— PERSPECTIVE —

Protecting intellectual property in the rapidly evolving age of AI

By James L. Davis Jr. and Steve Meil

Innovation in the field of artificial intelligence has accelerated at a remarkable pace in recent years. While work on AI-related technology started over 60 years ago, more than half of the nearly 340,000 AI-related patent applications were published after 2013 according to a recent study by the World Intellectual Property Organization (WIPO). As AI incorporates a number of different related techniques, some of these component techniques are seeing growth at particularly astonishing rates. For example, deep learning, a form of machine learning that processes data as a hierarchy of concepts in order to extract multiple layers of features, saw a 175 percent average annual growth rate in patent applications between 2013 and 2016, while applications for all technologies grew at an annual rate of only 10 percent by WIPO's count. The field has also recently shifted to a much more practical focus, with the ratio of scientific papers to inventions declining from 8:1 in 2010 to 2:1 in 2016 according to the study.

Given the multi-faceted nature of AI, which can include the software, data sets, and implementing hardware, for example, several vehicles are available to try to protect these innovations, including patents, copyrights, trade secrets, and contractual arrangements. Because each approach has its respective strengths and weaknesses, a multiprong approach — considering and applying each strategy as appropriate — will help maintain protection in this ever-evolving area of technology and law.

Patent protection presents strong benefits for AI innovations because, unlike other areas of law (copyright and trade secret), independent creation is not a defense to patent infringement. However, patents also have downsides, including the requirement that the underlying technology be made public. As a result, competitors have access to what is divulged in the patent application, even if they cannot copy it during the issued patent's term of protection. Furthermore, under the current law, patents are not available for certain types of subject matter: claims that are merely directed to abstract ideas, and that fail to apply an "inventive concept," cannot qualify for a patent. For example, processes that purport to automate a process otherwise performed by humans have received particular scrutiny. Because the test for what is protectable is continuing to evolve, submitting an application — and thereby publishing the accompanying information — presents significant costs to applicants due to the risk that their application may be rejected, especially as it prevents other forms of protection (e.g., trade secret law) from being available. Meanwhile, other elements of AI technology in isolation, such as data sets, are categor-

ically unpatentable. Accordingly, innovators must also look to other protection mechanisms.

As one alternative, copyright may apply to certain AI innovations. Copyright law can protect certain elements of AI that are unpatentable. For example, copyright protection may extend to particular expressions of software code and to the arrangement of data sets (although not the data itself). On the other hand, copyright has its own limitations. For example, use of third-party code in an AI program can undermine a claim to "originality" that is required for copyright protection. Similarly, copyright protection only applies to human "authors," undermining the viability of copyrighting sufficiently sophisticated AI-developed innovations. Registration (and thus disclosure) is also required in order to enforce the right. Moreover, the scope of copyright protection is also narrow, only extending to a particular expression of software code or dataset — not the underlying concept or data.

In contrast to patents and copyrights, trade secret protection requires no application or registration, and has no subject-matter eligibility constraints. Trade secrets also do not face the same inventory

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or authorship issues as patents and copyrights. While there are potentially open questions about who "invented" or "authored" an invention with sufficiently sophisticated AI technology, that question is irrelevant for trade secret protection. Finally, trade secret protection may last indefinitely, as long as sufficient enforcement measures are taken. However, trade secret protection also has its drawbacks. To obtain (and retain) protection on sensitive technology, a company must engage in "reasonable measures" to ensure the technology's secrecy. There is no hard and fast rule as to what qualifies as "reasonable," but it is generally proportional to a company's size and resources. Furthermore, in contrast to patent law, trade secret protection can be eliminated outright either by another entity's reverse engineering of the technology, or by its widespread disclosure (even where inadvertent, such as through a malicious data breach).

Finally, contracts are playing an increasingly important role in protecting AI innovations. For example, nondisclosure and use agreements — covering secrecy obligations, audit rights, use limitations, and

provisions for post-relationship control — can be critical. These agreements are particularly important in the AI space, as more players may be involved. One party may have the underlying data, another the devices, and another the software, which can introduce particularly complicated arrangements that may not be sufficiently addressed by the above IP regimes. Furthermore, contracts are not strictly limited to employees or business partners. Anyone who uses, or contributes to, the AI technology may have the use be subject to contract terms. For example, for cloud-based machine learning services, a company may use contracts to reserve rights to its customers' models and data created or used with the service. Similarly, a company can try to use contracts to require representations and indemnifications as to IP infringement or misappropriation on the part of its partners, employees, and customers that use and/or contribute to its technology. Contract law can also be used to impose other obligations, such as fiduciary and civil duties to data sources arising from a "relationship of trust."

As AI-related activity continues to accelerate, stake-holders would do well to continue to strategically leverage the benefits of each IP protection regime. None provides comprehensive protection: there is no one mechanism that provides the perfect mix of subject matter coverage, duration, and strength of protection. Instead, each of these techniques can be applied to protect different aspects of AI innovation — balancing the benefits and drawbacks to achieve the strongest protection possible as the law and the technology continues to develop.

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