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10 Best Practices for Artificial Intelligence-Related Intellectual Property

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Artificial intelligence ("AI") is expanding in many industries and could add approximately $13 trillion to the global economy by 2030.[1] Many organizations, both public and private, have invested substantial resources in AI research and development ("R&D"). The United States, the European Union, Canada, China, and many other countries have developed, or are developing, a national AI strategy[2] that, in many cases, contemplates significant government investment in AI. Global investment in AI start-ups has increased steadily, from $1.3 billion in 2010 to over $40.4 billion in 2018,[3] at an average annual growth rate exceeding 48 percent. While the global pandemic has dampened economic growth, focus[4] continues on maximizing AI to address COVID-19 and other important needs.

Not surprisingly, investment in AI R&D has given rise to a substantial increase in AI-related intellectual property ("IP"). The U.S. Patent and Trademark Office ("PTO") published over 27,000 AI-related patent applications since 2017, with over 16,000 of them published within the past 18 months.[5] The World Intellectual Property Organization ("WIPO") has reported similar increases in AI-related patent filings globally.[6] Additionally, organizations continue to invest in developing AI algorithms, software, and data assets.

AI also has emerged as an important tool for IP development. For example, many pharmaceutical companies use AI in drug discovery. Advertisers[7] and others[8] leverage AI to create content. These and other activities can result in AI outputs, such as new drugs or content, and incremental improvements to AI algorithms, all of which may be valuable IP.

10 BEST PRACTICES FOR AI-RELATED INTELLECTUAL PROPERTY

Organizations should protect their AI-related IP given its potential value. For S&P 500[9] companies in 2018, IP and other intangibles represented 84 percent of company value. However, developing a strategy for harnessing this value may face some hurdles as the AI-IP legal landscape continues to evolve. For example, WIPO,[10] the European Patent Office ("EPO"),[11] the PTO,[12] the U.S. Copyright

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Office[13] and other governmental agencies are examining many AI-related IP issues, including AI inventorship, patent eligibility, written description and enablement requirements, data issues, and AI-related copyright issues.

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To maximize protection for AI-related IP while policy deliberations continue, organizations can follow these 10 best practices.

1. Develop an IP Strategy and Procedures

Organizations should have a written IP strategy, and procedures for implementing this strategy, that efficiently streamlines (1) the identification of IP assets; (2) assessment of their importance to the business; and (3) determination of how best to protect the IP. Some options for protection include patent, copyright, trade secret, trademark, and contract, and organizations frequently employ a combination of protections. For instance, algorithms often are protected by copyright, trade secret, and contract. The IP strategy and procedures should prioritize protection for valuable IP, take into account that existing laws may change, and be modified, as needed, as such laws change. They also should include steps for reducing risks of third party infringement and other IP claims and address trademark, socials media, and other IP matters.

2. Assess Whether Inventions are Patent-Eligible

When considering patenting AI-related inventions, organizations must carefully answer the threshold question of whether such inventions qualify for patent protection. This analysis may be complicated because patents are territorial, and patent subject matter eligibility requirements vary among jurisdictions, particularly for AI-related inventions. For example, in the United States, broad statutory patent eligibility[14] language has been interpreted by the U.S. Supreme Court to exclude abstract ideas, laws of nature and natural phenomena (including products of nature), with recent[15] cases establishing a two-step test, known as the *Alice/Mayo* framework, for determining whether a patent claim is directed to[16] patent-eligible subject matter.

In Europe,[17] while a computer program may not be patentable, artificial intelligence and machine learning that serves or achieves a technical purpose may qualify. To address these issues, organizations should identify the countries where they desire patent protection for their AI inventions and assess whether such inventions satisfy the applicable subject matter eligibility criteria. If so, patent applications must be prepared to address such criteria and the organization's objectives. If patent protection seems unfeasible, the organization should consider trade secret or another alternative.

3. Determine Inventorship and Secure Ownership of AI-Related Inventions

Patenting inventions developed using AI, such as those that may arise in the drug discovery context mentioned above, raises new issues. Specifically, patent applications must identify the inventors. However, the United Kingdom Patent Office ("UKIPO"),[18] the EPO,[19] and the PTO[20] have recently stated that inventors must be human, and do not allow AI tools to be named as an inventor. Consequently, when preparing patent applications for AI-related inventions, organizations should consider[21] the particular circumstances pertaining to the conception[22] and reduction to practice of the inventions in order to identify who should be named as inventor(s). Identifying inventorship can have important implications for patent ownership.

In the United States, the inventor(s) owns the patent application, absent an agreement or other arrangement to the contrary. Given the potential difficulties in identifying the inventors and the evolving nature of the law, organizations should ensure that all potential inventors have vested or otherwise conveyed, in many cases by contract, any rights they may have in the patent application to the organization.

4. Comply with Written Description and Enablement Requirements

When preparing AI-related patent applications, organizations should consider how to disclose the invention. Under U.S. law, patent applications must include a written description that demonstrates that the inventor(s) had possession of the invention at the time of filing and that enables persons of "ordinary skill in the art" to make and use the invention. This written description is intended

to advance public knowledge[23] in exchange for granting a monopoly.

When preparing AI-related patent applications, organizations should consider how to disclose the invention.

How best to comply with the written description requirement may depend upon various factors, including the nature of the invention and the information that is available. For example, if the patent application relates to an improvement to pre-existing AI that is not well-known or widely available, then a relatively detailed disclosure may be needed to describe and enable the invention. However, if the pre-existing AI is widely known or available, a higher level description may suffice.

5. Protect Trade Secrets

Trade secrets typically represent an important part of an organization's IP portfolio. Trade secrets may be preferable to patents in several circumstances, such as when (1) the patentability requirements, including those mentioned above, may not be satisfied; (2) the cost of pursuing patent protection outweighs the benefits; or (3) the need for potential IP protection extends beyond the available patent term. Organizations should have policies to protect the confidentiality and security of their trade secrets. These policies should take into account the amount of remote access and work, such as during the pandemic, and include measures to guard against unauthorized disclosure and use of trade secrets and to investigate and remediate actual or suspected misappropriations. Organizations often implement these policies by using various measures, including physical and technical controls, nondisclosure agreements, training, audits, and other procedures.

6. Determine Authorship and Ownership of AI-Generated Copyrighted Works

For copyrights, determining authorship, and in turn securing ownership of copyrights in AI-generated works, presents novel questions analogous to those raised in the patent context. For instance, the United Kingdom's Copyright, Designs and Patents Act 1988 provides that when "there is no human author" of a computer-generated work, the author "shall be taken to be the person by whom the arrangements necessary for the creation of the work are undertaken." Similarly, the U.S. Copyright Office[24] has stated that it will register copyrights only for original works of authorship created by humans. However, identifying the human authors of AI-generated works is not necessarily easy. For example, some U.S. case law[25] suggests that the author of an AI program will be deemed to be the author of outputs generated by such program if the program, as opposed to the end user, did the "lion's share of the work" to generate such outputs. Depending upon the circumstances, determining whether the program did the "lion's share of the work" may be challenging.

Authorship also can have important implications for copyright ownership. In the United States, authors own the copyright, absent an agreement, work-for-hire, or another arrangement to the contrary. As with patents, securing rights from all potential authors, including in many cases by contract, can be important for addressing ownership, including for AI outputs and trained algorithms.

7. Protect Data Rights

Protecting rights in training data, AI data outputs, and other important data also requires careful attention. Under U.S. law, data is not copyrightable because "facts" are not original works of authorship. However, limited copyright protection may be available for how the data is selected, coordinated, or arranged. Similarly, EU law affords copyright protection to databases that are "original" in the selection or arrangement of their contents.

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Europe also provides for a *sui generis* database right, which provides limited protection to databases if significant investments have been made to obtain, verify or present their contents. Organizations can rely on trade secret or similar laws to protect data, so long as appropriate measures are implemented to protect the confidentiality of the data and any other applicable requirements are satisfied. Organizations also commonly utilize contracts to protect data.

8. Manage Text and Data Mining and Similar Activities

Organizations increasingly are using text and data mining ("TDM") and similar means to obtain AI training data and should ensure that these activities do not violate third party rights or applicable laws or agreements. In the EU, the 2019 Digital Single Market Directive[26] defines "text and data mining" as "any automated analytical technique aimed at analyzing text and data in digital form in order to generate information which includes but is not limited to patterns, trends and correlations." This Directive requires EU Member States to implement certain exceptions to copyright infringement for these activities. Organizations will be able to rely on these exceptions, so long as IP owners have not exercised their rights to prohibit TDM.

In the United States, a patchwork of laws potentially may apply to TDM and similar activities, such as the fair use copyright exception, trademark law, contract law, the Computer Fraud and Abuse Act, and state law. In sum, organizations engaging in TDM and similar activities should familiarize themselves with applicable laws and agreements and tailor their practices to comply with them.

9. Evaluate Broader Data Policies

Organizations also should evaluate the broader legal landscape pertaining to data. For instance, the European Commission recently issued a communication on "A European strategy for data."[27] This communication focuses on enabling the EU to realize its potential in the data economy by:

Contracts can help secure and allocate IP rights, including for training data, AI outputs, and algorithms.

- Introducing a cross-sectoral governance framework for data access and use;
- Improving the EU's data-processing infrastructure and creating interoperability standards;
- Investing in skills and small and medium enterprises; and
- Creating common European data spaces in strategic sectors, such as health, finance, agriculture and energy.

The developments that follow this communication could impact how organizations protect their data.

10. Maximize Contracts

As mentioned above, contracts can help secure and allocate IP rights, including for training data, AI outputs, and algorithms. Consequently, organizations should evaluate how best to utilize contracts to achieve their objectives and carefully craft appropriate contractual terms. In addition, organizations should familiarize themselves with the growing number of "free" standard form agreements used to make certain IP available, such as open source and Creative Commons licenses. There are many versions of these licenses with varying terms. Open source licenses often are used for making software freely available, while Creative Commons licenses often are used to make other copyrighted works and databases available on a no-cost basis. Organizations should assess the various forms of these licenses and consider how they might be used on an in-bound and out-bound basis to further their business objectives.

CONCLUSION

While there is no "one-size-fits all approach" to protecting and maintaining AI-related IP rights, by following the best practices outlined above, organizations should be able to develop and implement IP strategies and procedures that further their business objectives.

Notes

1. *https://www.mckinsey.com/~/media/McKinsey/Featured%20Insights/Artificial%20Intelligence/Notes%20from%20the%20frontier%20Modeling%20the%20impact%20of%20AI%20on%20the%20world%20economy/MGI-Notes-from-the-AI-frontier-Modeling-the-impact-of-AI-on-the-world-economy-September-2018.ashx.*
2. *https://oecd-opsi.org/projects/ai/strategies/.*
3. *https://hai.stanford.edu/sites/g/files/sbiybj10986/f/ai_index_2019_report.pdf.*
4. *https://www.whitehouse.gov/wp-content/uploads/2020/02/American-AI-Initiative-One-Year-Annual-Report.pdf.*

5. *https://www.uspto.gov/initiatives/artificial-intelligence.*
6. *https://www.wipo.int/about-wipo/en/.*
7. *https://www.prnewswire.com/news-releases/spark-foundry-and-ai-music-introduce-ai-generated-creative-for-audio-ads-300808237.html.*
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21. *https://www.federalregister.gov/documents/2019/08/27/2019-18443/request-for-comments-on-patenting-artificial-intelligence-inventions.*
22. *https://mpep.uspto.gov/RDMS/MPEP/e8r9#/e8r9/d0e207607.html.*
23. *https://supreme.justia.com/cases/federal/us/416/470/.*
24. *https://copyright.gov/comp3/chap300/ch300-copyrightable-authorship.pdf.*
25. *http://cdn.ca9.uscourts.gov/datastore/opinions/2017/02/09/14-16701.pdf; https://casetext.com/case/rearden-llc-v-walt-disney-co-2.*
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