

Changing face of invention in the age of AI

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With the widespread adoption of generative AI tools like ChatGPT, we can no longer assume that new ideas and inventions are solely the result of human effort. As an organization driven by innovation and invention, Intellectual Property (IP) is CSIRO's primary output. So, what does this mean for inventors and the IP they create?

We've heard many perspectives recently on the effect generative AI will have on all facets of how we work, conduct business, and ultimately live our lives. When game-changing technologies emerge, there's a tendency for people to polarize in opinion, either vastly underestimating or vastly overestimating the benefits and problems associated with using them. For example, we've heard how AI could never produce art or how it will solve all our collective problems.

But no matter what our opinions are on the dangers and benefits of AI, these tools don't exist in isolation. People using and creating generative AI tools and the tools themselves are subject to IP laws. Being aware of these laws can help protect us from their impact.

When the tools we create become the creators

From the perspective of an artist, creator or author, there's a strong argument they should have a right to control how their work is used or exploited. Copyright laws generally achieve this goal. Typically, these laws rely on the legal concept of "individual intellectual effort" to determine who the author of a work is. That is, the person creating the work needs to have added enough of their own ingenuity and creativity to distinguish their creation from other existing works. But how does a human achieve this? Some argue that unlike AI, there's something

special about humans that allows us to achieve the creation of a "new" work.

I propose a different argument. The work a human creates is simply the sum total of all the things that human has sensed and experienced throughout their lifetime. Similarly, an AI tool creates an output based on the sum total of all the data it has consumed throughout its training. With time, the data that an AI consumes will grow as its sensor inputs and ability to experience become more sophisticated. There's a [critical point](#) where AI tools will exceed humans in their ability to sense and experience, and consequently exceed humans in their capability to create, author or invent. At the very least, this will happen in specific domains. For example, AI's in the specific domain of chess exceeded human capability years ago, and we're witnessing it again now in the visual arts thanks to tools like Dall-E and Midjourney.

Humans vs. AI in Intellectual Property law

Many jurisdictions have decided only "real humans" can be considered the author, creator, or inventor for the purposes of IP law. But often it's unclear who is considered the creator of a work when an AI tool is used.

In the current generation of high-profile generative AI tools, text prompts are used as the input mechanism to produce a desired output. The question is, by entering a specific set of prompts into an AI tool, did a human apply sufficient effort to be considered the author, inventor or creator of the output work? If not, and the work is not considered a copy of any other work, then from where did the ingenuity or inventive effort come?

This line of thinking leads to several problems for people using and creating these tools, especially when it comes to proving they are the creator. More broadly, it poses problems for the entire IP system.

Let's hone in on the patent system as an example. One requirement for patenting is that a new invention must be "inventive," "not-obvious," contain an "inventive step," or other similar requirements across jurisdictions. The test for meeting this threshold is often defined as whether a person skilled in an area of technology, with access to their normal working tools, would consider the invention "routine," as "a matter of course," or "obvious."

If generative AI is used as a matter of course in an area of technology, and can produce an acceptable description of an invention, then the bar for patenting is significantly raised. That is, once generative AI tools become common place (maybe they already are), we can expect a person skilled in a particular area of technology will use them to solve their problems.

But what happens when an AI tool has become so proficient that it has collected every piece of data that a human could, and has awareness of every experience that a human could have? The AI would be able to conceive a solution to every problem that a human could, just as the chess computer knows every move a grandmaster may consider. The result is almost nothing is inventive anymore, unless the human inventor has new data they can input to which no other party (including the AI tool) has access.

This scenario helps to illustrate the issues that IP law and individuals face. It is likely that over the coming years step changes in technology will be taken that lawmakers will need to respond to. But, we don't yet know how these problems will be resolved. Given that no significant legal changes have been made in the face of the current generation of AI, and the rate of change is likely to accelerate, inventors and innovators should attempt to stay ahead of any possible changes.

Avoiding IP issues when using generative AI

There are practical steps you can take right now to help ensure you're considered the creator, author, or inventor of something made with the assistance of generative AI.

Most importantly, be careful to document how and when you interact with AI tools, and what data you use for to gain an output. For the current generation of AI tools, this means you should record the prompts you use, when they were made, and with what version of tool. This could be crucial evidence down the track to show sufficient 'intellectual effort' was used, proving you're the rightful author or inventor.

If you're creating new AI tools, you should verify that you have sufficient rights in the datasets used to train the tools. This ensures the AI model that forms the basis of your tool can't inadvertently create a copy or a derivative work that would infringe on others' rights. It's likely more jurisdictions will require disclosure about training datasets as time goes on.

And finally, when using an AI [tool](#), it's important to remember that you're accepting a license. That license affects your rights in the works, ideas or data output by the AI. Always read the fine print.

Despite the uncertainty and potential for massive changes, you can still get creating, inventing, and authoring—but know how to protect yourself, and do it responsibly.

Provided by CSIRO

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