



THE BENCHMARK IN
IP SINCE 1892

ROBIC, LLP
INFO@ROBIC.COM
ROBIC.COM

PATENTING AI-ASSISTED INVENTIONS – IS A NEW OBVIOUSNESS STANDARD REQUIRED?

YUHENG TOM ZHANG*
ROBIC, LLP
LAWYERS, PATENT AND TRADEMARK AGENTS

One of the reasons why Artificial Intelligence (AI) has received so much recent attention is that it can be used to solve problems and make new discoveries beyond what humans, by themselves, were capable of before. Examples of using AI include designing better components in airplanes[†] and making discoveries of new drugs and medical treatments[‡].

Conceiving new solutions to problems and making new discoveries inevitably leads to a discussion of seeking IP protection. Generally, patents are best suited for useful and functional solutions or discoveries. However, should the process of inventing using the assistance of AI be viewed differently from the “traditional” invention process? Furthermore, how should the inventiveness of a new solution or discovery be evaluated depending on the amount of assistance provided by an AI system.

We can imagine the follow 4 theoretical scenarios in which a human interacts with an AI system in order to conceive a new solution or make a new discovery:

Scenario 1: The human person designs and/or builds an AI system or applies extensive customization to the AI system and then uses the AI system to obtain a useful and practical result;

Scenario 2: The human person applies an amount of parameterization to the AI system that is non-trivial but also not as extensive as in Scenario 1. This customized AI system is applied, for example, to a large set of training data to obtain a useful and practical result;

Scenario 3: The human person uses a pre-existing AI system but exercises an amount of judgment to select the data that is provided to the AI system to obtain a useful and practical result;

Scenario 4: The human person feeds a highly-capable AI system a set training data without the human applying much judgment in the parameterization of the AI system, nor in the preselection of the data. The AI system processes this training data and produces a useful and practical result.

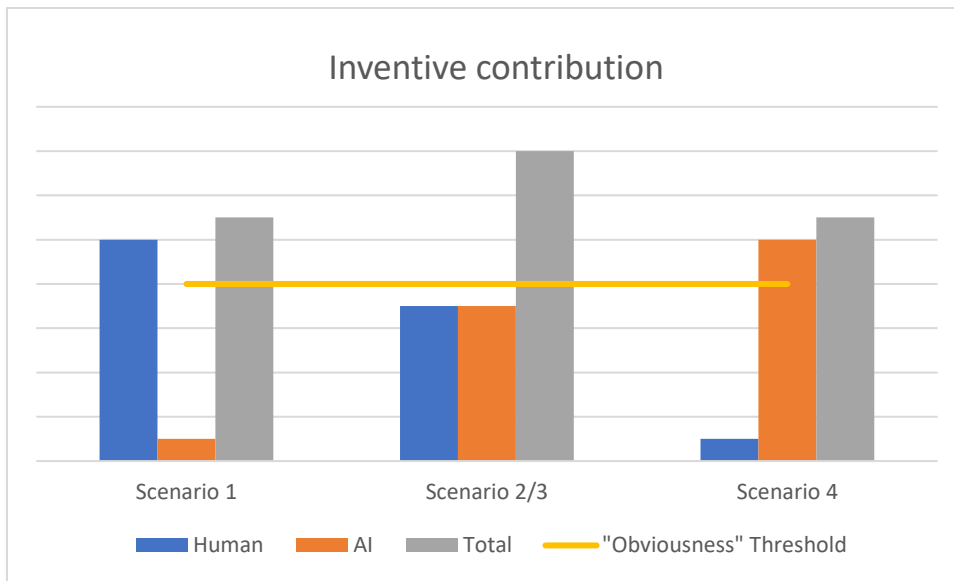
© CIPS, 2018.

*Yuheng Tom Zhang is a lawyer and a patent agent for ROBIC, LLP, a firm of lawyers, patent and trademark agents.

[†] <https://www.autodesk.com/customer-stories/airbus>

[‡] <https://www.nature.com/articles/d41586-018-05267-x>

Assuming that the amount of inventive contribution made by the human and by the AI system can be easily split up and quantified, these four scenarios can be graphically represented as follows:



Scenario 1 is fairly simple. The human person can be understood as having made the bulk of the inventive contribution.

Scenario 4 is at the other extreme and also appears fairly simple. Since the human does not provide much judgment in either customizing the AI system or in the selection of the data used, we can conclude that the AI system does most of the heavy lifting to generate the useful result.

Scenarios 2 and 3 lie somewhere between scenarios 1 and 4. For these scenarios, it is reasonable to conclude that human person has made a non-trivial contribution by either customizing the AI system or preselecting the data. It is also reasonable to conclude that the AI system has also contributed in a non-trivial way in producing the useful result.

These different scenarios raise the question of how we are to characterize the “inventiveness” when at least a portion of the solution or discovery is made using the assistance of AI. More importantly, at what point do we determine that there has been sufficient inventive activity so as to render that activity non-obvious and therefore the meet the criteria of for being granted patent protection.

In Canada, the test set out by the Supreme Court of Canada in *Apotex v. Sanofi*[§] remains the leading test for evaluating non-obviousness. The test is as follows:

- (1) (a) Identify the notional “person skilled in the art”;
- (b) Identify the relevant common general knowledge of that person;
- (2) Identify the inventive concept of the claim in question or if that cannot readily be done, construe it;

[§] *Apotex Inc. v. Sanofi-Synthelabo Canada Inc.* 2008 SCC 61

(3) Identify what, if any, differences exist between the matter cited as forming part of the “state of the art” and the inventive concept of the claim or the claim as construed;

(4) Viewed without any knowledge of the alleged invention as claimed, do those differences constitute steps which would have been obvious to the person skilled in the art or do they require any degree of invention?

Taking for granted that the difference between the inventive concept of a claimed invention and the “state of the art” (i.e. the collection of pertinent prior art) can be readily identified, a large part of applying this test depends on step 1 of identifying the person skilled in the art and the relevant common general knowledge of that person. It will be appreciated that obviousness depends on comparing the differences identified in step 3 against the knowledge of this notional person skilled in the art.

The person skilled in the art, the knowledge of this person and their inventive prowess has been addressed many times by the Canadian courts. In *Merck & Co. v. Pharmascience Inc.*** per justice Hughes at paragraph 35:

In Canada, the “person of ordinary skill in the art” is the hypothetical person to whom the patent is addressed. [...] The person of ordinary skill in the art is deemed to be unimaginative and uninventive, but at the same time is understood to have an ordinary level of competence and knowledge incidental to the field to which the patent relates (i.e. the common general knowledge) and to be reasonably diligent in keeping up with advances. The common general knowledge is that knowledge generally known by persons skilled in the relevant art at the relevant time. Accordingly, it can include knowledge passed amongst people in the field, including information that is not in published form. Likewise, not everything that has been published is within the common general knowledge.

Prior to the widespread adoption of AI systems, the threshold that needs to be met in order to show non-obvious is fairly easy to define, albeit often difficulty to apply in practice. If the difference between the inventive concept and the state of the art would not have been obvious to the unimaginative and uninventive person of ordinary skill, then the threshold for non-obviousness is met. Returning to the figure graphically representing hypothetical scenarios of an “inventive” process, the horizontal threshold line in purple overlaid on the chart represents a notional threshold at which the difference over the state of the art no longer becomes to the person skilled in the art. This could represent the amount of “inventive” activity that would meet step 4 of the test under Sanofi.

The difficulty becomes defining this threshold when an AI system plays a part in conceiving or discovering that non-obvious “difference”. Where AI is involved, should the notion of the person of ordinary skilled in the art be somehow different? Alternatively, does what is understood as “being obvious” to that person somehow different because the involvement of AI? That is, should the threshold somehow be moved?

Scenario 1 still remains fairly straightforward to resolve. The amount of “inventive” activity attributable to the person independently of the AI system is so great that it surpasses the non-obvious threshold.

** *Merck & Co. v. Pharmascience Inc* [2010 FC 510](#).)

Scenario 4 also seems to have a straightforward answer. If the human has not made a significant “inventive” contribution and the AI has instead done almost all of the work, then it is reasonable to conclude that the human is not deserving of patent protection. Although, as will be seen further below, even this answer may not be adequate.

Scenarios 2 and 3 are more difficult. The combination of the inventive activity provided by human thinking with that provided by the AI may easily exceed the non-obvious threshold under its traditional sense, but what if neither contribution alone meets the threshold, as illustrated above?^{††}

A proposed solution is to consider the AI as a tool available to the person of ordinary skilled in the art. If the AI has been used as a tool in a way that would have been obvious to the person of ordinary skilled in the art, then the threshold has not been met. While this solution may appear reasonable, it is not without its drawbacks. For example, the capabilities of AI systems are constantly involving due to both better AI algorithms as well as constantly accelerating hardware implementing the AI systems. These factors cause the ways that humans are using AI to be constantly evolving, which makes evaluating obviousness more difficulty.

Furthermore, there is a larger question of whether merely treating AI as a tool and not attributing any inventive activity to the AI system consistent with patent policy. At its core, the patent system seeks to incentivize inventions by rewarding those that disclose their inventions with a time-limited monopoly. Does treating an AI system simply as a tool adequately achieve this policy?

Returning to the four scenarios outlined above, to reward patent protection for the creation of AI system (scenario 1) but not for useful solutions or discoveries made by the AI system (scenario 4) can lead to a situation that is inconsistent with the policy of incentivizing disclosure of invention. This distinction becomes more pronounced where the value of the AI system really resides in the solutions and discoveries made by that system.

Retaking the example of an AI system for designing better airplane components, getting a patent monopoly for only the AI system would have little value if the airplane components generated by that AI system are not protectable. The party holding the patent for the AI system would have exclusive rights to use the AI system to design the airplane components. But if any useful component is found using the system, anyone would be free to copy that useful component because the component itself is not patented.

Our IP laws are always evolving to keep up with the constant advancements in technology. This short discussion provides an example of just one question being raised by the rise of AI systems. Going forward, it will be interesting to follow how the IP laws will adapt to these AI systems or if even new laws will be written.

^{††} Of course, this assumes that we can make a clear demarcation between the contribution by the human from the contribution of the AI, which may not be an easy task at all.