

## Machine Learning

# Lawyers getting up to speed on machine learning

By Omar Ha-Redeye and Dan McAaran



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(August 29, 2019, 8:27 AM EDT) -- Lawyers spend an inordinate amount of time learning the law, following trends and attempting to analyze the law. This learning doesn't end in law school but continues into practice on files and through continuing professional development (CPD).

At some point, someone must wonder whether there is a more efficient way to do things in law. Technology is allowing this to occur through the use of machine learning, which can automate routine legal processes.

Machine learning uses established mathematical techniques from statistics to allow computer programs to learn and make decisions. Traditionally, every single action of a computer program needs to be programmed. Every single possible action of the program in every conceivable situation needs to be evaluated, designed and coded by a developer.

Derek Hopfner, co-founder of digital legal platform Founded, notes that the primary advantage of machine learning is significant time savings. Machine learning allows for up to 95 per cent reduction in legal work for routine corporate documents, such as incorporations and corporate maintenance filings.

The coders of the future will be learning how to design machine learning, and this trend is already mirrored in IT educational programs. The question many are asking is whether lawyers will have to learn these skills as well, to stay current in the practice of law as designed for the future.

The Estonian government is launching a pilot this year to use an artificial intelligence (AI) judge for small value contractual claims. However, uptake in that country has been accelerated by long-standing digitization initiatives and robust scrutiny of the use of technology.

Egi Troka, an articling student at McCague Borlack LLP, got an early start on machine learning in her career. "I encourage young lawyers, especially women, to get involved and increase diversity in the legal tech space," said Troka, who was involved in the Conflict Analytics Lab at Queen's Law when she was a law student.

"Since collaborating with professors and data scientists, I am familiar with the variety of machine learning concepts applicable to law. This helps to facilitate discussions with multiple stakeholders and contribute to creating programs that make legal practice more efficient."

Machine learning can use different types of statistical models to analyze data. The two main methods are Supervised Learning and Unsupervised Learning.

The first can use linear regression methods to model the relationship between certain features and a continuous target variable. This can be a simple relationship: looking at a dependent variable "y" that is determined by an independent variable "x." These types of simple mathematical relationships can be highly complex becoming what is known in mathematics as multivariate analysis.

The second can use statistical methods like cluster analysis. If something being studied has the same underlying statistics associated with it as something else when being graphed, the complex relationships based on their proximity may be revealed.

Some challenges with linear regression models in law is that they work best when the data itself is linear. "Statistical models are only as strong as the data," said Troka. Because the law often deals with complex social issues that encompass facts that might be unique in respect to existing case law, there may be a need to continually adjust the training data being used.

Statistical models also have the potential for bias, in that they overlook outlier cases or reinforce human biases based on general trends found within the data. Clustering may occur as a result of factors that are entirely undesirable, such as discriminatory elements. Professionals working in these fields should be aware of these potential biases in order to guard against them and correct for their impacts accordingly.

The need for diversity in cutting edge areas of technology is often more recognized than it is in the legal field. Industry experts also recognize the need for greater diversity at all levels of their systems. "One of the most major challenges that we are facing in this area is algorithmic bias in automated or augmented judgments that we are starting to implement," said Amir Feizpour, founder of Aggregate Intellect.

Feizpour notes that in some American jurisdictions, bail risk assessments are now prepared using AI technology called the "Public Safety Assessment." Critics have noted a strong racial bias in these results however, which have influenced the data through otherwise innocuous factors like neighbourhood of residence.

Feizpour proactively seeks practitioners of diverse backgrounds to make contributions to the field to help reduce bias. One example is the Toronto Machine Learning Summit (TMLS), which will bring together 6,000 interprofessional machine learning enthusiasts on Nov. 21-22, 2019, including lawyers.

Feizpour, who is on the TMLS steering committee, points to the conference's "Women in AI" focus, which hopes to reduce the biases that affect machine learning results. "These types of biases can severely damage groups that might be under-represented in our datasets like gender or racial minorities," said Feizpour. "Having ML practitioners and product designers that understand these nuances and represent different backgrounds can significantly prevent systems that lack diversity."

The need for all lawyers to familiarize themselves with machine learning is increasingly becoming apparent, and events like TMLS provide an opportunity for working professionals to get some of this exposure.

The computing power that machine learning provides should be an enormous boon to the legal industry. Soon, those CPDs that we take in law will include some of the technical skills relating to machine learning, to ensure that we can use these tools properly.

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