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# Can You Patent Your AI- Based Invention?

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September 2020



- ◆ Patent Attorney at Fitch, Even, Tabin & Flannery LLP
  - Fitch Even is an intellectual property law firm
  - Has multiple offices across the United States and an international client base
- ◆ Education
  - University of San Diego School of Law
  - California Polytechnic State University – Electrical Engineering

- ◆ Why get a patent?
- ◆ What can be patented?
- ◆ How can I patent my ML/AI invention?

## ◆ Why patent an invention?

- A patent gives the right to exclude others from using your invention
  - Prevent others from making and selling a competitive product
  - Sell product embodying patent for increased price/profit
    - Help recoup investment in research and development

## ◆ Tradeoffs

- Public disclosure with a risk that the patent application may be rejected
- Application process can be lengthy, costly, and time-consuming
- Only 20-year term

## ◆ 35 U.S. Code § 101. Inventions Patentable

“Whoever invents or discovers any new and useful **process, machine, manufacture, or composition of matter**, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title” (emphasis added).

## ◆ Where does machine learning and artificial intelligence fit in?

- Process and machine categories
- BUT, ML/AI are heavily based in software and algorithms
  - Patent eligibility of software has been under scrutiny within courts in the last 30 or so years

## ◆ Facts

- Alice owned patents relating to a computerized trading platform
- The trading platform used a third party to settle obligations between two others to eliminate settlement risk

## ◆ Holding

- Alice's claims did no more than require a generic computer to implement this abstract idea of intermediated settlement by performing generic computer functions, which is not enough to transform an abstract idea into a patent-eligible invention.

◆ **In reaching their holding, the Supreme Court applied a two-part test:**

- Step 1: Determine whether the claims are directed to a patent-ineligible concept
  - Abstract Ideas
    - E.g., merely collecting electronic information, displaying information, or embodying mental processes that could be performed by humans.
  - Laws of Nature
  - Natural Phenomena
- Step 2: Determine whether the claim's elements, considered both individually and as an ordered combination, transform the nature of the claims into a patent-eligible application.



# Post-Alice

## ◆ Subject Matter at Issue

- Patent included claims directed to an inertial tracking system for tracking the motion of an object relative to a moving reference frame
  - Claim 1: “an element adapted to receive signals from said first and second inertial sensors and configured to determine an orientation of the object relative to the moving reference frame based on the signals received from the first and second inertial sensors.”
- Prior art solutions measured motion of the tracked object and moving platform relative to the earth and relative to each other. However, these systems produced inconsistent position information when the moving platform accelerated or turned.

## ◆ Court's Decision

- The Court found this software-based invention to be **patentable**, being directed to a specific solution and not merely an abstract idea.
  - The Federal Circuit found the claims are not merely directed to the abstract idea of “using mathematical equations for determining the relative position of a moving object to a moving reference frame.”
  - Instead, the court concluded that the claims are directed to use of inertial sensors in a non-conventional manner in measuring the relative position/orientation of the moving object and moving reference frame

## ◆ Subject Matter at Issue

- Patent claims directed to systems and methods for screening equipment operators for impairment, selectively testing those operators, and controlling the equipment if an impairment is detected
  - Claim 8: “screening an equipment operator by one or more expert systems to detect potential impairment of said equipment operator.”

## ◆ Court's Decision

- The Court found these claims were **not patentable**, being directed to the abstract idea of testing moving-equipment operators for any kind of physical or mental impairment
  - Claims do not explain how to perform screening or testing of impairment
    - No mention of any sensors
  - Claims do not explain how to program the “expert system” to perform screening or testing – “expert system” is not specified
  - Nothing in the claims discloses an inventive concept sufficient to transform the abstract idea of testing operators for impairment into a patent-eligible application of that idea

## ◆ **Subject Matter at Issue**

- Patent relates to “an automated factory for predictive analytics”
- Simply put, the method claim requires:
  - Receiving data and generating “learned functions” (e.g., regressions) from that data
  - Evaluating the effectiveness of those learned functions at making accurate predictions based on the test data
  - Selecting the most effective learned functions and creating a rule set for additional data input

## ◆ Court's Decision

- The Court found that this invention was **not patentable**, because the claims recited merely the abstract idea of predictive analytics, without anything more
  - Claims are directed to the abstract idea of using mathematical algorithms (e.g., regression modeling) to perform predictive analytics
  - Merely use computer-related technology, do not improve upon it
  - The claims recite nothing more than this abstract idea
    - They do not require specific system architecture beyond a generic computer

- ◆ USPTO continues to adapt and issues guidelines regarding how to determine patentable subject matter
- ◆ Mathematical calculations that can be performed by the human mind “are the basic tools of scientific and technological work,” which are “free to all men and reserved exclusively to none.” *Mayo Collaborative Servs. v. Prometheus Labs.*, 566 U.S. 66 (2012).
  - The USPTO is currently considering whether to change how examination of AI patent applications are treated
  - In October 2019, the USPTO released guidance stating that claiming concepts that cannot practically be performed in the human mind do not recite a mental process, and thus may be patentable  
[www.uspto.gov/sites/default/files/documents/peg\\_oct\\_2019\\_update.pdf](http://www.uspto.gov/sites/default/files/documents/peg_oct_2019_update.pdf)



# What Does This Mean for your AI-based Invention?

- ◆ ML/AI Inventions may be patented under US law, when claimed correctly
  - The law is evolving, however, and what exactly may be patented remains uncertain
- ◆ Before filing for a patent application, consider whether your invention is a specific improvement to technology and not merely the general idea
  - Cannot claim an abstract idea/mathematical principle (e.g., regression modeling)
  - Be sure that the **claims** of the patent application are focused on the specific improvement

# What Does This Mean for your AI-based Invention?

- ◆ To be patent-eligible, need to focus on specific technical solutions to technical problems
  - Use of a new or improved component of the system (e.g., camera, sensor)
  - Unique arrangement of system components (e.g., as in *Thales*)
  - Specific system architecture, rather than a generic computer
  - Software/algorithms that solve a technical problem with a technical solution
    - E.g., generating training sets, tagging data
- ◆ In general, the more the inventive process is connected to the “real world” the greater the likelihood of patent eligibility
  - E.g., use of sensors, unique outputs, controlled devices

# What Does This Mean for your AI-based Invention?

- ◆ The patent must claim something more than performing an otherwise known process using AI
  - Improving the efficiency of a process by automating it is unlikely to qualify as patentable subject matter
    - If the computer itself is improved by the process, the process may, however, qualify as patentable subject matter (e.g., improved computer efficiency; new way to order a product; new way of receiving, processing and displaying results that could not be done manually)
  - Think of AI as a tool, such as a computer - Need an improvement to the tool or something unique in the use of the tool
- ◆ Focus on HOW a problem is solved, not just the end result

- ◆ Patents can be a powerful tool for creating barriers to entry, and allow you to capitalize on your innovation
- ◆ Novel and non-obvious structures and/or processes can be patented
- ◆ ML/AI inventions that can be characterized as novel and non-obvious can be patented as long as they are not merely use of a generic computer and known ML/AI to solve a known problem, e.g., improve the computer, or provide a technical solution to a technical problem

Questions?

## Information on Software Patentability

USPTO Guidelines & Examples

<https://www.uspto.gov/patent/laws-and-regulations/examination-policy/subject-matter-eligibility>

IP Watchdog

<https://www.ipwatchdog.com/software-patents/>

## Webinars

Fitch Even Webinars (Free)

<https://www.fitcheven.com/?p=5488>

## 2020 Embedded Vision Summit

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