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Cognitive Insights for Artificial Intelligence

Request for Comments Regarding Artificial Intelligence and Inventorship, United States Patent and Trademark Office, Department of Commerce.
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On behalf of Cognitive Insights for Artificial Intelligence (CIfAI), we write in response to the call for comments regarding Artificial Intelligence (AI) and Inventorship by the United States Patent and Trademark Office (USPTO), Department of Commerce. We support the USPTO's efforts in seeking stakeholder input on the current state of AI technologies and inventorship issues that may arise as a result of the advancement of such technologies, especially as AI plays a greater role in the innovation process.

We at CIfAI provide strategic research-based solutions from a human-centered perspective to ensure the safe and ethical design, development, deployment, and management of AI-enabled autonomous systems across various industries. Our values-based approach is founded on accuracy, consistency, and context-dependency, and supports trusted data across every phase of the AI lifecycle to achieve confident and fair decision making.

We would like to take this moment to offer an alternative perspective on the issue of whether an AI-enabled system should have inventorship rights as an inventor or co-inventor. Although we are witnessing the improvement of AI-enabled capabilities resulting from the evolution of compute capacity, data availability and algorithm complexity and AI has become part of everyday discourse, we believe that we must take several steps back and address the underlying fundamental question at hand:

Should a non-human intelligent system as it stands today with its current characteristics and capabilities have the same or similar rights to humans in the context of ownership or authorship?

Given that current U.S. Patent Law pertains to the protection of inventions by an inventor, i.e. natural person, that must be statutory, novel, useful, and non-obvious, the short answer is no, an AI-enabled system should not be granted inventorship status since it is incompatible with sovereign ownership rights and is not a recognizable owner of intellectual property. Listing a non-human inventor (i.e. AI-enabled system) will be a violation of the U.S. Patent Law.

The long answer is one informed by a human-centered approach, and highlights the immature reaction to anthropomorphize a system simply because it mimics our intelligence on the surface. Today's AI-enabled systems are not genuine human-like systems with authentic beliefs, comprehension of the world, intrinsic and extrinsic emotions, and awareness of self. Crucially, these systems are trained on the very many outputs that we as sentient beings have produced and, in the case of AI generated text, for example, are simply trying to predict the most probable next words based on what they have learned. Therefore, it is unsurprising that behaviors like engaging in a back-and-forth conversation that moves from informal to literary to poetic and giving a semblance of having understanding, thoughts, sentience, and creativity are exhibited. To give an intuitive example of basic human behavior, take language and communication and consider what it means to us. It is not so much what we say, machines can generate language instantly and sound syntactically correct; the *what* of language, therefore, is a performable capacity. Instead, it is the *why* behind and *when* of what we say, and what we *do* with what we say that has a plurality of meaning for us.

Current AI-enabled systems do not have such above capabilities and do not have personhood; they are solely tools of us humans that function within the dictates of our human-provided data. On this assertion alone, an AI-enabled system cannot contribute to an invention at the same level as a human because contribution to an invention entails an understanding of the utility, benefit and overall responsibility as an author of a novel creation. Specifically, being able to explain in detail both the contribution at the input stage as well as at the output stage to show how the invention was conceived and then reduced to practice necessitates an understanding of the physical world in which one inhabits. An AI-enabled system is at most a tool that assists in an invention, or in the discovery of the subject matter of an invention.

Several countries have addressed the issue of AI inventorship for inventions derived from AI-enabled systems given their complexity and the fact that they are one of many issues pertaining to an evolving area of AI law and policy. The United Kingdom, the European Patent Office, and the United States hold the position that only natural persons can be named as inventors. Although Australia addressed the topic of AI inventorship and allowed AI-enabled systems to be named as inventors under the assumption that 'inventor' was not restricted to only humans, the ruling was later overturned because Australian Patent Act recognizes only human inventors. The consensus of AI inventorship is, at least for now, consistent. Patent offices across the world continue to confirm that inventors must be human, precluding AI agents from being listed as sole inventors.

All of the above underscores the fact that we humans maintain control over the development of AI-enabled systems, and we humans create tools like AI-enabled systems to successfully adapt to

our changing environment. The very new and dynamic opportunities and challenges before us are the very inspiration to stimulating innovation and technological progress. Inventions created by an AI-enabled system could be patented as long as all the 'natural persons' who participated in the creation of the AI system that produced the invention are listed as inventors, and all the requirements for patentability are met. This addresses the issue of promoting and incentivizing innovation and serves the underlying goals of the patent system without the need to extend or change the U.S. Patent Law. Moreover, upholding human beneficial ownership of AI-enabled systems helps to prevent malfeasant humans from shifting blame and responsibility to the AI-enabled systems themselves in the event of harmful outcomes. These systems pose a plethora of significant risks to humans and humans have the understanding of and control over these systems as they are trained, tested, and validated during development.

Acknowledging that current AI-enabled systems do not have an intelligence equivalent to that of humans and subscribing to an approach centered on human empowerment and well-being, we support the need for the USPTO to focus simultaneously on the topics of obviousness, data protection, disclosure, and stakeholders.

Obviousness, the key factor to determine patentability of an invention, must be enforced in patent applications containing AI-enabled system tools. This is important because AI is not above and beyond the state of the art given the myriad of available prior art information. AI as a discipline and machine learning as an approach were born in the 1950s, becoming popular in the 1960s and 1970s as computers gained better storage capacity and became cheaper, faster, and more accessible. An example of obviousness are chatbots, the most notorious one being Joseph Weizenbaum's ELIZA system at MIT from the 1960s that while a limited pattern-matcher that ran on scripts beguiled users nonetheless with its person-centered Rogerian psychotherapeutic-like capabilities. Armed with greater computer power due to the advancement of powerful computer chips, massive amounts of data generated by digital transformation efforts, and access like never before seen 57 years later, and we have an obvious evolution of AI, i.e. OpenAI's ChatGPT. As such, AI has been in existence for 72 years and therefore, based on history, AI fails to demonstrate non-obviousness, an important requirement for patentability.

Regarding data protection, the USPTO should also focus on the type of data AI algorithms use. Data generated by humans is available across multiple modalities in the public domain, and any private data should be protected. For example, ChatGPT, a large language model trained on the gigantic text dataset of the Internet produced by humans generates content based on the input it receives. Such input may produce content very similar to existing content and therefore may be considered plagiarism. Furthermore, AI-enabled systems are fed with biased data that may contain any mix of discriminatory content, errors, and falsehoods that are not necessarily captured during data processing. Hence, AI-enabled systems violate privacy, discriminate, expose sensitive and private data leading to unwanted harm. The need to regulate AI and apply laws protecting discrimination and the collection and use of personal data must be a priority of the USPTO by enforcing data protection in patent applications ensuring that inventors describe in detail the legitimate source, selection, curation and use of data that are fed into AI algorithms for

training. We also suggest that the standard for patentability of AI-enabled systems should be higher than those for non-AI-enabled technologies given the reasons stated above.

Disclosure is another area the USPTO should focus on. Although in some AI-enabled systems the processes to generate a product, decision or output are unknown, given the high complexity of computer processing, inventors should disclose in detail the tools and data used to feed an AI algorithm as well as a description of how the algorithm arrived at the final desired outcome or product. It is difficult to believe that using AI as a tool to assist in the creation of an output will contain trade secrets or confidential information given that the creators of AI algorithms are using available mathematical assumptions, algorithms, data for training and advanced computers, all well known in the art and used for many decades to advance AI-enabled systems.

Stakeholder outreach should also be a priority for the USPTO. Stakeholders must include inventors, patent attorneys, academics, and industry groups to ensure that the USPTO's practices and policies are informed by diverse perspectives and best practices.

On a final note, we mention the yet-to-achieve possible eventuality of AI-enabled systems having an intelligence capability on par with or beyond that of us humans and the resulting treatment of such systems. First, achievement of such intelligence capability is an open question with no definitive answer yet in sight. Second, assuming such intelligence capability were achieved — including agreement on the metrics used to determine such— U.S. Patent Law would then necessitate revision for, if not already surpassed and dictated by, autonomous self-sufficient agents themselves capable of moral judgement. This scenario, of course, remains to be seen.

