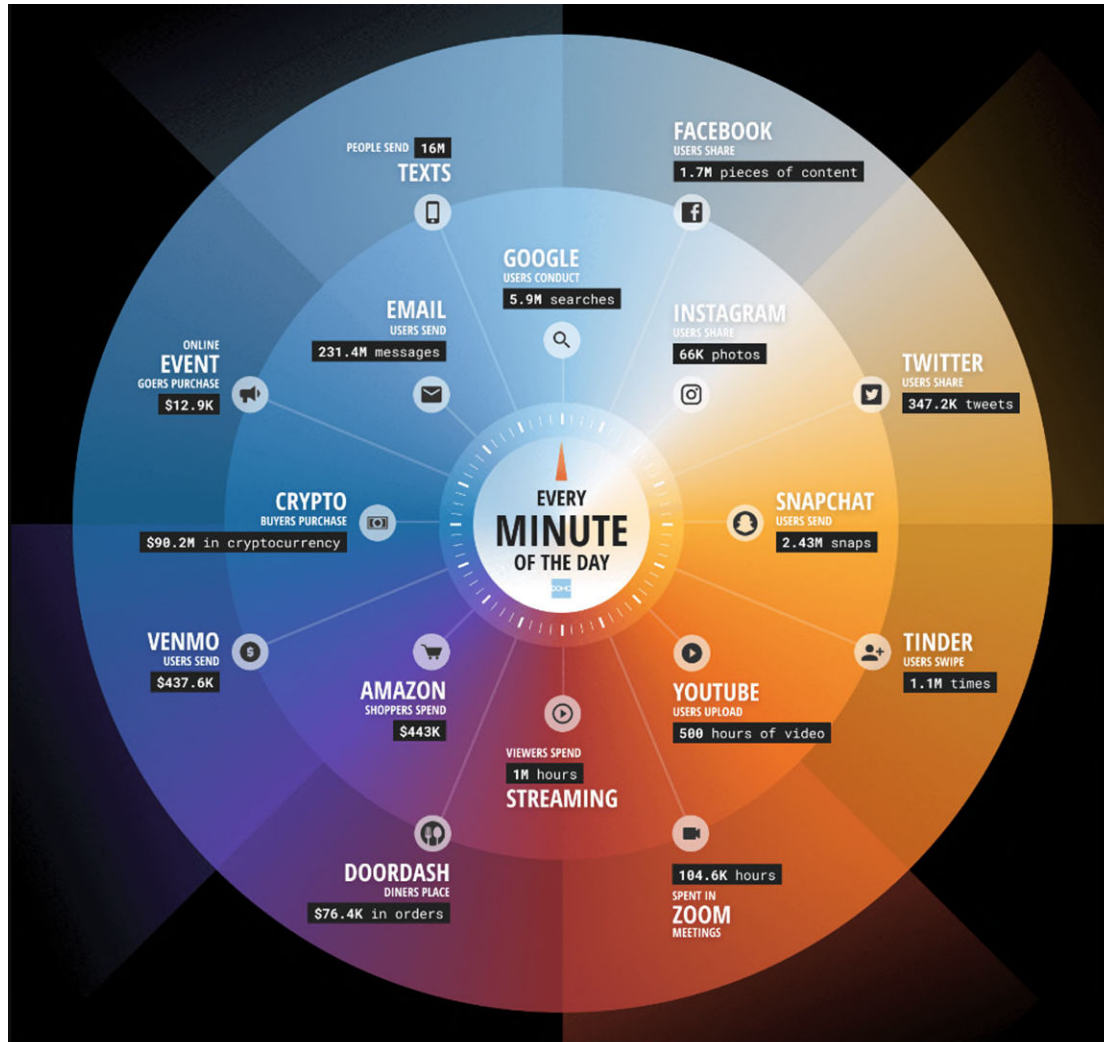
Facial /
biometric
technology

Big data, but how big are we talking?



How much data do we use in 2023?

How does this compare to 2013?



Source: <https://www.domo.com/data-never-sleeps>

Machine learning



The AI system learns from data and can make decisions which are not based on pre-programmed human rules



Data collection and preparation is time intensive and vital to the effectiveness of the AI system

One or more algorithms are used – essentially statistical techniques which vary depending on the desired outcome e.g. regression v neural networks

The trained model (once tested) is deployed. Most AI models / systems don't “learn on the job”, but they do need to be monitored and updated

Autonomy vs automation



Automation

Human-made rules
Simplicity
Transparency

Autonomy

Machine-made rules
Complexity
Opacity

Symbolic AI

Symbolic AI relies on translating human knowledge and logical statements into explicitly programmed rules. For example, 'if a financial transaction is above £10,000, then flag it for human review.' Many of the early chess programmes fall within the category of symbolic AI. They are programmed in a top-down manner, encoding human knowledge about chess in software rules, and they identify playing strategies by searching through possible moves. Symbolic AI was the predominant approach in AI research between the 1950s and 1980s.

Statistical AI

Statistical AI, in contrast, refers to the development of bottom-up, data-driven systems. The capabilities of such systems are not the result of the rule-based application of encoded human knowledge but instead arise from the analysis of data. AlphaZero, a computer programme which can play highly complex games, is an example. Rather than relying on hard-coded rules, AlphaZero learns how to master games from the data it generates by playing itself.

Ostmann, F., and Dorobantu C. (2021). AI in financial services. The Alan Turing Institute. <https://doi.org/10.5281/zenodo.4916041>

- Still no consensus on definition of AI – does it encompass rule-based automated systems?
- “Algorithmic decision-making” likely to encompass rule-based systems and AI
- “Automated decision-making” under GDPR, confusingly, probably also includes AI

Deterministic v non-deterministic systems

§

B2C2 v Quoine Pte [Singapore courts]

“The algorithmic programmes in the present case are deterministic, they do and only do what they have been programmed to do... Accordingly, in my judgment, in circumstances where it is necessary to assess the state of mind of a person in a case where acts of deterministic computer programs are in issue, regard should be had to the state of mind of the programmer of the software...”

(Thorley J at first instance; [2019] SGHC(I) 3 at [208] and [211])

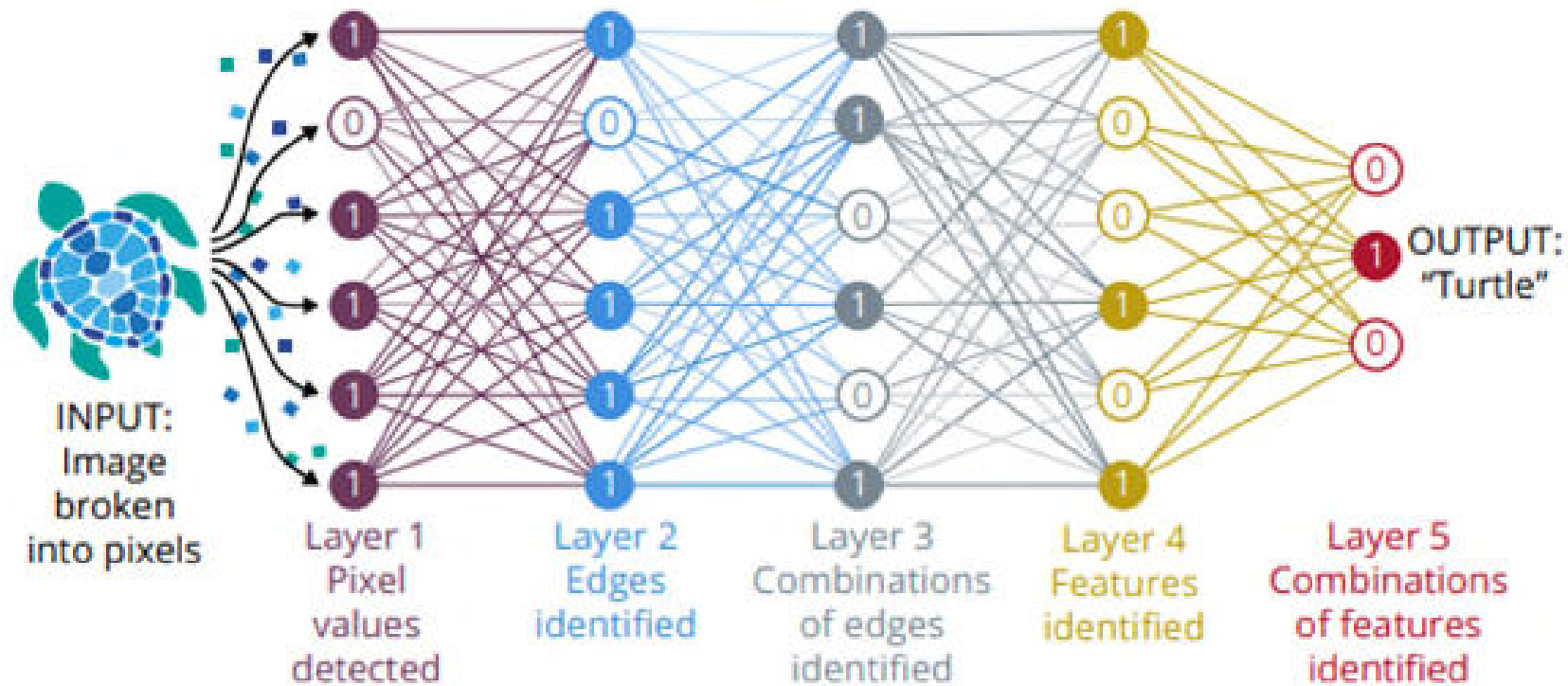
“A deterministic computer program or algorithm is bound by the parameters set by the programmer...”

(Menon CJ on appeal; [2020] SGCA(I) 02 at [98])

In contrast, it is helpful to consider AI as being non-deterministic i.e. not bound by the parameters set by the human programmer

Risks arising out of sophisticated AI

AI models are becoming increasingly complex and opaque



Source: 'New Theory cracks open the black box of deep neural networks', Wired (10 August 2017): <https://www.wired.com/story/new-theory-deep-learning/>

Key AI features to keep in mind



Data

Data, including personal data, vital to AI in both training and deployment

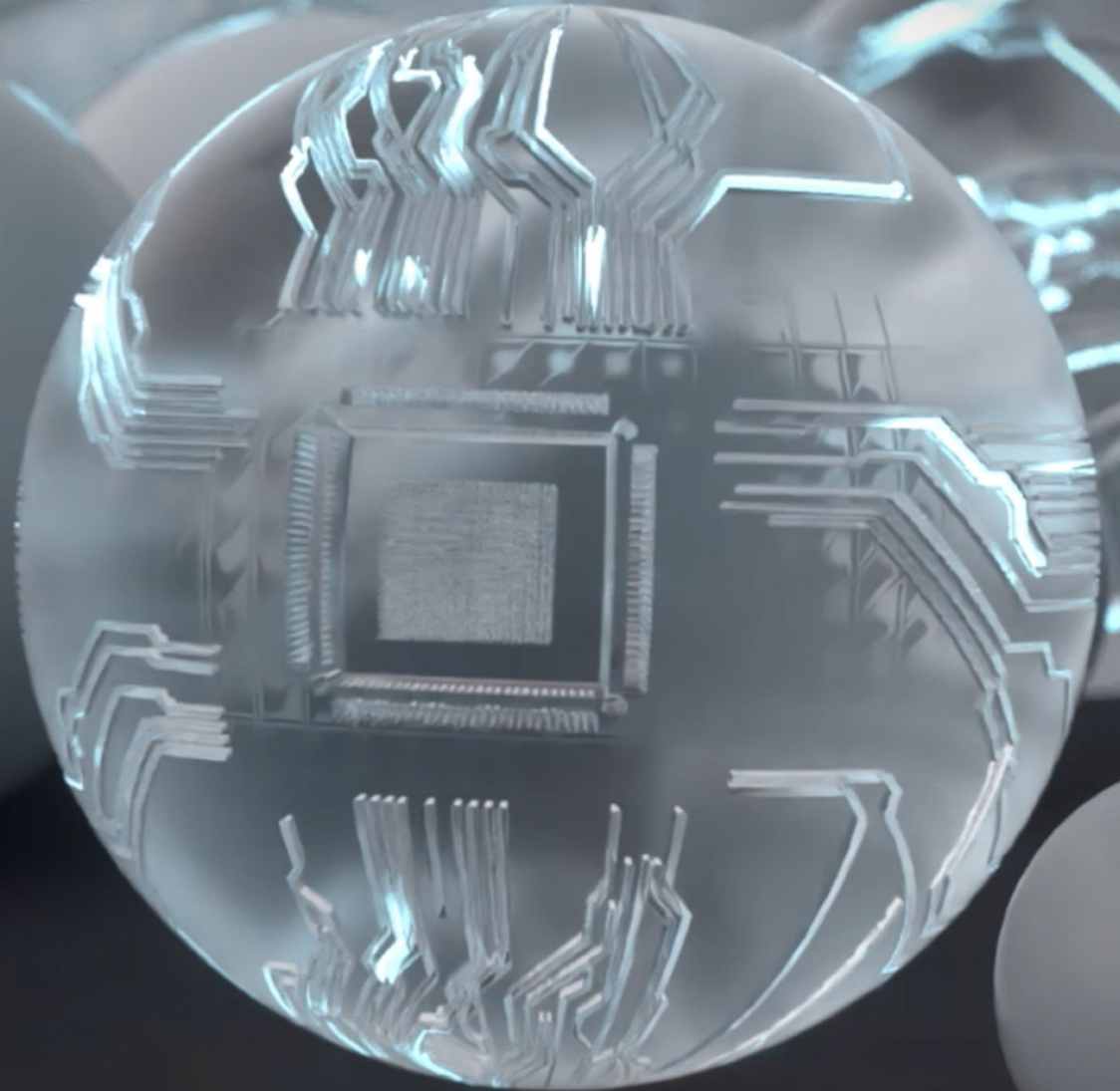
Opacity

Complex AI systems cannot be fully understood, interpreted or explained by humans

Unforeseeability

AI systems have the ability to act autonomously and unpredictably

3. Generative AI v discriminative AI



The explosion of ChatGPT...



A powerful large language model (LLM) capable of generating language (“generative AI”)

MI When was The Academy of Experts founded?

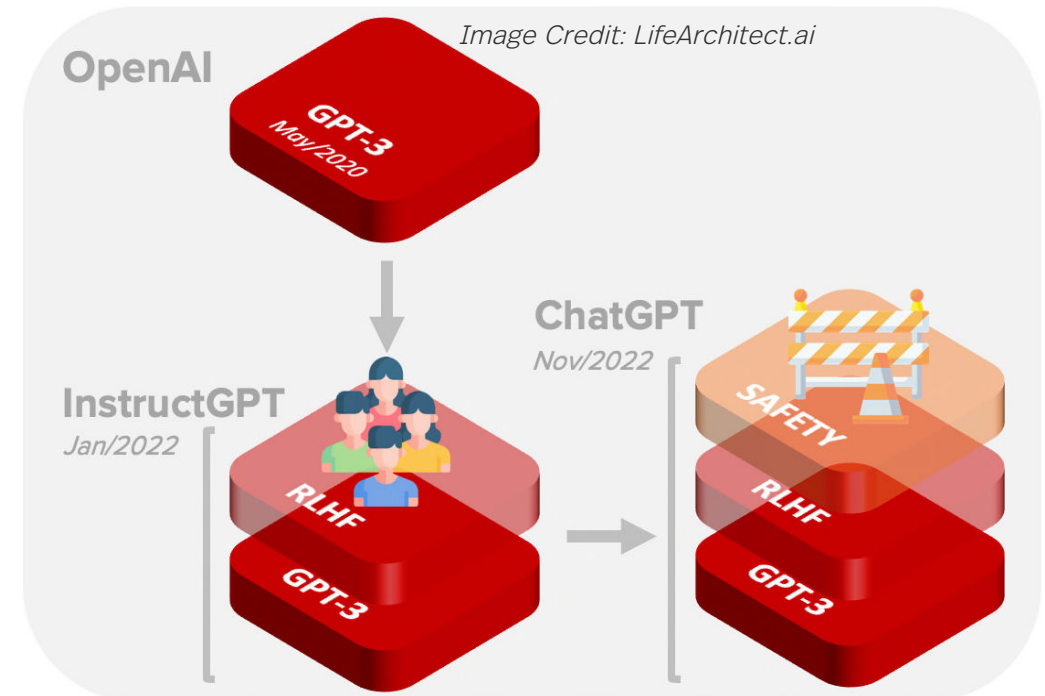
OpenAI The Academy of Experts was founded in 1987, in the United Kingdom. It was established with the aim of promoting excellence and professionalism among expert witnesses and to provide a platform for education and training for those involved in dispute resolution. Since then, the Academy has grown into a respected organization with a membership that includes experts from a wide range of disciplines, including law, engineering, medicine, finance, and more.

MI Write a limerick about The Academy of Experts

OpenAI There's a group of folks quite astute,
The Academy of Experts, they're called to boot,
They're skilled and learned,
With expertise they've earned,
Their opinions are trusted and acute!

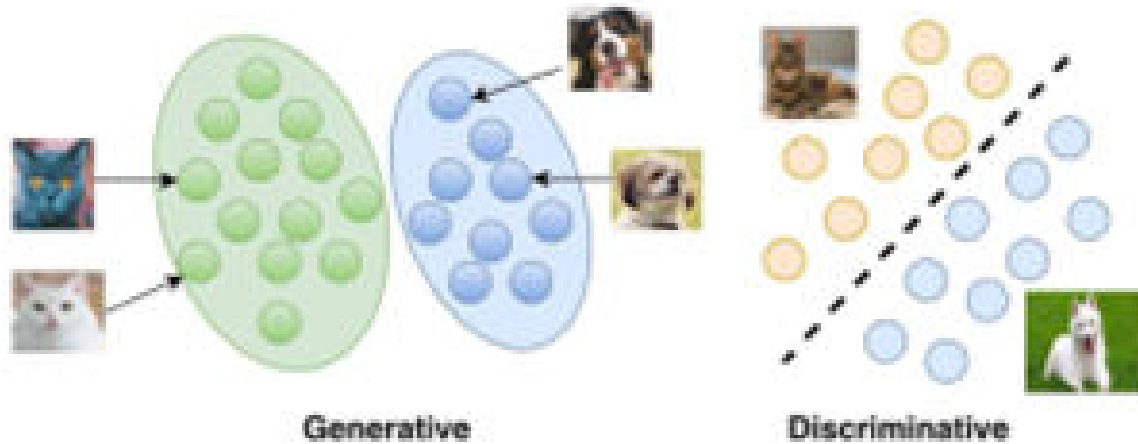
How does it work?

Pre-trained Model



Trained Model

What is generative AI?



Source: <https://vitalflux.com/generative-vs-discriminative-models-examples/>

User: What is funny about this image? Describe it panel by panel.



Source: [hmmm \(Reddit\)](#)

GPT-4: The image shows a package for a "Lightning Cable" adapter with three panels.

Panel 1: A smartphone with a VGA connector (a large, blue, 15-pin connector typically used for computer monitors) plugged into its charging port.

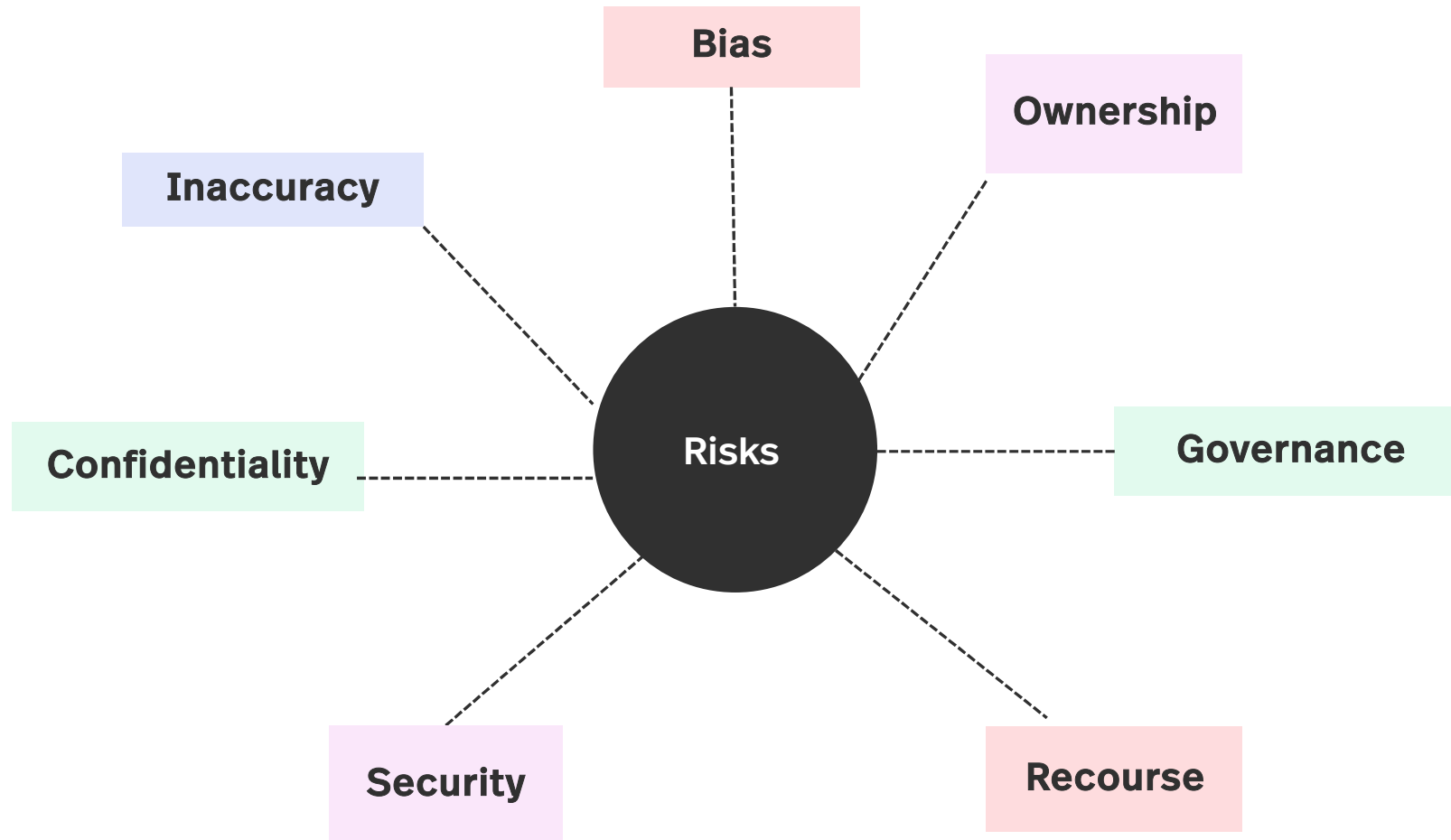
Panel 2: The package for the "Lightning Cable" adapter with a picture of a VGA connector on it.

Panel 3: A close-up of the VGA connector with a small Lightning connector (used for charging iPhones and other Apple devices) at the end.

The humor in this image comes from the absurdity of plugging a large, outdated VGA connector into a small, modern smartphone charging port.

Source:
<https://openai.com/research/gpt-4>

The risks of generative AI



Inaccuracy in generative AI

What is an English law case that says parties don't readily give up their common law rights

One example of an English case that addresses the issue of parties not readily giving up their common law rights is the case of *Parker v Taswell*. In this case, the court held that a clause in a contract that purported to exclude or limit the parties' rights under common law would be subject to a strict interpretation and would only be enforced if it was clear and unambiguous. The court held that parties should not be taken to have readily given up their common law rights unless it was clear from the wording of the contract that this was their intention. This case is often cited as an example of the principle that parties should not be taken to have given up their common law rights unless it is clear from the wording of the contract that this was their intention.

Is there a more recent case which says the same thing?

Yes, there are more recent cases in England that have reaffirmed the principle established in *Parker v Taswell* that parties should not be taken to have given up their common law rights unless it is clear from the wording of the contract that this was their intention.

...

Another example is the case of *Attrill v Dryad Maritime Corp.* [2019] UKSC 43, where the Supreme Court held that a clause in a contract that purported to exclude or limit the parties' rights under common law would be subject to a strict¹⁵ interpretation and would only be enforced if it was clear and unambiguous.

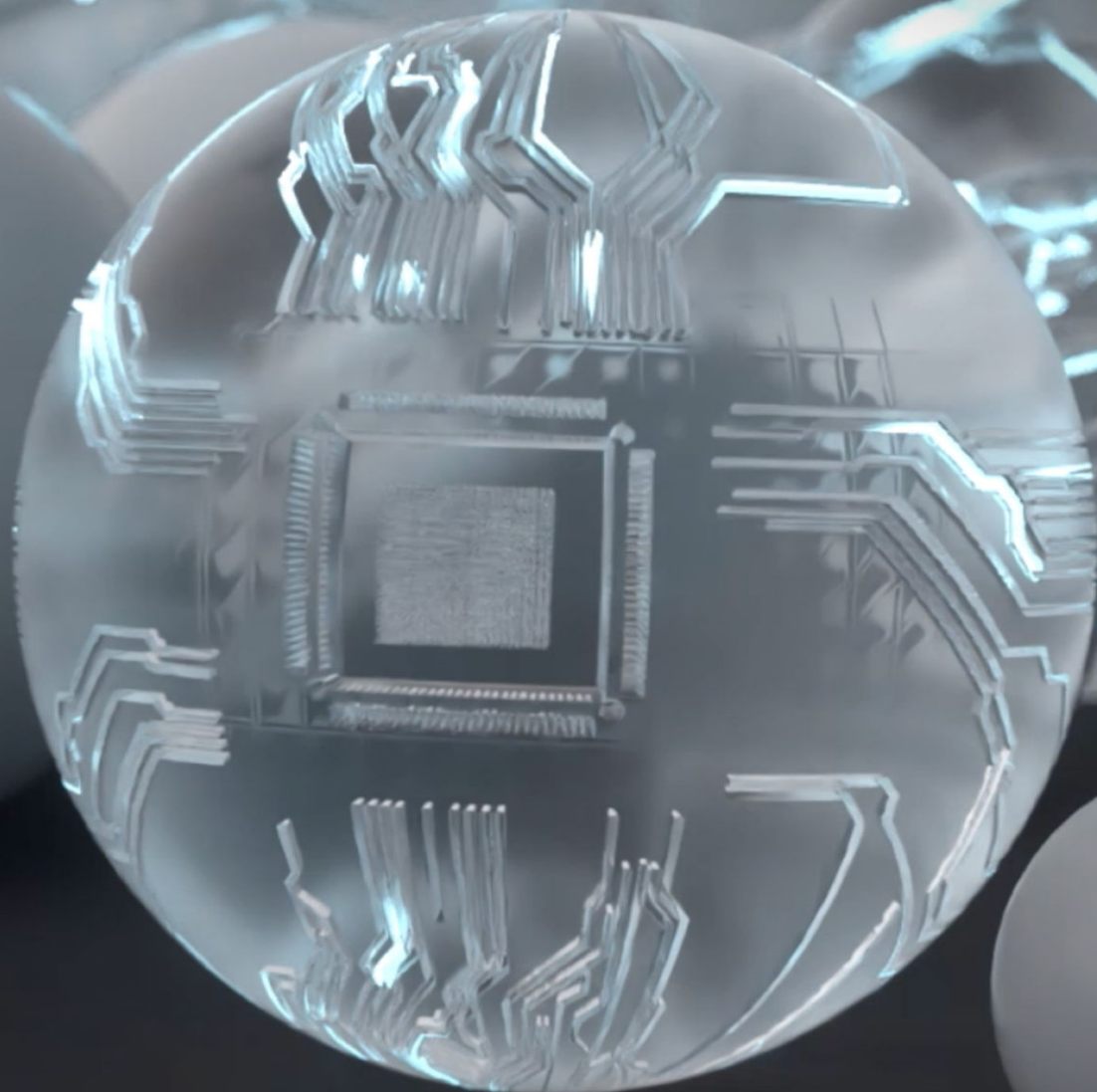
Which paragraph in Attrill says this?

In the case of Attrill v Dryad Maritime Corp. [2019] UKSC 43, the relevant paragraph that addresses the issue of parties not readily giving up their common law rights can be found in the judgement of Lord Hodge, in paragraphs 19 and 20.

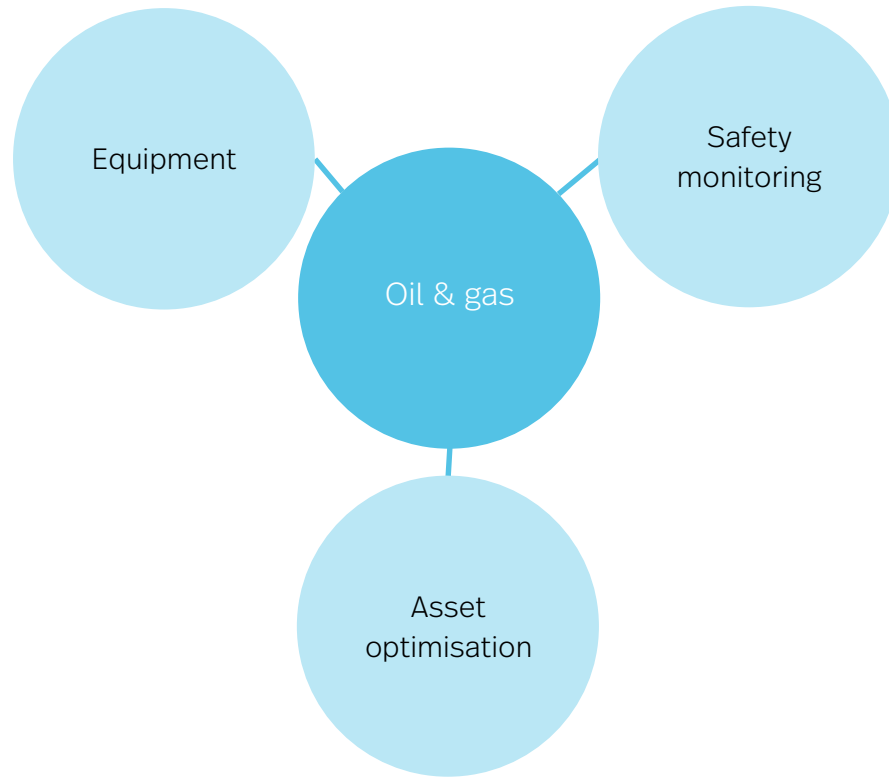
In paragraph 19, Lord Hodge stated that "English law has long recognised the principle that parties should not be taken to have given up their common law rights unless it is clear from the wording of the contract that this was their intention." He also referred to the Unfair Contract Terms Act 1977 (UCTA) which state that a term of a contract is void in so far as it would exclude or restrict liability for death or personal injury caused by negligence, or for fraud or fraudulent misrepresentation.

In paragraph 20, Lord Hodge went on to state that "the principle that parties should not be taken to have given up their common law rights unless it is clear from the wording of the contract that this was their intention applies to clauses that seek to exclude or limit liability. Such clauses are subject to a strict interpretation and will only be enforced if they are clear and unambiguous."

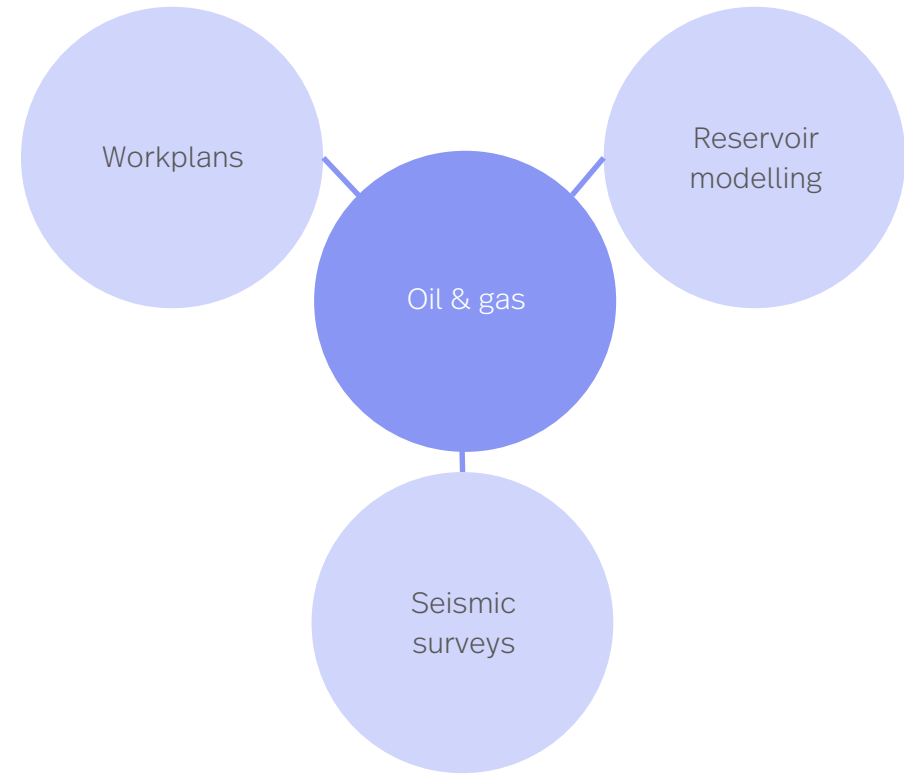
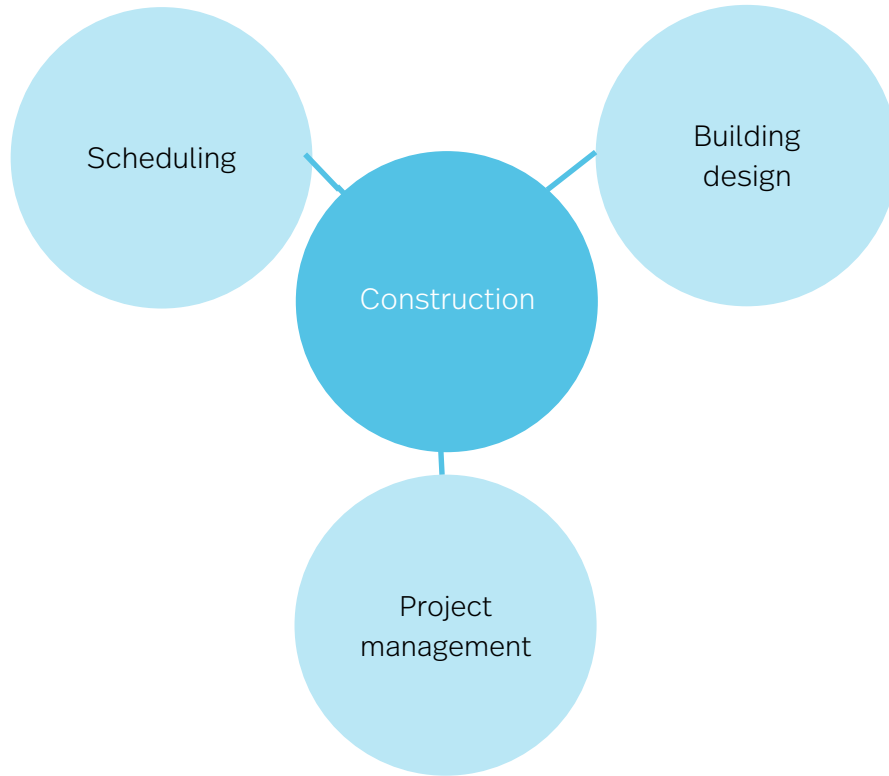
2. Use cases



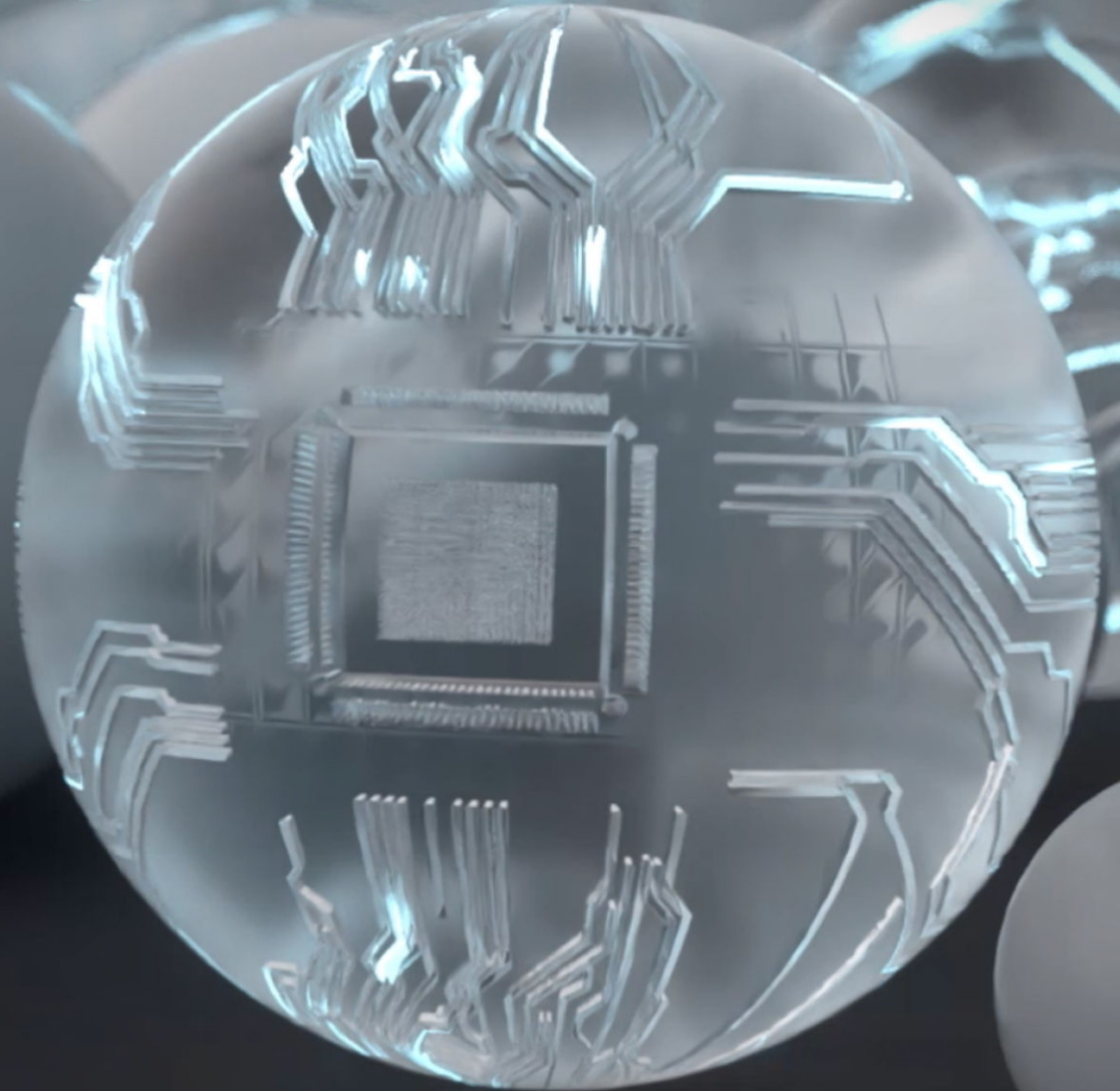
Use cases of discriminative AI



Use cases of generative AI



4. Impact of AI on expert witness work



How could AI impact expert work?

Various scenarios

1. Subject of expert opinion impacted by AI

i.e. opinion on state of affairs, process, decision etc. incorporates elements of AI when previously solely human involvement

2. Using AI in expert work

e.g. analysing information, distilling information (but hopefully not to write report or make decision!)

3. Instructing solicitors using AI

e.g. to filter/identify relevant evidence



4. Courts using AI (?)

Perhaps not yet, but may do in future

What does ChatGPT say about this?

MI How is AI likely to impact the work of expert witnesses?



AI is likely to have a significant impact on the work of expert witnesses in a number of ways.  
Here are some possible ways:

1. **Augmenting Expert Analysis:** AI could be used to assist expert witnesses in analyzing and processing large amounts of data, potentially making their work more efficient and accurate.
2. **Automation of Tasks:** AI could also automate certain tasks that expert witnesses currently perform manually, such as document review, data extraction and analysis, and report generation.
3. **Improved Accuracy and Consistency:** AI has the potential to improve the accuracy and consistency of expert witness testimony by providing objective and evidence-based analysis.
4. **Increased Speed:** AI could also help expedite the litigation process by quickly analyzing data and producing reports, allowing cases to be resolved more quickly.
5. **Challenges in Admissibility of Evidence:** As AI becomes more prevalent in the legal industry, expert witnesses may need to grapple with the admissibility of evidence generated or analyzed by AI systems.

Overall, the impact of AI on the work of expert witnesses is likely to be significant, with both potential benefits and challenges. Expert witnesses will need to adapt and evolve their practices to keep up with the changing legal landscape.

What are the risks?

Various scenarios

1. Subject of expert opinion impacted by AI

- Unfamiliarity
- New standards against which to opine
- Lack of transparency /understanding

2. Using AI in expert work

- Inaccuracy
- Lack of particularity
- Lack of precision

3. Instructing solicitors using AI

- Hopefully low risk, but work being aware of how AI used

4. Courts using AI (?)

- *TBD*

What does ChatGPT say about this?



What are the risks of relying on AI in expert witness work?



While there are potential benefits to using AI in expert witness work, there are also several risks that should be considered:



1. **Reliability:** AI systems are only as reliable as the data they are trained on, and if the data is biased or incomplete, the AI system's analysis may be flawed. This could lead to inaccurate conclusions and potential legal liability.
2. **Lack of Contextual Understanding:** AI systems may not have the same level of contextual understanding as human experts, which could result in errors or misunderstandings when analyzing complex data or providing expert opinions.
3. **Transparency and Interpretability:** It may be difficult to understand how an AI system arrived at a particular conclusion, especially if the system uses complex algorithms or machine learning techniques. This lack of transparency could make it difficult to challenge or evaluate the validity of the AI system's analysis.
4. **Admissibility of Evidence:** There may be legal challenges to the admissibility of evidence generated or analyzed by AI systems. The court may require that expert testimony be provided by a human with specialized knowledge and experience rather than relying solely on an AI system.
5. **Ethical Considerations:** There are ethical considerations associated with using AI in expert witness work, such as ensuring that the AI system is used in a manner that is consistent with professional standards and does not compromise the integrity of the legal system.

Overall, the risks associated with relying on AI in expert witness work should be carefully evaluated, and the use of AI should be done in a responsible and transparent manner.

Final thoughts



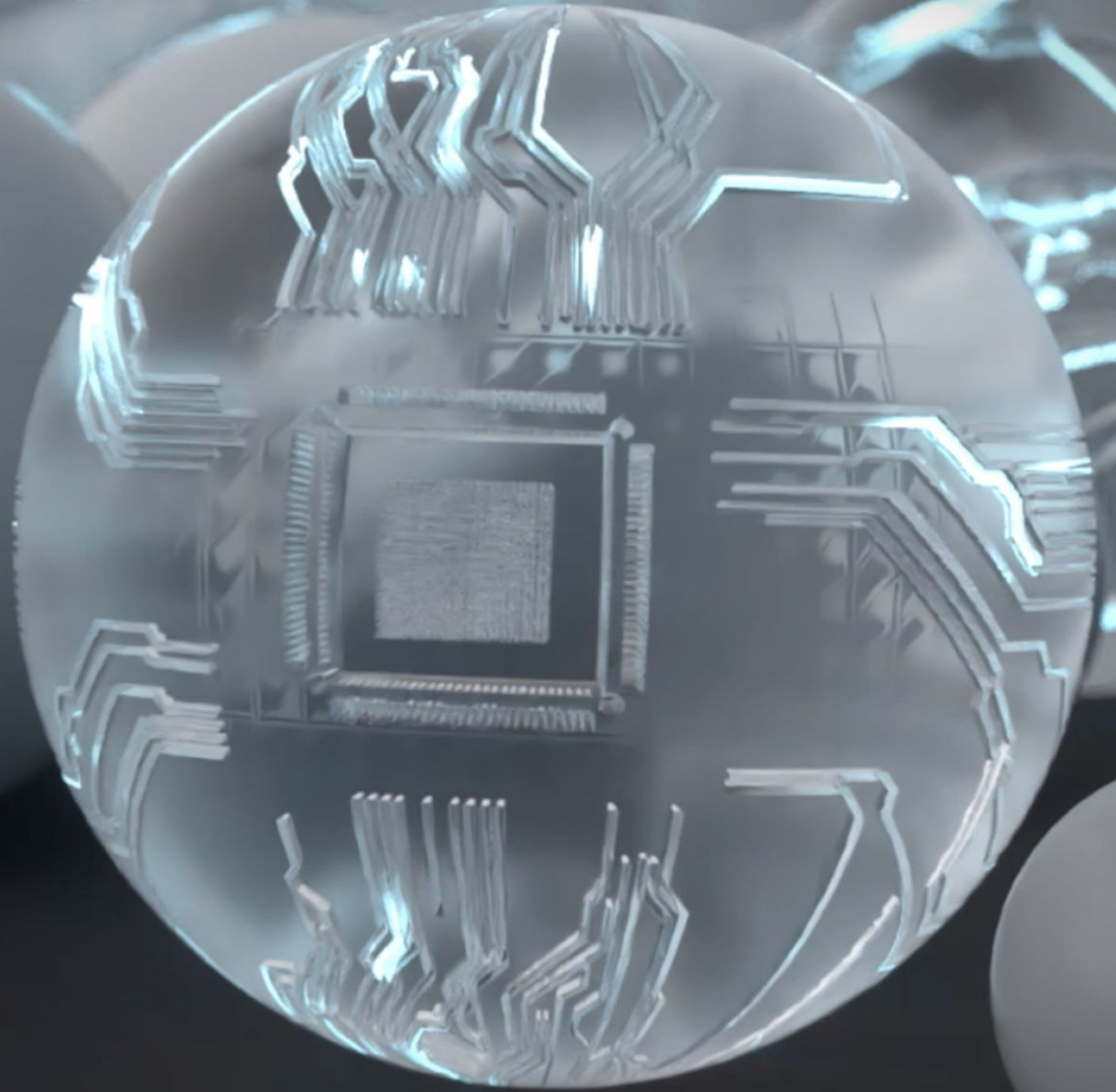
AI is here to stay

AI will have widespread use and impact, including on expert witness role and in legal work generally

Try to stay on top of developments, at least at a high level

The greater the impact that AI has on your role as expert witness, the more you will need to understand its operation, impact and shortcomings

Questions



A large, semi-transparent sphere in the foreground contains a detailed image of a microchip with its intricate circuitry. The sphere is set against a background of several other similar spheres, some of which are out of focus. The entire scene is bathed in a cool, blue light, with some glowing circuit-like patterns in the background.

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