

AI and Patent Law: Evolving Challenges and Opportunities

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A&O SHEARMAN

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Introduction to the panel



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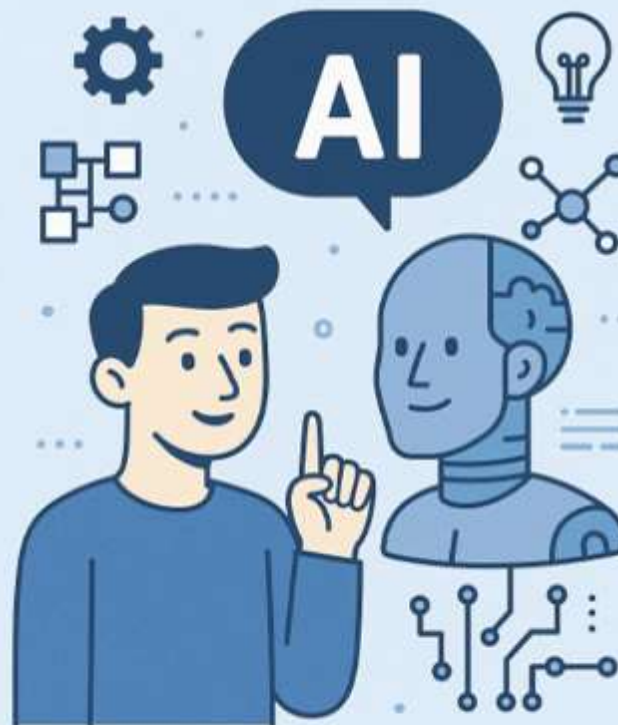


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What comes to mind when you think of AI?

INTRODUCTION TO AI



Definition - Artificial Intelligence

"A machine-based system that can, for a given set of human-defined objectives, make predictions, recommendations, or decisions influencing real or virtual environments."

- U.S. National Institute of Standards and Technology (NIST)

Straight from the source

AI is like a super-keen intern who's read everything and tries to answer your questions by matching them to what it's seen before.

It doesn't really "think"—it just does a ton of fast math to guess the best answer, sometimes nailing it, sometimes hilariously missing the mark.

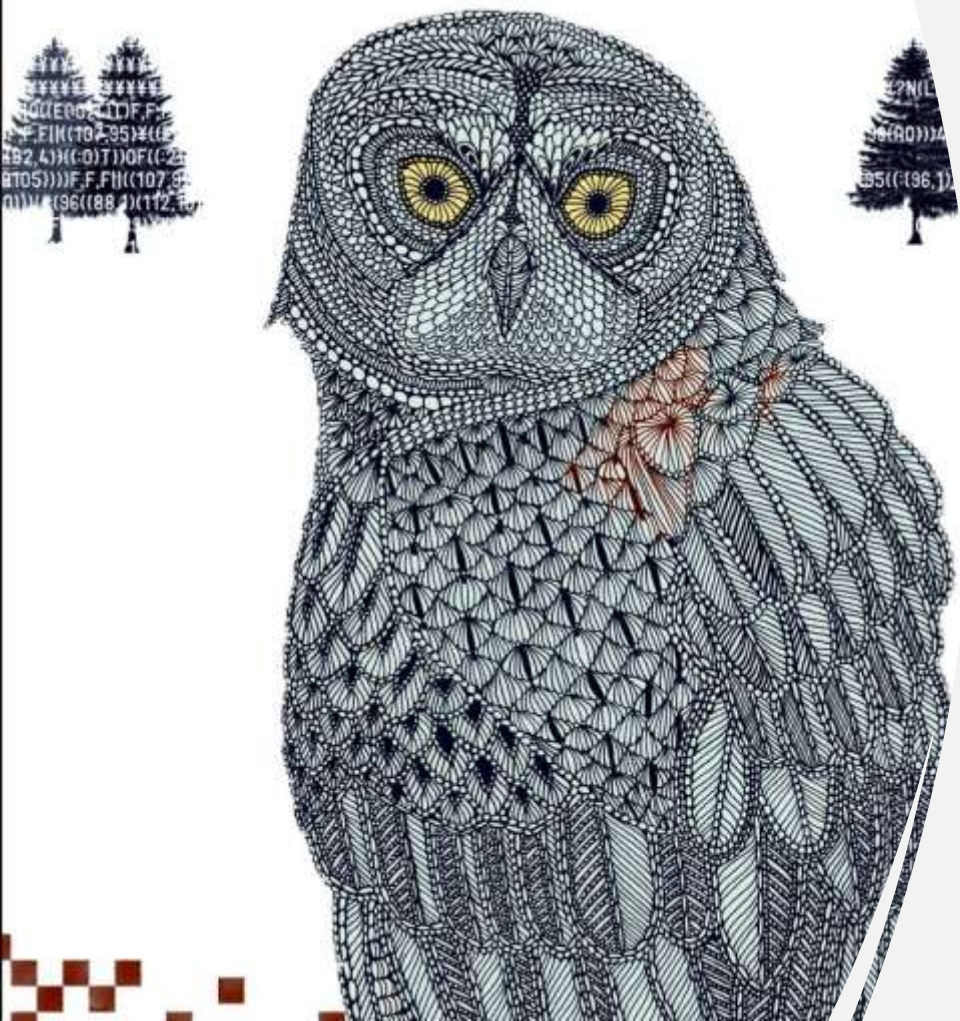
- Chat-GPT, part-time comedian



NICK BOSTROM

SUPERINTELLIGENCE

Paths, Dangers, Strategies



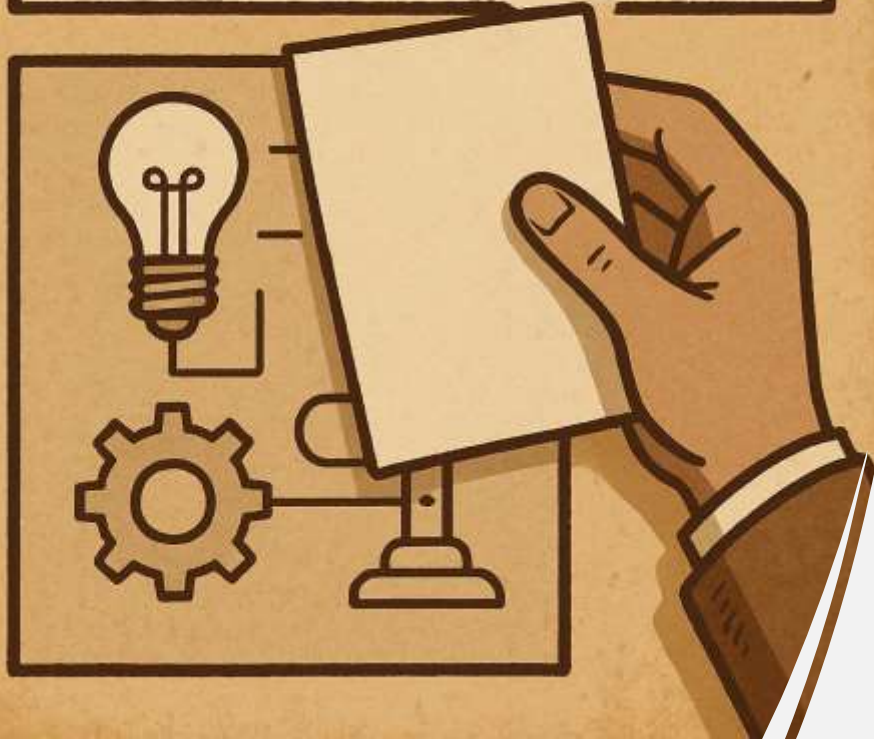
Further reading

Patent problems:

1. Inventorship



INSUFFICIENT DISCLOSURE OF AN INVENTION



Patent problems: 2.
Insufficient
disclosure



Patent problems: 3. and beyond

- Unpatentable subject matter
- Inventive step analysis:
 - AI skilled in the art?
 - Prior art flooding?

Structure Ahead

01

Case law update
(Owen & Ettore)

02

AI Impact on
Inventiveness
(Ryan & Michał)

03

AI in Patent
Practice (Rebekka &
Jan)

Case law update



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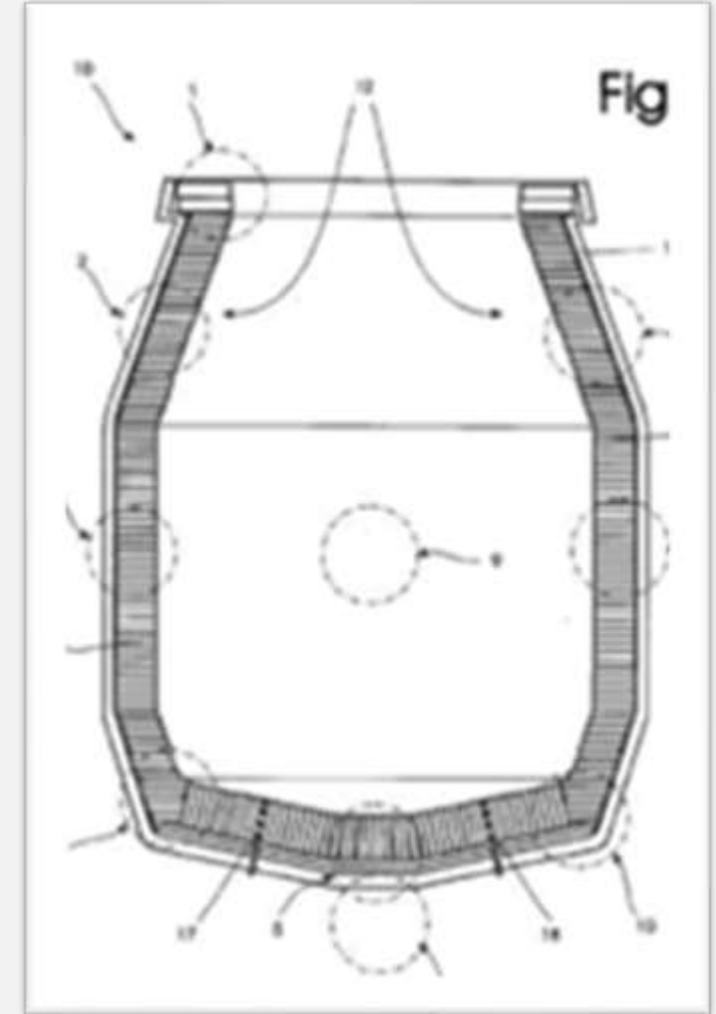
European Patent Office decision T 1669/21

published on 07/23/24

The case involved the exciting matter of a patent application for a

method of determining the condition of a fire-resistant lining in a metallurgical melting vessel using a "computational model"

Nevertheless, useful insights can be gained on the critical need for **comprehensive disclosure** in patent applications involving AI and machine learning to avoid the **BLACK BOX** problem



T 1669/21- Continued

- Article 83 of the European Patent Convention requires a patent application to **disclose the invention in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art**
- The Board of Appeal **confirmed the revocation of the patent** due to an **insufficient description** of a "computational model," which the patentee argued implied machine learning

T 1669/21- Continued

- To comply with sufficiency of disclosure requirements the applicant must **detail the AI/ML model's architecture, input/output variables, parameter selection**, and relevant **training data**. General references to machine learning are not sufficient to allow a skilled person to implement the claimed invention.
- The Board concluded that the patent's disclosure relied too heavily on the general idea of a "**black box**" **computational model** without providing sufficient details for implementation

Key Points Regarding Machine Learning Patent Applications

- **Detailed disclosure of the ML model is crucial:** Simply mentioning machine learning is not enough, a comprehensive description of the model's architecture, including its topology, mathematical modelling of nodes and learning procedures is required.
- **Clear definition of input and output variables is essential:** Broad terms are unacceptable without further detail.
- **Guidance on parameter selection is required:** The application must provide clear instructions and criteria for choosing appropriate parameters within broadly defined categories.
- **Disclosure of training data quantity and quality is necessary:** Information about the source and characteristics of the training data is required to ensure it adequately represents the relevant parameters. Relying on the assumption that a skilled person would know where to get the right data and what it would look like is not sufficient.

Insight

Practitioners need to be **clear about AI/ML use, describe the model in detail, define input and output variables precisely, offer clear guidance on parameter selection and disclose relevant information** about the training data

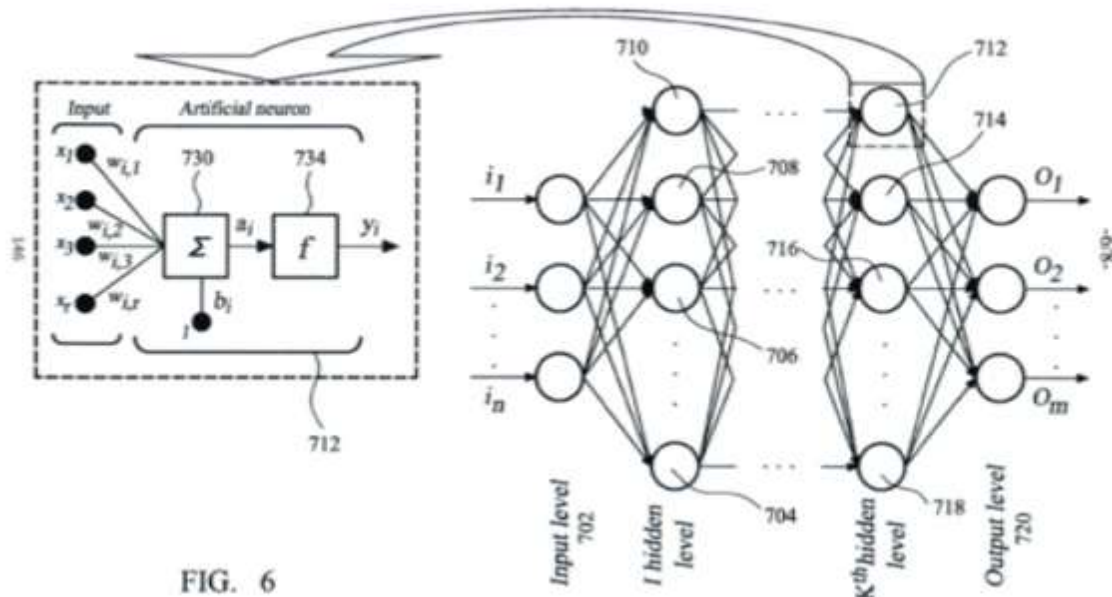


Emotional Perception AI Limited v Comptroller

Court of Appeal of England and Wales, [2024] EWCA Civ 825, 19 July 2024

- Case concerning a patent for an artificial neural network system for providing media recommendations
- Art 52 of the European Patent Convention and Section 1 of the UK Patents Act 1977 say
 - (2) The following in particular shall not be regarded as inventions within the meaning of paragraph 1*
 - (a) discoveries, scientific theories and mathematical methods;*
 - (c) schemes, rules and methods for performing mental acts, playing games or doing business, and programs for computers;*
 - (3) Paragraph 2 shall exclude the patentability of the subject-matter or activities referred to therein only to the extent to which a European patent application or European patent relates to such subject-matter or activities as such.*

How did the Court think the system worked



- An Artificial Neural Network is a machine which process information, whereby each neuron acts according to the aggregate set of its weights and biases.
- Once setup an Artificial Neural Network can convert any input into another output.

Why the claimed invention was a computer program

- **Weights and biases in an Artificial Neural Network** are a computer program or if not likely to be mathematical method
- **No requirement for a human computer programmer**, the fact that the weights and biases were trained by machine does not change the analysis
- **Artificial Neural Network inventions can be patentable**, but that requires a technical effect like prior computer program inventions
- **No separate technical effect**, the recommended files being more worthwhile in some aesthetic way was not technical

Recentive Analytics Inc v Fox Corp

US Court of Appeals for the Federal Circuit, Case 2023-2437, 18 April 2025

- Case concerning patents which use AI and machine learning to optimise TV scheduling
- Conclusion of the Court of Appeals for the Federal Circuit

“Machine learning is a burgeoning and increasingly important field may lead to patent-eligible improvements in technology. Today, we hold only that patents that do no more than claim the application of generic machine learning to new data environments, without disclosing improvements to the machine learning models to be applied, are patent ineligible under § 101”

Insight

AI / Artificial Neural Networks / Machine Learning are **computer programs** and/or **mathematical methods**.

Need therefore to show some other **technical effect** of the claimed invention.



Impact of AI on inventiveness



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Problems associated with inventive step & AI

- **Human inventor** – patent law relies on the inventiveness perceived through the eyes of the person skilled in the art.
- AI will impact three elements of the inventive step analysis:
 1. The size of the prior art pool;
 2. The identity of the person skilled in the art / the skilled team;
and
 3. The test for obviousness.

AI & prior art

- Threat of the **prior art flooding**:
 - Generative AI allows for easy publishing on a massive scale;
 - Creating prior art for defensive reasons (DeepMind) as well to impede patenting as such ("All Prior Art" project – by March 2022, supposedly 570 million disclosures):

All Prior Art is a project attempting to algorithmically create and publicly publish all possible new prior art, thereby making the published concepts not patent-able. The concept is to democratize ideas, provide an impetus for change in the patent system, and to preempt patent trolls. The system works by pulling text from the entire database of US issued and published (un-approved) patents and creating prior art from the patent language. While most inventions generated will be nonsensical, the cost to computationally create and publish millions of ideas is nearly zero – which allows for a higher probability of possible valid prior art.

- How to differentiate between technical "deep fakes" and valid prior art:
 - Evaluation of prior art and its sources?
 - Requirement of human contribution, review, or validation?
 - Threshold of sufficiently accessible and/or disclosed (enabled) prior art?



Should AI-generated prior art be taken into consideration for novelty and inventive step?

AI & the person skilled in the art

- How should a 'skilled person' be defined in an obviousness analysis?
 - Usual definition is a relatively narrow knowledge relating to the field of the invention;
 - A skilled person equipped with AI would have the ability to consider references spanning numerous fields of invention.
- How is the alternative **AI skilled in the art** ("AISITA") different?
 - Able to explore multiple avenues easily (test & try approach);
 - Unbiased and neutral - mosaicking prior art from remote fields;
 - Solutions based on pattern recognition and probabilistic modeling.

AI & obviousness analysis

- Clash between "everything is obvious" vs overpatenting;
- Call to raise the bar? Adaptive approach as a solution to maintain the requirement of inventive step
- Two separate standards to assess inventive step:
 - AI-assistance standard for the relevant field (**would** use AI) → a skilled person equipped in AI-tools as the point of reference;
 - AI-assistance untypical for the relevant field (**could** use AI) → a human skilled person as the point of reference.
- How to define what is typical and routine use of AI and what are its state-of-the-art capabilities?
- Could the reinvention of the obviousness analysis push inventors towards trade secrets and away from the patent system?



What should be the model of a skilled person for assessment of inventive step?

Change of law or practice to be expected?

- 2024 – **USPTO**: *Request for Comments Regarding the Impact of the Proliferation of Artificial Intelligence on Prior Art, the Knowledge of a Person Having Ordinary Skill in the Art, and Determinations of Patentability Made in View of the Foregoing*
 - Questionnaire: <https://www.federalregister.gov/documents/2024/04/30/2024-08969/request-for-comments-regarding-the-impact-of-the-proliferation-of-artificial-intelligence-on-prior>
 - 75 comments by stakeholders submitted – they are currently being evaluated; available at: <https://www.regulations.gov/document/PTO-P-2023-0044-0001/comment>
- Will it result in new guidance or new legislation? If so, will other jurisdictions follow?

AI in patent practice



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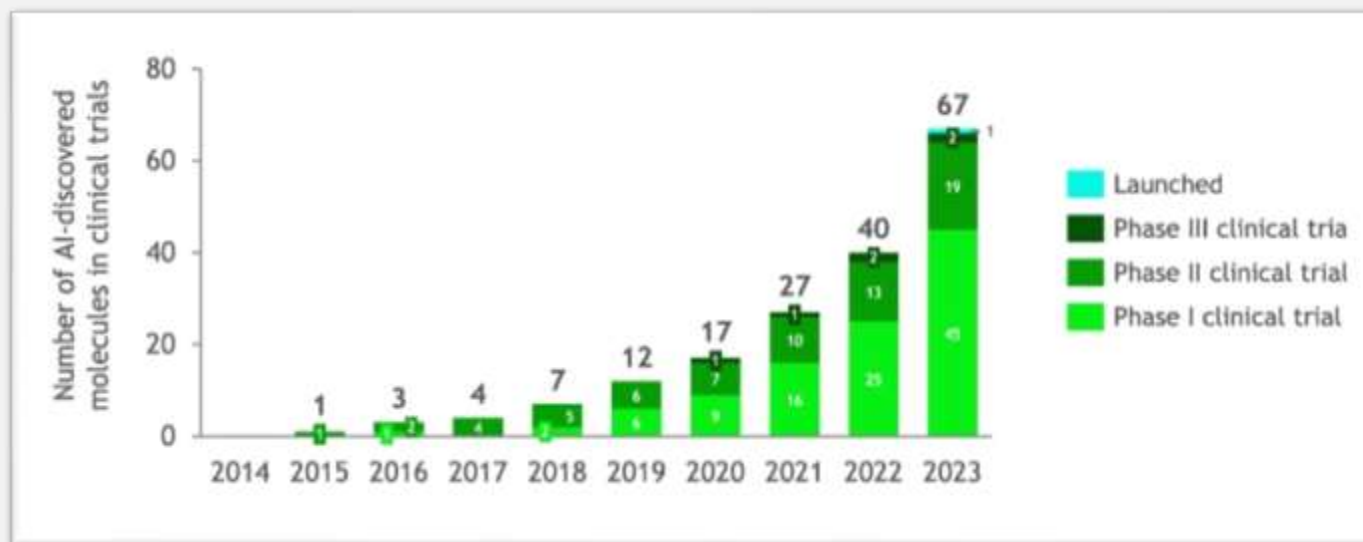
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AI in patent practice: life sciences examples

"In Phase I trials, AI-derived molecules can have a success rate of 80–90%"

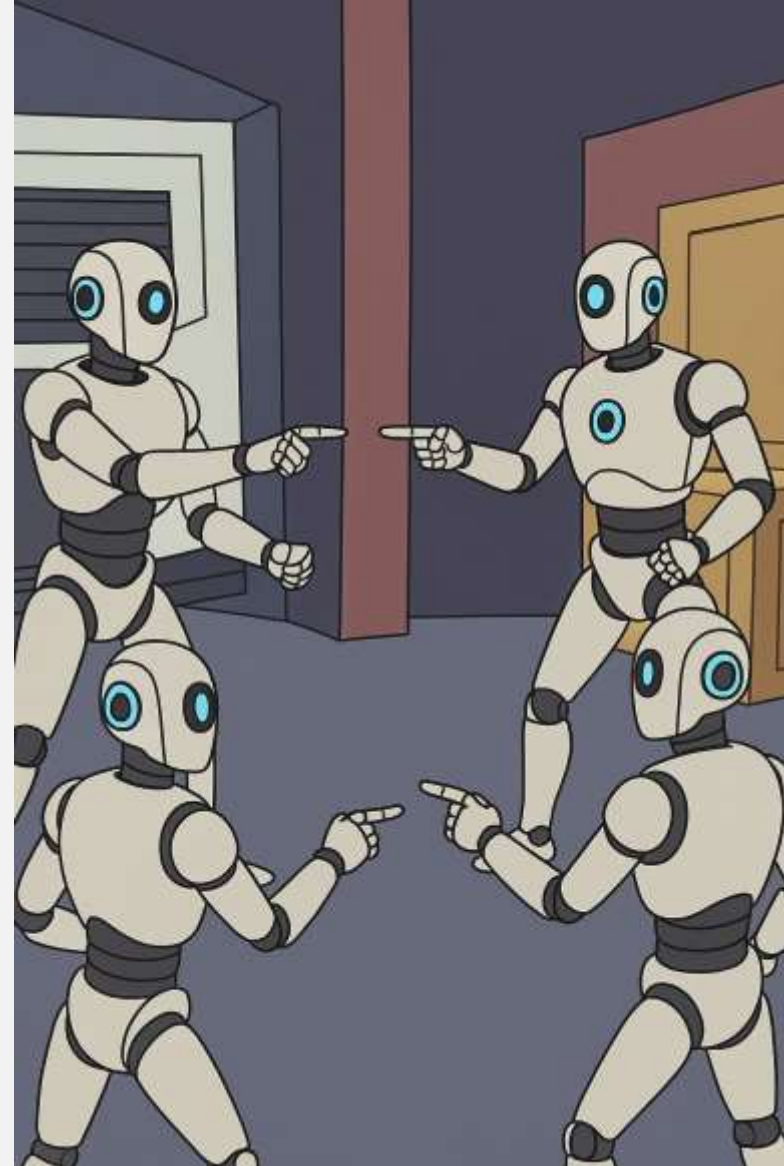


Q. Benefits for drug discovery & development are clear but what do patent litigators need to know about AI in the life sciences field?

AI in patent practice: life sciences examples



Who's to
blame? -
Assigning
liability



Whose fault is it, anyway? Liability Distribution Challenges



AI DEVELOPERS



AI TRAINERS



END USERS



AI SYSTEM ITSELF

Now you see me, now you don't – Evidentiary problems



Black box



Emergent capabilities



Goal misgeneralization

"Pls fix, thx." – Solution strategies



Enhanced
documentation



Contractual
frameworks



Transparency
by design



Insurance



AI patent
clearance

Questions?



The AI Act & patents – key intersections

- The AI Act is not an IP regulation, but it may still have an indirect effect on patent law and IP-protection strategies for AI-related inventions.

Patentability vs Risk	Drafting vs Classification	Transparency vs IP
Solutions related to unacceptable risk AI systems could become unpatentable in the future	Content of patent applications may lead to high-risk classification under the AI Act	Disclosure obligations may destroy novelty or expose trade secrets

Takeaways for patenting in the AI Act era

- **Consider regulatory risk** when drafting AI-related patent applications;
- **File early** to safeguard novelty before disclosures are required;
- **Align** IP and compliance strategies;
- **Reassess trade secret vs patenting** strategy for solutions involving AI-use.