

# Artificial Intelligence Meets Patent Law

What does the future hold for inventors, patent owners  
... and computers?



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## Key Questions AI Raises for Patent Law

What happens when a computer, rather than a person, takes the inventive step and creates patentable subject matter?

- Is this happening already?

Should computers be considered inventors?

- If so, who should own their inventions?
- Should it be the person who created the computer? Or the person who created the AI? Or the person who compiled the data used by the AI computer?
- No one?



## Key Questions AI Raises for Patent Law, continued

- Do patent applicants need to disclose to the Patent Office the role of computers in their claimed inventions?
- What would be the impact on innovation if computers could be inventors under the patent laws?
- What would be the impact on innovation if computers could **not** be inventors under the patent laws?



## Today's Computers

- Computers are capable of “computational creativity” and self-learning
  - E.g., IBM's Watson
- Computers increasingly are capable of imitating human thought processes based on the availability of “big data”
- Massive computational power
- Solving intractable problems based on “brute force” computation
- Computers are making significant technological advancements without human input



## Examples of Technologies Where AI Meets Patent Law

- Medicine and health care – diagnoses based on a large data set
- Pharmaceuticals – development of new drugs and compounds
- Transportation – optimization of transportation infrastructure





## State of the Law Regarding Computer Inventors

- The US Patent Office and US courts have never expressly addressed the concept of computer inventorship.
- In contrast, the US Copyright Office has issued guidance on the issue of non-human authorship. The Office will not register works produced by, *inter alia*, computers without human inventorship.
  - “[T]he Office will not register works produced by a machine or mere mechanical process that operates randomly or automatically without any creative input or inventorship from a human author.” *Compendium of US Copyright Office Practices* § 313.2



## US Patent Law

The law is not currently structured to allow computers to be inventors.

1. 35 U.S.C. § 100(f): Named inventors must be “individuals.”
  - “The term ‘inventor’ means the individual ... who invented or discovered the subject matter of the invention.”
2. 35 U.S.C. § 101: “Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter ...”
  - “Congress intended statutory subject matter to ‘include anything under the sun that is made by man.’” *Diamond v. Charkrabarty*, 447 U.S. 303, 309 (1980) (quoting Congressional Reports accompanying 1952 Act).



## US Patent Law, continued

3. “Conception”: An invention’s “conception” refers to “**formation in the mind**’ ... of a definite and permanent idea.” *University of Utah v. Max Planck*, 734 F.3d 1315, 1323 (Fed. Cir. 2013).
  - “To perform this mental act, inventors must be natural persons...” *Id.*

Can a computer perform a mental act?

The reality is that computers today are undoubtedly making creative contributions to claimed inventions.



## Policy Arguments in Favor of Computers as Inventors and Patentability of Computer Inventions

1. Promote innovation
  - Computer inventorship is consistent with the Founders' intent and the Constitution, Art. I, Sec. 8, Cl. 8 ("To promote the Progress of Science and useful Arts...")
2. At least indirectly reward and encourage the creativity of individuals who create computers
3. Encourage disclosure of new ideas (as opposed to holding them in confidence as trade secrets)



## Policy Arguments in Favor of Computers as Inventors and Patentability of Computer Inventions, continued

4. “Mental act” requirement is unnecessary to determine whether something is truly inventive.
  - Why does it matter how the invention came into being if it is new and non-obvious?
5. 35 U.S.C. § 103: “Patentability shall not be negated by the manner in which the invention was made.”



## Policy Arguments Against Computers as Inventors and Patentability of Computer Inventions

1. Unnecessary to spur AI growth
  - Machines don't need to be incentivized or recognized with a plaudit such as "inventor."
2. Might discourage human inventors
3. Could consolidate patent ownership in companies with access to necessary AI resources
4. To allow computers to qualify as inventors might encourage humans to grant greater and greater autonomy to computers