

November 7, 2019

VIA E-MAIL

The Honorable Andrei Iancu
Under Secretary of Commerce for Intellectual Property and
Director of the United States Patent and Trademark Office
P.O. Box. 1450
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Re: Request for Comments on Patenting Artificial Intelligence Inventions,
Docket No. PTO-C-2019-0029

Dear Under Secretary Iancu:

Below please find responses to two of the questions posed by the United States Patent And Trademark Office in its Request for Comments on Patenting Artificial Intelligence Inventions, Docket No. PTO-C-2019-0029.

3. Do current patent laws and regulations regarding inventorship need to be revised to take into account inventions where an entity or entities other than a natural person contributed to the conception of an invention?

At least some of the current patent laws and regulations regarding inventorship should be revised in view of the coming wave of computer-conceived inventions. *See* Section III of Patents In An Era Of Infinite Monkeys And Artificial Intelligence, Ben Hattenbach & Joshua Glucoft, 19 Stanford Technology Law Review 32 (October 2015) (*available at* <https://law.stanford.edu/publications/patents-in-an-era-of-infinite-monkeys-and-artificial-intelligence/>). If the patent laws and regulations are so revised, however, it is critical for the Office to recognize that the Office ***has already granted patents*** for inventions where a computer algorithm conceived of the claimed invention in whole or at least in sufficient part to qualify as an inventor under the relevant case law.

For example, the Office has granted patents conceived by “genetic programming” algorithms. Genetic programming generally starts with a seed set of candidate solutions of known performance. The best-performing candidates are then either reproduced, crossed with each other to generate offspring that have some elements from each of the parents, or randomly mutated. That process of reproduction, crossover, and mutation repeats itself until the software converges on a set of sufficiently “fit” offspring. *See* John R. Koza, Genetic Programming:

On The Programming Of Computers By Means Of Natural Selection (1992). This method was used by, for example, Martin Keane and his co-inventors to generate new proportional-integrative-derivative (PID) and non-PID electrical controllers, which were subsequently patented. *See generally* U.S. Patent No. 6,847,851. Neither Keane nor his co-inventors chose the layout or even the number of electrical elements in their new controllers; rather, they developed the software that created all of the new generations of potential solutions and measured each generation's performance.

Similarly, the Computer-Aided Drug Design Center at the University of Maryland's School of Pharmacy has been awarded numerous patents for molecules whose structure were pharmacologically optimized (if not conceived in the first instance) with the help of computer algorithms. *See CADD Center Patents*, University of Maryland School of Pharmacy, *available at* http://cadd.umaryland.edu/CADD_publications.shtml. As with Keane *et al.*'s invention described above, the computer algorithm in these situations arguably qualified as at least a co-inventor.

There are two key takeaways from these examples of patents that have already been issued on inventions that were conceived in whole or in sufficient part by computers. *First*, because the Office has already granted patents on some of these types of inventions, the Office must try to minimize the potential fallout from disturbing otherwise settled expectations regarding ownership. For example, will the University of Maryland suddenly have to share ownership (and revenues) from the pharmaceuticals that it developed with any third-party contributors to the computer-aided drug design software? And *second*, computer-conceived inventions have not always been associated with the trendy (and poorly defined) term "artificial intelligence," so the Office must take care in delineating exactly what types of inventions are affected by any change in the laws or regulations. For example, would inventions conceived by "genetic programming," as opposed to a more common example of "artificial intelligence" such as a neural network, fall within the ambit of the changes?

8. Does AI impact the level of a person of ordinary skill in the art? If so, how? For example: Should assessment of the level of ordinary skill in the art reflect the capability possessed by AI?

Artificial intelligence could have a dramatic impact on the person of ordinary skill in the art. After all, "intelligent" computers might begin to generate mountains of pertinent prior art, and the "person of ordinary skill is a hypothetical person who is presumed to be aware of *all* the pertinent prior art." *See Custom Accessories, Inc. v. Jeffrey-Allan Indus., Inc.*, 807 F.2d 955, 962 (Fed. Cir. 1986) (emphasis added).

The law might already have at least a partial escape hatch to avoid holding obvious the types of inventions that the patent laws were intended to reward. Specifically, the Office might rely on the requirements of "printed publication" status to keep in check the otherwise heightened

level of skill of a POSITA. To serve as prior art, printed publications must be publicly accessible, which requires a showing that the documents were “made available to the extent that persons interested and ordinarily skilled in the subject matter or art exercising reasonable diligence[] can locate” them. *Suffolk Techs., LLC v. AOL Inc.*, 752 F.3d 1358, 1364 (Fed. Cir. 2014). A tower of computer-conceived prior art that is generated en masse should not constitute a “printed publication” for prior art purposes if it lacks sufficient context such that inventors can effectively sift through the potentially massive piles of disclosure. *See SRI Int’l, Inc. v. Internet Sec. Sys., Inc.*, 511 F.3d 1186, 1194-98 (Fed. Cir. 2008) (holding that a paper placed on an FTP site but neither indexed nor catalogued in any “meaningful way” was not publicly accessible). In this manner, although the level of skill of a POSITA might be dramatically increased as a result of artificial intelligence, the risk to the patent system’s basic incentive mechanism might be somewhat mitigated by leveraging the “printed publication” requirement to avoid raising the bar too high.

On the other hand, the inquiry into whether something constitutes a “printed publication” is highly fact specific. *See Voter Verified, Inc. v. Premier Election Solutions, Inc.*, 698 F.3d 1374, 1380 (Fed. Cir. 2012). As a result, the inquiry could become particularly burdensome in situations where a court is left to make the nuanced determination of whether computer-generated prior art is surrounded by sufficient context to warrant “printed publication” status. Thus, even though the current system may already have a mechanism to (at least partially) deal with the significant impact that artificial intelligence will have on the level of ordinary skill in the art, that mechanism (*i.e.*, the “printed publication” requirement) was not built with this purpose in mind and may not be up to the task practically speaking. While the system might be able to make do for the time being, eventually the laws and regulations will have to be revisited.

For a more in-depth discussion about the effect that artificial intelligence might have on prior art and the associated level of ordinary skill, *see* Section II of Patents In An Era Of Infinite Monkeys And Artificial Intelligence (*supra*), incorporated herein by reference.

Sincerely,

/s/ Joshua Glucoft

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