Artificial intelligence: is your data well protected across borders?

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Cross-border deals are always challenging, but when related to AI technologies, such deas additionally involve substantial variations in terms of the rights granted in each jurisdiction. Looking at cross-border deals about Artificial Intelligence technologies therefore requires a careful analysis of these variations in order to properly assess the risks, but also to seize all available opportunities.

Many AI technologies are based on neural networks and rely on large amounts of data to train the networks. The value of these technologies relies mostly on the ability to protect the intellectual property related to these technologies, which may lie, in some cases, in the innovative approach of such technology, in the work performed by the AI system itself and in the data required to train the system.

Patents

Given the pace of the developments in Artificial Intelligence, when a transaction is being negotiated, we are often working with patent applications, well before any patent is granted. That means we often have to assess whether or not these patent applications have any chance of being granted in different countries. Contrary to patent applications on more conventional technologies, in AI technologies one cannot take it for granted that an application that is acceptable in one country will lead to a patent in other countries.

If we look at the US, the Alice[1] decision of a few years ago had a major impact, resulting in many Artificial Intelligence applications being difficult to patent. Some issued AI-related patents have been declared invalid on the basis of this case. However, it is obvious from the patent applications that are now public that several large companies keep filing patent applications for AI-related technologies, and some of them are getting granted.

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Just across the border up north, in Canada, the situation is more nuanced. A few years ago, the courts said in the Amazon[2] decision that computer implementations could be an essential element of a valid patent. We are still hoping for some specific decision on AI systems.

In Europe, Article 52 of the European Patent Convention excludes "programs for computers". However, a patent may be granted if a “technical problem” is resolved by a non-obvious method[3]. There may be some limited potential for patents on Artificial Intelligence technologies there.

The recently updated Guidelines for Examination of patent applications related to AI and machine learning), while warning that expressions such as "support vector machine", "reasoning engine" or "neural network" trigger a caution flag as typically referring to abstract models devoid of technical character, point out that applications of IA and ML do make technical contributions that are patentable, such as for example:

> The use of a neural network in a heart-monitoring apparatus for the purpose of identifying irregular heartbeats; or
> The classification of digital images, videos, audio or speech signals based on low-level features, such as for example edges or pixel attributes for images

In contrast, classifying text documents solely based on their textual content is cited as not being regarded to be a technical purpose per se, but a linguistic one (T 1358/09). Classifying abstract data records or even "telecommunication network data records" without any indication of a technical use being made of the resulting classification is also given as an example of failing to be a technical purpose, even if the classification algorithm may be considered to have valuable mathematical properties such as robustness (T 1784/06).

In Japan, according to examination guidelines, software-related patents can be granted for inventions “concretely realizing the information processing performed by the software by using hardware resources”[4]. It may be easier to get a patent on an AI system there.

As you can appreciate, you may end up with variable results from country to country.

Several industry giants, such as Google, Microsoft, IBM and Amazon keep filing applications for Artificial Intelligence and AI-related technologies. It remains to be seen how many, and which, will be granted, and ultimately which will be upheld in court. The best strategy for now may be to file applications for novel and non-obvious inventions with a sufficient level of technical detail and examples of concrete applications, in the event case law evolves such that Artificial Intelligence patents are indeed valid a few years down the road, at least in some countries.

Judicial exceptions remain:

a. **Mathematical Concepts**: mathematical relationships, mathematical formulas or equations, mathematical calculations;
b. **Certain methods of organizing human activity**: fundamental economic principles or practices (including hedging, insurance, mitigating risk); commercial or legal interactions (including agreements in the form of contracts; legal obligations; advertising, marketing or sales activities or behaviours; business relations); managing personal behaviour or relationships or interactions between people (including social activities, teaching, and following rules or instructions); and
c. **Mental processes**: concepts performed in the human mind (including an observation, evaluation, judgment, opinion).

Take-home message: patent applications on AI technology should identify a technical problem, provide a detailed technical description of specific implementations of the innovation that solve or mitigate the technical problem, and give examples of possible outcomes have a greater hope of getting allowed into a stronger patent. Setting the innovation within a specific industry or as related to specific circumstances and explaining the advantages over known existing systems and methods contributes to overcoming subject matter eligibility issues.

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Copyright

From the copyright standpoint, we have also some difficulties, especially for the work created by an AI system.

Copyright may protect original Artificial Intelligence software if it consists of “literary works” under the *Copyright Act*, including: computer source code, interface elements, a set of methods of communication for a database system, a web-based system, an operating system, or a software library. Copyright can cover data in a database if it complies with the definition of a compilation, thereby protecting the collection and assembling of data or other materials.

There are two main difficulties in the recognition of copyright protection in AI creation: one relates to the machine-generated work that does not involve the input of human skill and judgment and the second concerns the concept of an author, which does not specifically exclude machine work but may eliminate it indirectly by way of section 5 of the *Copyright Act*, which indicates that copyright shall subsist in Canada in original work where the author was a citizen or resident of a treaty country at the time of creation of the work.

Recently, we have seen Artificial Intelligence systems creating visual art and music. The artistic value of these creations may be disputed. However, the commercial value can be significant, for example if an AI creates the soundtrack to a movie. There are major research projects involving the use of AI technologies to write source code for some specific applications, for example in the gaming industry.

Some jurisdictions do not provide copyright protection to work created by machines, like the US and Canada. In Canada, some recent case law specifically stated that for a work to be protected under the *Copyright Act*, you need a human author[5].

In the US, some may remember Naruto, the monkey that took a selfie. In the end, there was no copyright in the picture. While we are not sure how this will translate for Artificial Intelligence at this point, it is difficult to foresee that an AI system would have any such right if a monkey has none.

Meanwhile, other countries, such as the UK, New Zealand and Ireland, have legal provisions whereby the programmer of the Artificial Intelligence technology will likely be the owner of the work created by the computer. These changes were not specifically made with AI in mind, but it is likely that the broad language that was used will apply. For example, in the UK, copyright is granted to “the person by whom the arrangements necessary for the creation of the work are undertaken”[6].

The work created by the system may have no protection at all in Canada, the US and several other jurisdictions, but be protected by copyrights in other places, at least until Canada and the US decide to address this issue by legislative changes.

Trade secrets

Trade secret protection covers any information that is secret and not part of the public domain. In order for it to remain confidential, a person must take measures, such as obtaining undertakings from third parties not to divulge the information. There are no time limits for this type of protection, and protection can be sought for machine-generated information.

Data privacy

Looking at data privacy, some legal scholars have mentioned that, if construed literally, the European GDPR are difficult to reconcile with some AI technologies. We just have to think about the right to erasure and the requirement for lawful processing (or lack of discrimination), which may be difficult to implement[7].

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If we look into neural networks, they typically learn from datasets created by humans or by human training. Therefore, these networks often end up with the same bias as the persons who trained them, and sometimes with even more bias because what neural networks do is to find patterns. They may end up finding a pattern and optimizing a situation from a mathematical perspective while having some unacceptable racial or sexist bias, because they do not have “human” values.

Furthermore, there are challenges when working on smaller datasets that allow reversing the “learning” process of the Artificial Intelligence, as it may lead to privacy leaks and trigger the right to remove specific data from the training of the neural network, which itself is technically difficult.

One also has to take into account laws and regulations that are specific to some industries, for example HIIPA compliance in the US for health records, which includes privacy rules and technical safeguards[8]. Laws and regulations must be reconciled with local policies, such as those decided by government agencies and which need to be met in order to have access to some government data; for example, to access electronic health records in the Province of Quebec’s, where the authors are based.

One of the challenges, in such cases, is to come up with practical solutions that comply with all applicable laws and regulations. In many cases, one will end up creating parallel systems if the technical requirements are not compatible from one country to another.

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1. *Alice Corp. v. CLS Bank International*, 573 U.S., 134 S. Ct. 2347 (2014)
2. *Canada (Attorney General) v. Amazon.com, Inc.*, 2011 FCA 328
3. *T 0469/03 (Clipboard formats VI/MICROSOFT) of 24.2.2006*, European Patent Office, Boards of Appeal, 24 February 2006.
4. *Examination Guidelines for Invention for Specific Fields (Computer-Related Inventions)*, Japanese Patent Office, April 2005.
5. *Geophysical Service Incorporated v Encana Corporation*, 2016 ABQB 230; 2017 ABCA 125; 2017 CanLII 80435 (SCC).
6. *Copyright, Designs and Patents Act*, 1988, c. 48, § 9(3) (U.K.); see also *Copyright Act 1994*, § 5 (N.Z.); *Copyright and Related Rights Act, 2000*, Part I, § 2 (Act. No. 28/2000) (Irl.).
7. *General Data Protection Regulation*, (EU) 2016/679, Art. 9 and 17.
8. *Health Insurance Portability and Accountability Act of 1996*

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