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AI Inventor Debate

I'm sorry Dave, I'm afraid I can't be an inventor

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Definition of AI (Artificial Intelligence)

- **Merriam-Webster:**

1. a branch of computer science dealing with the simulation of intelligent behavior in computers

2. the capability of a machine to imitate intelligent human behavior

- **Professor B.J. Copeland** (University of Canterbury, New Zealand)

The ability of a digital computer or computer-controlled robot to perform tasks commonly associated with intelligent beings. The term is frequently applied to the project developing systems endowed with the intellectual processes characteristic of humans, such as the ability to reason, discover meaning, generalize, or learn from past experience

Internet of Things (IoT)

- IoT is where electronic, internet-enabled smart devices communicate with each other, as in a smart house. These devices create mountains of data which is channeled into machine-learning software. This technology allows repeatable accounts receivable tasks accurately after human input helps the technology learn how to complete tasks.
 - Amazon Go (a chain of convenience stores in the United States operated by the online retailer Amazon)
 - Wearables (Google Glass, FitBits smart watches)
 - Smart Homes (smart locks, garage controller, smart plugs, Roomba)
 - Driverless cars (vehicle capable of sensing its environment and moving safely with little human input) - closer to AI

Artificial Intelligence

- After data is processed in an education filter to help organize and prioritize it, the data goes into deep-learning, a more sophisticated level of processing, learns from the data to inform the next set of data. Deep-learning gives data the ability to **complete tasks without any human input.**
- The data then leaves deep-learning and goes into an even more complex and highly organized process called Artificial Intelligence (AI). AI organizes the data into silos, similarly to deep-learning, but the difference is the AI is 100% automated cognitive functioning, and is **able to take the data and complete tasks without human input or manual effort.**

Is the Terminator an AI?

- In the Terminator movie, Skynet, the artificial intelligence, sends Model 101 (the guy on the right) from the future to kill John, who has the fate of becoming the human resistance leader against Skynet in the future.
- Skynet communicates with Model 101 in a fashion similar to IoT (gives order to terminate John).
- Model 101 is not much different from Roomba that can be controlled from your cellphone.



AI in Real World

- Lethal Autonomous Weapons Systems (AWS):
 - A weapon system that can identify, select, and engage a target without meaningful human control.
 - It can be deployed without established communication network and would independently respond to a changing environment and decide how to achieve its pre-programmed goals.
 - The ethical, political and legal debate underway has been around autonomy in the use of force and the decision to take human life.
 - Over 4500 AI and Robotics researchers, 250 organizations, 30 nations and the Secretary General of the UN have called for legally-binding treaty banning AWS.

AI in Real World (friendlier versions)

- Chess (AI v. Human)
 - In 1997, Deep Blue, a chess computer built by IBM, beat the reigning world champion in a six-game match.
 - Deep Blue's 256 parallel processors enabled it to examine 200 million possible moves per second and to look ahead as many as 14 turns to play.
- Shogi (Japanese Chess) (AI as a mentor)
 - In 2020, Japan's 17-year-old shogi sensation Sota Fujii became the youngest player ever to win two of the eight major titles.
 - Fujii started off as an amateur, but has since manages to surpass players that have been top for more than 20 years. This became possible, thanks to his **major partner: artificial intelligence**.
 - Using past data from a large shogi match database, the software attributes an evaluation value to each move, and looks at which prospect is more advantageous for the player, going down to which move is best for each of the pieces in the game.

PTO's Recent Decision on *AI* (*as an Inventor*)

AI DABUS

- **Background**

- In 2018, Stephen L. Thaler filed patent applications with the UKIPO and EPO for inventions purportedly created by a machine (an AI) known as “DABUS.”
- Thereafter, Mr. Thaler filed U.S. patent application no. 16/524,350 on July 29, 2019, for “DEVICE AND METHODS FOR ATTRACTING ENHANCED ATTENTION.” (not yet published as of September 4, 2020)
- The application data sheet (ADS) listed, as the sole inventor, the given name “DABUS” and the family name “Invention generated by artificial intelligence.”

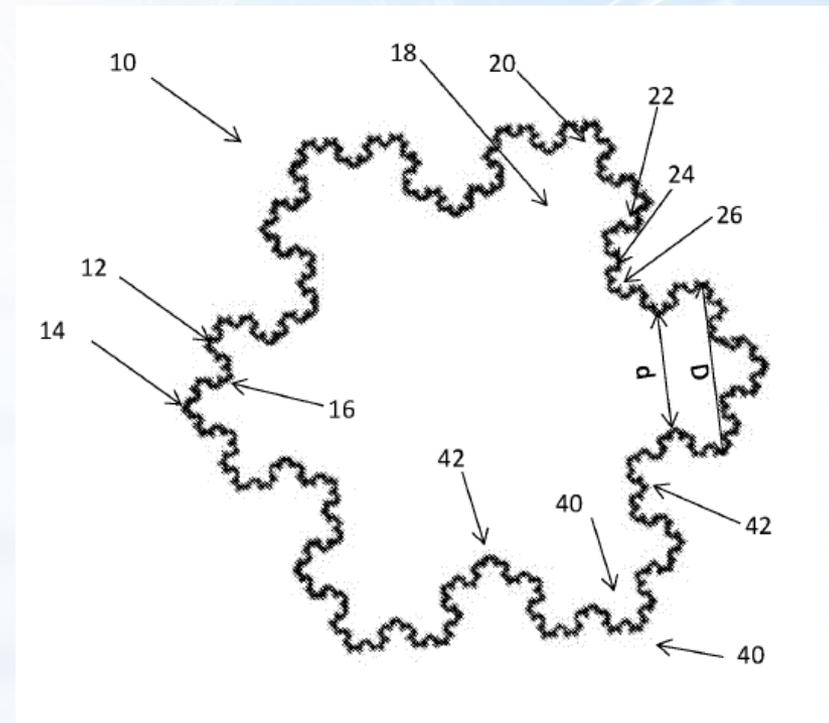
AI DABUS

- **Background**

- Mr. Thaler identified himself as the assignee of the invention and the legal representative of DABUS, and submitted a substitute statement under 37 C.F.R. 1.64, which enables an applicant to proceed without the signature of the inventor when the inventor's signature cannot be obtained through reasonable efforts.
- This was accompanied by a Statement of Inventorship stating that the invention was conceived by “creativity machine” named DABUS and that DABUS should be named as the inventor in the ‘350 application.
- The PTO issued a Notice to File Missing Parts on the basis that ADS did “not identify each inventor by his or her legal name.”
- In response, Mr. Thaler filed a petition under 37 CFR 1.181 on January 20, 2020, requesting reconsideration of the decision. Mr. Thaler argued that inventorship should not be limited to natural persons, asserting that it was DABUS, not a person, “which recognized the novelty of salience” of the claimed invention.

What did DABUS Invent?

- The Abstract in the corresponding PCT application (WO 2020079499) states:
 - A container (10) for use, for example, for beverages, has a wall (12) with an external surface (14) and an internal wall (16) of substantially uniform thickness. The wall (12) has a fractal profile which provides a series of fractal elements (18-28) on the interior and exterior surfaces (14-16), forming pits (40) and bulges (42) in the profile of the wall and in which a pit (40) as seen from one of the exterior or interior surfaces (12, 14) forms a bulge (42) on the other of the exterior or interior surfaces (12, 14). The profile enables multiple containers to be coupled together by inter-engagement of pits and bulges on corresponding ones of the containers. The profile also improves grip, as well as heat transfer into and out of the container.



PTO's Opinion

- In the April 27, 2020 decision, the PTO rejected Mr. Thaler's arguments, holding that **only a natural person can be an inventor**, echoing the UKIPO's and EPO's positions (briefly described later).
- In its opinion, the PTO pointed to the following:
 - Under 35 U.S.C. § 115(a), “[a]n application for patent that is filed under section 111(a) . . . shall include, or be amended to include, the name of the inventor for any invention claimed in the application.” An “inventor” is defined in 35 U.S.C. § 100(a) as “**the individual or**, if a joint invention, **the individuals** collectively **who invented or discovered** the subject matter of the invention.”
 - 35 U.S.C. § 101 states “**whoever** invents or discovers any new and useful process, machine, manufacture, or composition of matter . . . may obtain a patent”
 - 35 U.S.C. § 115 similarly refers to individuals and uses pronouns specific to “natural persons – **‘himself’ and ‘herself’** – when referring to the individual.” It further states that the inventor who executes an oath or declaration **must be a “person.”**

PTO's Opinion

- CAFC explained that ***a state cannot be an inventor*** (*Univ. of Utah v. Max-Planck-Gesellschaft*, 734 F.3d 1315 (Fed. Cir. 2013)) and ***a corporation cannot be an inventor*** (*Beech Aircraft Corp. v. EDO Corp.*, 990 F.2d 1237, 1248 (Fed. Cir. 1993)).
- The MPEP defines “conception” as “the complete performance of the ***mental*** part of the inventive act” and it is “the formation in the ***mind*** of the inventor of a definite and permanent idea of the complete and operative invention as it is thereafter to be applied in practice.” *The use of terms “mental” and “mind” in the MPEP indicates that conception must be performed by a natural person.*

Dissenting Comments

by Kirk Hartung (McKee, Voorhees & Sease, PLC)

- 35 USC § 103 provides that patentability “shall not be negated by the manner in which the invention was made.” Thus, a conception step, as discussed by the USPTO decision in the ‘350 application should not be a prerequisite for patent protection.
- The entire U.S. patent system is premised on the objective of promoting science and the useful arts. As stated in 35 U.S.C. § 101, patents can also be granted for discovery of a new and useful process, machine, manufacture or composition of matter. The ‘350 application is based on the discovery by DABUS of a novel device and method for attracting enhanced attention, such as signal indicators and beacons using a fractal dimension.
- The USPTO decision focuses largely on conception as a necessary mental step in the inventive process. However, some inventions do not derive from conception, rather may be the result of a “flush of genius,” or simply by accident without any mental conception step. (e.g., post-it sticky notes, the slinky toy, and Play Doh modeling clay)

Dissenting Comments

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- If no mental step of conception is needed, then a natural person is not necessary for a patentable invention of discovery.
- The USPTO's position is inconsistent with the April 10, 2020 CAFC decision, which concluded that the statutory language allowing a "person" to file a petition for post grant review includes **banks** (*Bozeman Fingncial, LLC v. Federal Reserve Bank*). This statutory interpretation that "persons" is not limited to natural persons undercut the USPTO interpretation that an inventor must be a natural person.
- Prior to 1980, living things were generally understood not to be subject to patent protection. However, the USSC ruled in *Diamond v. Chakrabarty* that a live, human-made organism was patentable subject matter under § 101. Chief justice Burger cautioned against reading limitations and conditions into the patent laws which *Congress had not expressed*.

Holdings by EPO and UKIPO

- In published decisions dated December 2019 and February 2020, respectively, the UKIPO and EPO both held that a machine, and DABUS in particular, is not a person and therefore cannot be named as an inventor on a patent granted by those offices.
 - AI DABUS could not be regarded as an inventor under the applicable legal framework, which in the context of inventorship only refers to natural persons. The position of inventors is safeguarded by granting them various rights such as the right to be referred to as such in the European patent applications. However, AI systems or machines do not have any such rights because they have no legal personality comparable to natural persons or legal persons.

Holdings by EPO and UKIPO

- Applicants need to indicate on what legal basis Mr. Thaler was applying for a patent. Such legal basis is most often found in an assignment or in the fact that the applicant is the successor in title to the invention.
- However, AI systems or machines can neither be employed, nor can they have any legal title over their output which could then be transferred by operation of law or agreement. Although Mr. Thaler is the owner of AI DABUS, the question of ownership of an output must be distinguishable from the question of inventorship and the rights connected to it.
- IP5 (the patent offices of Japan, Korea, China, the U.S., and the EPO), which together handle about 85% of the world's patent applications, has been holding meetings on their joint Task Force on New Emerging Technologies and Artificial intelligence.

Copyright Law In UK

- UK copyright law acknowledges the possibility that works could be "computer-generated" defined as a "generated by computer in circumstances such that **there is no human author of the work**" (Section 178 (CDPA)).
- Section 9(3) CDPA provides that the author of a computer-generated work is deemed to be **the person** "by whom the arrangements necessary for the creation of the work are undertaken."

Takeaways

- The continued growth of AI capabilities has challenged traditional notions of inventorship as AI systems are starting to develop invention without human aid. Owners of such systems have recently sought to obtain IP protections for AI-generated inventions.
- The USPTO rejected an attempt to name an AI system as the inventor. The Office found that U.S. patent statutes and related case law, as well as USPTO rules and regulations limit inventorship to natural persons. Consequently, applications may *not* list an AI system as the inventor.

Takeaways

- The USPTO decision leaves open the question of what, if any, legal protections are available for inventions and other works created by an AI system without human aid. In the meantime, businesses that own AI systems capable of inventing should ensure sufficient human involvement in the inventive process to maintain compliance with patent application requirements.

Open Questions

- Can a human being, such as the owner, operator, or programmer of the AI, legitimately claim to be the “inventor” of something produced by an AI (to the extent they are the first person who “discovered” the subject matter)?
- Is an AI different from any other tool used by human beings in the inventive process?

Thank you!



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