

# Making sense of artificial intelligence

Understanding the technology  
behind today's game-changing  
trademark research solutions





**Artificial intelligence (AI), the ability of computer systems to simulate or imitate human intelligence, is quietly transforming our daily lives. If you use a “smart speaker” to select a movie or order pizza, rely on facial recognition to open your smartphone or PC, or listen to songs selected for you by a streaming music service, you’re interacting with an AI system.**

AI is also transforming trademark research. CompuMark’s™ TM go365™ self-service trademark research solution is powered by sophisticated AI technology. But how does it work? And how does it benefit busy trademark professionals? In this paper, we’ll answer those important questions.

## What is AI?

The first thing to understand is that AI is not magic...it’s math. AI systems rely on mathematical models that define procedures for solving specific problems. In the area of trademark research, the problem might be determining the semantic relationship between a word and other similar words or an image and other images with similar visual characteristics. The more sophisticated the AI system, the more complex the model.

## How do AI systems get smart?

AI models must be “trained” on the relevant categories, properties and relationships among things it will analyze, called ontology. This can be accomplished using one of two broad approaches:

- *Supervised learning*, where the system is trained by human experts using data with known correct and incorrect examples.

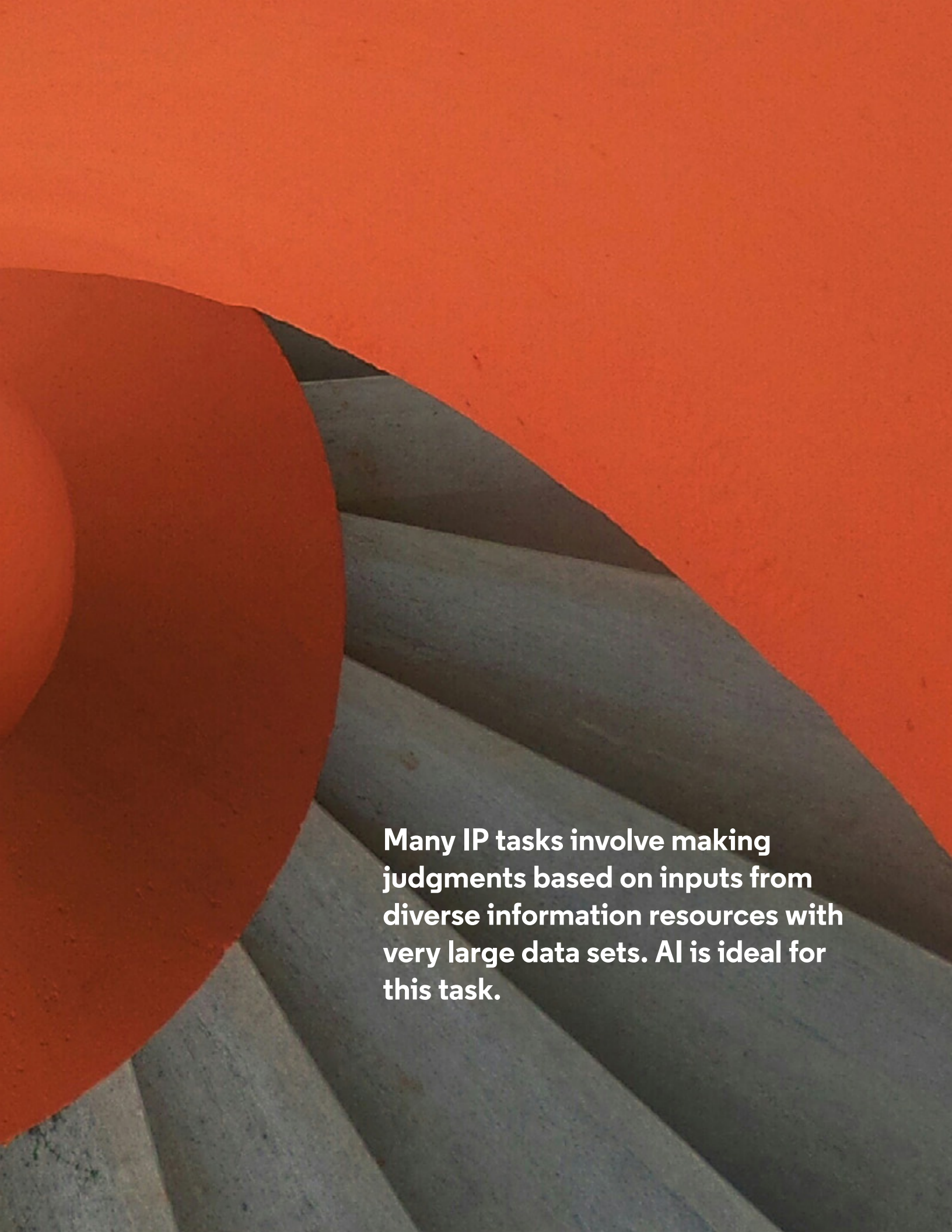
- *Unsupervised learning*, where the machine tries to make sense of the data being analyzed by identifying patterns within it, creating a model without human intervention. This is called machine learning.

TM go365 uses a machine learning algorithm to learn which words are related to other words. So a search for “Blue Milk” will also return semantic alternatives like Blue Yogurt or Purple Milk. Machine learning results are supplemented with additional alternatives from CompuMark search analysts, making the algorithm even smarter.

## How important is the source data to AI?

Data is the fuel that AI runs on. Generally speaking, the more data it can analyze and “learn” from, the better the AI model. TM go365 is trained on “Big Data” sources containing millions of data entries. New entries and analyst insights are continually incorporated to expand the system’s ontology and improve precision.

But the quality of source data is also critical. If the data has errors, these mistakes will be “learned” by the system, impacting the accuracy of the results. Low-quality data will lead to a low-quality model that cannot be trusted. AI cannot magically mine gold from a mountain of coal. For this reason, all data used by TM go365 is painstakingly reviewed, corrected and verified using both machine and human intelligence.

The background is an abstract composition of geometric shapes. A large, solid orange shape occupies the upper left and top portions of the frame. Below it, several parallel, grey, rectangular bands or planes are visible, creating a sense of depth and perspective. The overall aesthetic is modern and minimalist.

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## How does AI search visual trademarks?

Nearly 40% of all trademarks are images, which are notoriously difficult to search using traditional methods like design codes and descriptive search terms. TM go365's AI technology transforms this process.

It uses patented image recognition algorithms and deep learning for object recognition (for example, recognizing a zebra in a logo, rather than a group of stripes). The system automatically identifies key image objects and compares them to millions of images in CompuMark's database of design marks, making decisions about which marks are visually similar, ranking the results with the most similar marks first. Remarkably, it performs this complex analysis in just seconds.

## How does AI complement human IP professionals?

Many IP tasks involve making judgments based on inputs from a variety of diverse information resources, including resources with very large data sets. AI is ideal for this task, intelligently analyzing massive amounts of data very quickly, finding the "needles in the haystack" of data. This liberates IP professionals from the tedious task of sifting through many results, delivering a far smaller, more precise set of results.

In-depth training on word definitions, connotations and linguistics enables AI to create connections and find related results a human expert could miss. For a client in the dairy products business, could a human IP professional miss "kefir" as a related term? The AI system would not!

The IP applications of AI are just in their early stages. In the near future, we will see growing uses of AI focused on helping IP professionals form confident opinions faster, with less manual effort. This will free up more time to take on additional cases, spend more time with clients or drum up new business. AI may also enable IP professionals to broaden their in-house capabilities, reducing reliance on outsource partners.

## Are there any downsides to AI?

The "intelligence" of any AI system depends on the model that drives it. One potential pitfall is bias in the model. A notable example of this was the major corporation that had to shut down its AI-based résumé processing system when it discovered the system was turning down female applicants, revealing a clear male bias.

Another potential pitfall lies in how the AI system decides which features of the data being analyzed are important and which are not. For example, imagine that no trademark had ever been successfully applied for on a certain date. The system might spot this "pattern" and conclude that it is an important feature to use in its decision-making, impacting the results. Yet a human IP expert would recognize immediately that this is irrelevant.

To avoid these pitfalls, the AI model must be carefully conceived and trained to ensure it is optimized to find precisely the information that is sought, free from bias and irrelevant "noise."

## What is the future of AI in the IP space?

In the near term, we will see AI more commonly used in decision support applications, processing and parsing vast amounts of data, automating and accelerating a variety of time-consuming tasks. While TM go365 is already performing this vital function for searching word and image marks, the legal marketplace will see AI applied to other tasks, such as case management, competitive analysis and M&A due diligence.

AI will play an increasingly central role in IP management, helping professionals work faster and more efficiently, improving their service to clients and business colleagues. This, in turn, will create new opportunities for IP professionals to devote more time and energy to tasks that human experts are best at – collaborating with others and creating the human connections that drive business growth.

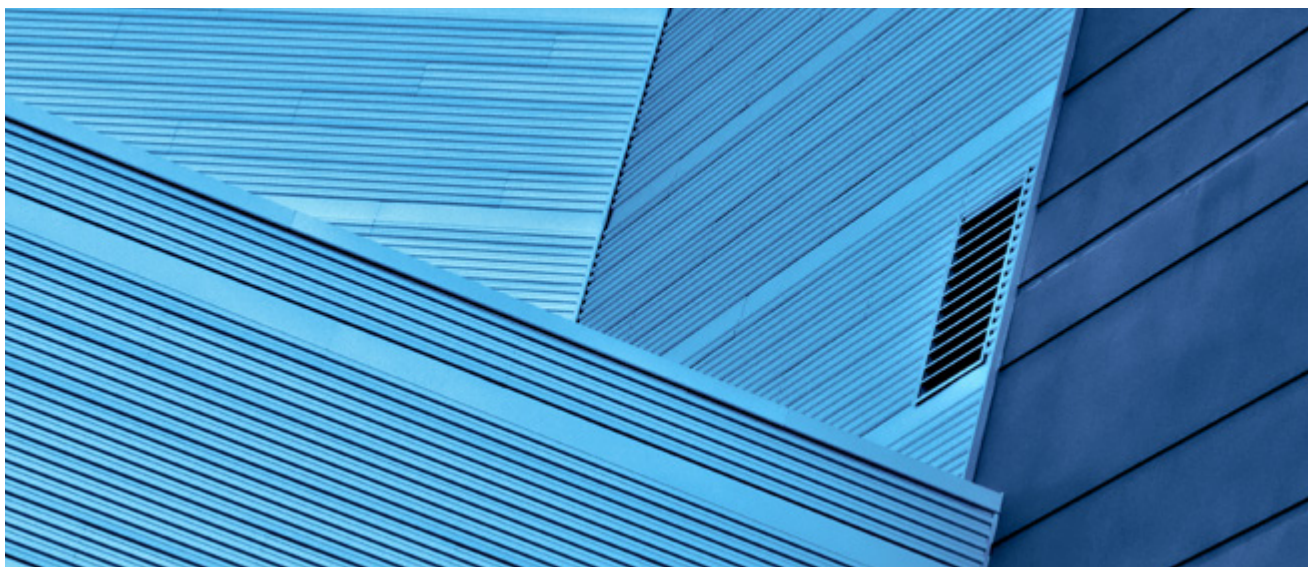
Recognizing the tremendous potential of AI to support trademark decision-making, CompuMark is making significant investments to advance the application of AI in trademark research and expand the capabilities of our solutions, including TM go365.

## Using AI to transform your daily work

TM go365 represents a dramatic example of the power of AI when applied to real-world trademark tasks. It combines advanced machine learning technology for word marks, image marks and industrial designs with trademark-specific logic based on decades of experience by CompuMark analysts. This combination of machine and human intelligence delivers a level of precision and practical value that changes the way IP professionals work.

The power of AI in TM go365 is just beginning, with continuous investments focused on expanding its capabilities.

Learn more at [compumark.com](https://compumark.com)



## About CompuMark

CompuMark™ is the industry leader in trademark research and protection solutions. We enable trademark and brand professionals worldwide to launch, expand and protect strong brands through the highest quality global content; expert analysis; superior trademark screening, search, and watch tools; and best-in-class service. Key products include: SAEGIS Trademark Screening Tools; TM go365 Self-Service Research Solution; Trademark Full Search; Trademark Watching; Copyright Searches; and Custom Solutions. CompuMark is a Clarivate Analytics™ company. For more information, please visit [compumark.com](http://compumark.com).

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