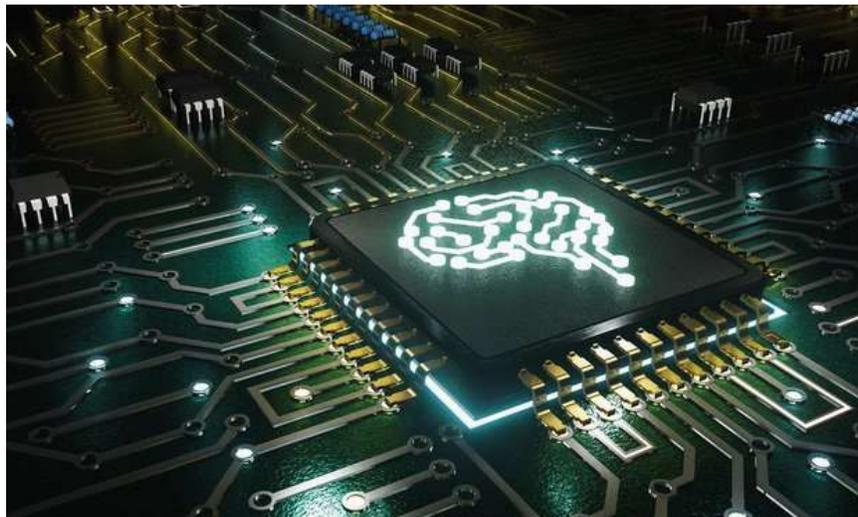New Jersey Law Journal

Intellectual Theft Stymied by Digital Legal Strategies

As a result of ongoing research in artificial intelligence as it is applied to the law, there are new and impressively effective advances in the efforts to prove intellectual theft.

By **Alissa L. Dubnicki** | December 06, 2019

Credit: MY stock/Shutterstock.com

There are few aspects of the daily effort to produce products and services that are more frustrating than finding one is the victim of theft—seeing one's efforts duplicated by illicit means.

But now, as a result of ongoing research in the science of artificial intelligence as it is applied to the law, there are new and impressively effective advances in the efforts to prove intellectual theft. Applying cutting edge digital research to existing technology is resulting in bold new legal methodologies.

When seeking legal redress for a trademark infringement claim, for example, plaintiffs first must demonstrate that the original product or mark has characteristics that show it is unique. Will a competitor's "version" be easily confused with the original?

The old methodology of proving these conditions by use of expert testimony and surveys of potential customers now is being replaced by machine learning techniques, which provide a much greater ability to evaluate the distinctiveness of a mark or trade dress, and document the likelihood of confusion with another. These questions can be answered faster, with less cost, and best of all, with documentable results that rely on scientific data, not human opinions.

This approach presents an important way of evaluating and quantifying the legal issues present when determining the association between the plaintiff's product and the version produced by the defendant in trade dress, trademark, and copyright lawsuits. The analyses created by this technology provide additional, scientific, supporting data in these cases. In fact, several of the leading experts in this area are eagerly embracing the use of machine learning technology as support for their testimony.

Similar to the use of DNA evidence that revolutionized criminal trials roughly beginning in the late 1980s, the results provided by techniques like this will push

courts to consider the admissibility of such approaches. This is, as of yet, an untested area, but could significantly lower legal costs.

The goal was to achieve a result that would not only meet, or preferably exceed, as yet undefined legal evidentiary criteria with statistical significance, but also withstand spirited cross examination. On a technical level, the program is a convolutional-neural-network based binary classifier which is taught to differentiate between products of the target company and similar, but non-infringing, third-party products. Based on the characteristics of the data sets, various data augmentation strategies are used, and some information (such as colors or logos) can be stripped out if the algorithm should not rely on those to make its determination.

In test cases, the algorithm performs well at distinguishing between the target product and non-infringing products. However, when asked to classify images of the infringing product, the accuracy drops significantly. This drop indicates that the algorithm struggles to distinguish these potentially infringing products from authentic ones, and can be used as a proxy to estimate the "likelihood of confusion."

In addition, this approach provides new avenues for data mining that are impractical with manual methods, such as pre-emptively analyzing large image sets to identify potentially infringing products. Besides protecting businesses from competitors that are attempting to unfairly infringe on their research and development, this approach also can be used prior to a new product launch to ensure that it does not infringe on brands developed by competing firms that already are on the market.

Other uses include research applications that can analyze trends and the diffusion of significant designs through specific markets over time.

Use of these advanced techniques can be precedent setting and ultimately, as this technology reduces the need for lengthy testimony from competing experts, could significantly lower the legal costs of intellectual property litigation, in particular. As

well, it could help juries more quickly understand what otherwise can be complex and contradictory testimony.

Clearly, the influence of the new technology on the outcome of cases involving theft of intellectual property, data, logos or even full product lines is still developing. The use of advanced technology as applied to the field of law is a direct result of litigation that displayed the need for this technology, and its impact is growing as the legal community becomes more familiar with its applications.

Theft of intellectual property in the workplace can be offset to a great degree simply by leaving incomplete or inaccurate data in a place where a suspected thief can access it, and then waiting for the fireworks at the next staff meeting. Theft of intellectual property, not to mention products and services, on a corporate-wide scale, on the other hand, has more far-reaching and expensive implications.

But the application of artificial intelligence and machine learning to legal challenges is providing accurate, timely and ultimately less expensive paths to ensuring that we benefit from what we create, while providing a significant discouragement to those who would attempt to benefit from the work of others by underhanded means.

Alissa L. Dubnicki *is the Engagement Manager at Keystone Strategy, where she specializes in intellectual property disputes with a focus on digital issues. She holds a PhD in economics from Syracuse University's Maxwell School and a BA in economics from Princeton University.*