

Morgan Lewis

ARTIFICIAL INTELLIGENCE IN THE LEGAL REALM – WHO, WHAT, WHEN, WHERE, AND WHY

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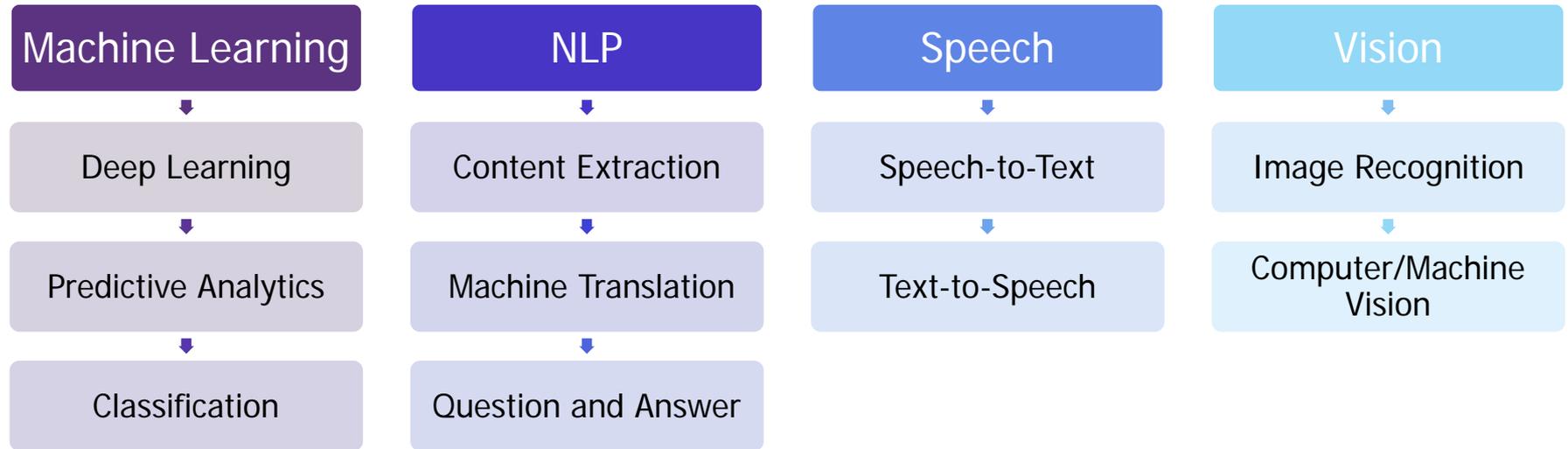
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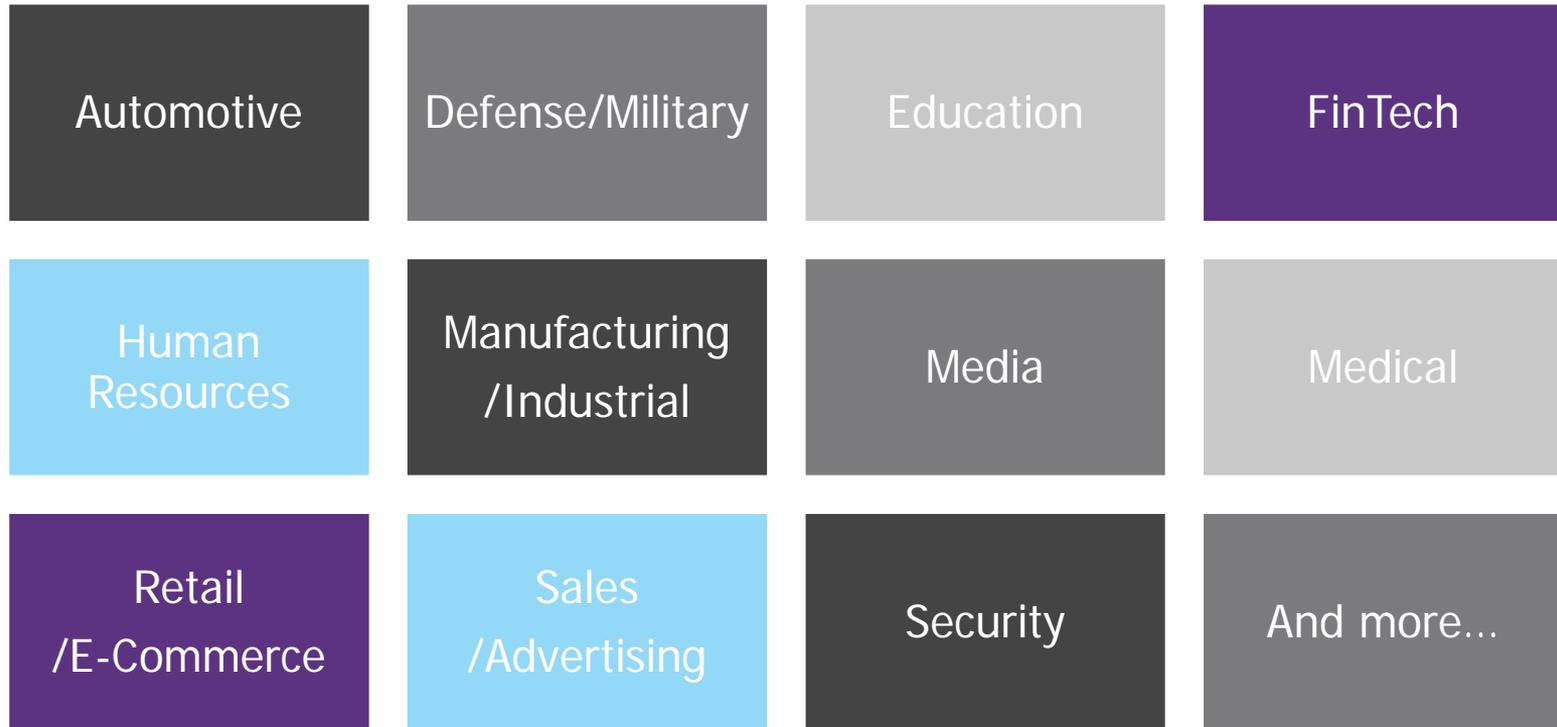
What Comes Next?

WHAT IS ARTIFICIAL INTELLIGENCE?

What are the Core AI Technologies?



Who Can Benefit from Application of AI Technologies?



When Did This All Begin?

1950

- Computer Scientist Alan Turing proposes the “Turing Test”

1955

- Computer Scientist John McCarthy coins the term “artificial intelligence”

1961

- “Ultimate,” the first industrial robot

When Did This All Begin?

1964

- Joseph Weizenbaum at MIT develops "ELIZA"

Mid-1960s–
1990s

- The "AI Winter"

1997

- Deep Blue, IBM's chess-playing system

When Did This All Begin?

2011

- IBM's Q&A computer Watson wins first place on *Jeopardy*;
- Apple's Siri is introduced

2014

- Chatbot "Eugene Goostman"

2014

- Amazon launches Alexa

When Did This All Begin?

2015

- Google & Microsoft announce that their algorithms surpassed humans at classifying image content

2016

- Microsoft chatbot "Tay" incident
- Uber begins testing driverless cars in California and Arizona

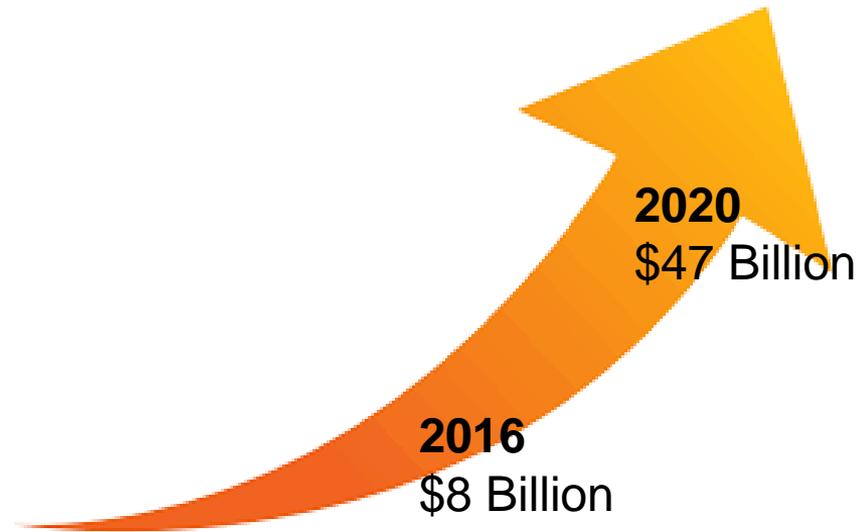
2017

- IBM & Microsoft battle for the lowest error rate in speech-recognition

March 2018

- Microsoft announces development of first machine translation system to reach human parity for Chinese to English translation

AI Market



Where is AI Rising?

China

- The amount of AI patents granted grew by 190% in a 5-year period
- Some estimate AI could increase economic growth rate by 1.6% by 2035
- Last year, China announced intent to become “a principal world center of artificial intelligence innovation” by 2030

United States

- Leads the world with \$10 billion in venture capital funneled to AI and more than 850,000 AI professionals in the US

Where is AI Rising?

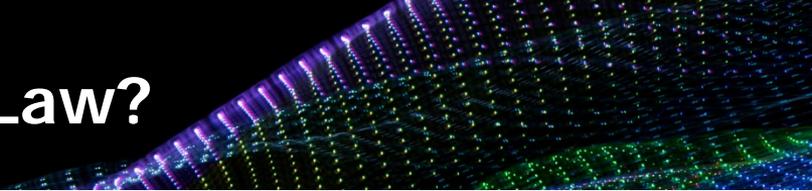
Japan

- Automation potential of the Japanese manufacturing sector at 71%, compared to 60% in the US

Germany

- Between 2011 and 2015, Germany published nearly 8,000 research papers on AI.
- Germany's Max Planck Society, two technical universities, and its leading exporting state are combining their artificial research intelligence together with companies like Porsche, Daimler, and Bosch.

Why Should I Care If I Practice Law?



Does AI signal the end of the legal profession?

McKinsey Global Institute - approximately 23% of a lawyer's job can be automated.

CB Insights' - more than 280 legal technology start-ups have raised \$757 million since 2012.

What About Research?

Example: ROSS application built on IBM's Watson

STATS

Impact on Research Efficiency and Accuracy

30.3%

time savings over Boolean based search

22.3%

time savings over Natural Language based search

\$13,067*

annual revenue increase per attorney

*based on a 25% conversion of unbillable time to billable time

What About Research?

Data analytics: use AI to identify important information “hidden” in your big data



What About Discovery?

Example: Document review and discovery



What About Contract Work?

Example:

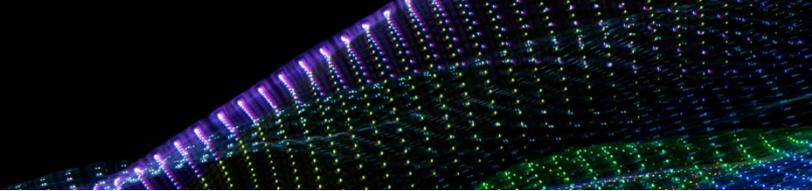
Beagle Inc.'s "Technology Assisted Narrative Review"



HOW ARE IP RIGHTS IN AI
PROTECTED?

IP Protection for AI

Copyright: How Would It Work?



Copyrights attach to original works of intellectual and artistic expression in multiple categories, including software

Data or databases qualifying as compilations are protectable

Registration before enforcement

IP Protection for AI

Trade Secret: How Would It Work?



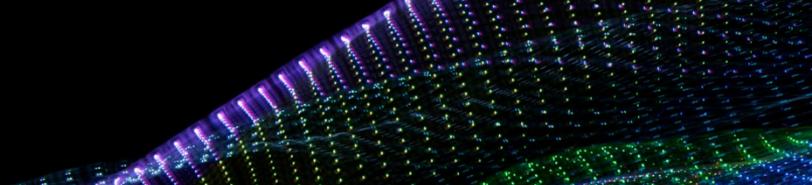
Trade secret protections apply broadly to business, financial, and technical information, including software source code, when:

(1) the information is not generally known / ascertainable

(2) the information provides independent economic value or business advantage

(3) you take reasonable efforts to preserve secrecy

IP Protection for AI Patent: How Would It Work?



Any novel, useful, and non-obvious process, machine, article of manufacture, or composition of matter, or any improvement of the same

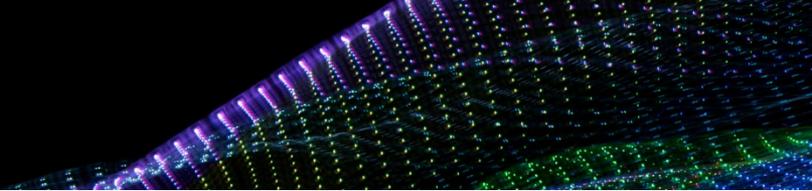
Infringes if made, used, sold, offered for sale, or imported

20 year term

Exclusive rights in exchange for public disclosure

WHO SUCCESSFULLY SECURES PATENT
PROTECTION FOR AI?

Claim Drafting



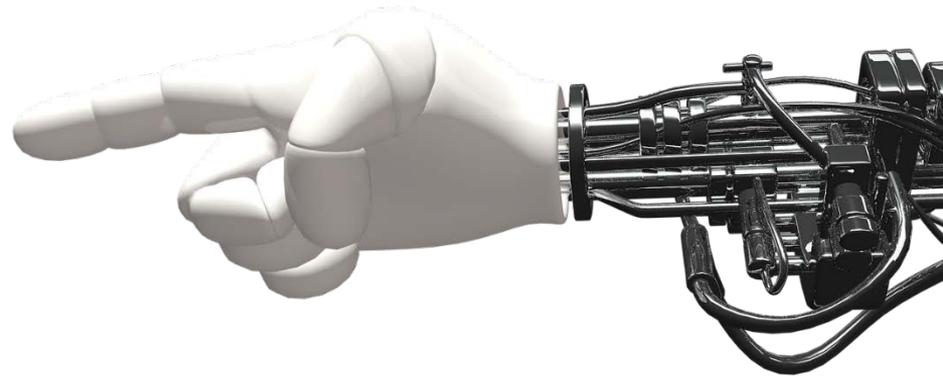
Software-implemented inventions are often claimed as:

- novel methods
 - systems
 - machines (*e.g.*, as pre-programmed, special purpose computers)
 - machine-readable physical media or
 - a combination of these technologies
-

Claim Drafting and § 112 Enablement

Why Might This Come Up?

Must provide a clear and definite description of the claimed invention and includes information stating the manner and process of making and using the invention.



Claim Drafting and § 112 Enablement

Why Might This Come Up?

- A key concern: how much disclosure?
- Source code is generally not required
- Include flow charts, data flow diagrams, skeletal data structures, user interface elements, and anything else that provides detail
- Provide the technical details of the functions instead of just the outcome (saying a process is “better,” “faster,” or “more accurate” will not get you a patent)
- The disclosure must be sufficient to enable a person having ordinary skill in the art to implement the invention (e.g., write a program that performs the claimed function)

Claim Drafting and § 112 Enablement

What Should I Do?

Disclose programmed steps, algorithms, or procedures that the computer performs to accomplish the claimed function

- Do not need to provide the details of well-known techniques (e.g., the internal algorithm of a neural network)
-

Use sufficiently detailed flow charts and data flow diagrams

- What data elements are computed and how
 - e.g., identify and compute the elements of the feature vectors used in AI techniques
-

Consider including source code snippets for key functions when the operations are technically complex

Claim Drafting and § 101

Why Might This Come Up?

- Computer-implemented inventions are at risk because the claims:
 - May be considered directed to an “abstract idea” or
 - Have novel elements that are (1) “purely conventional features of computers, the Internet, or other devices,” or are (2) “well-understood, routine, and conventional activity”
- Using purely functional claim language is generally not allowable because:
 - It focuses on just the result rather than how the result is obtained; and
 - The specification does not provide sufficient details describing how the invention accomplishes the functions (e.g., I claim all fuel-efficient cars)

Claim Drafting and § 101

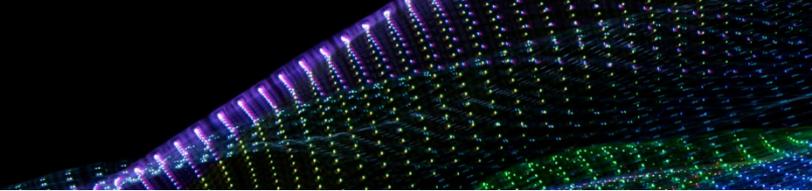
Why Might This Come Up?

How to get a rejection for subject matter eligibility:

1. A method, comprising:
collecting data from a plurality of sensors;
using the collected data as input to a neural network to
compute an output; and
display the output on a screen.

Claim Drafting and § 101

What Should I Do?



Illustrate that the claimed invention is not an abstract idea by providing meaningful implementation details

Explain how the invention improves the routine or conventional ways that the problem was previously addressed

Sometimes consider drafting narrow claims

Artificial Intelligence Examples: US 9,408,040

Room-Level Location using WiFi

1. A method of identifying locations of mobile devices in buildings, performed at a server having one or more processors and memory, the method comprising:

- partitioning a building into a plurality of regions, wherein the building includes a plurality of radio-transmitting base stations at distinct locations;

- receiving training data measurements taken at a plurality of distinct points in the building, wherein for each of the distinct points the measurements measure strength of signals received from the base stations, and wherein at least one respective point of the distinct points is in each of the respective regions;

- for each respective point of the plurality of distinct points in the building, computing differences between pairs of signal strength measurements taken at the respective point and forming a respective feature vector that includes a plurality of components, each component comprising a respective computed difference associated with a respective base station pair, thereby forming a plurality of feature vectors; and

for each region, using the feature vectors to train a respective region classifier, wherein the training includes selecting a respective subset of the base station pairs that consists of fewer than all base station pairs and determining a respective plurality of parameters corresponding to the respective subset of base station pairs, and wherein the respective plurality of parameters are modified during the training so that the respective region classifier computes probability estimates that test points are inside the respective region using sample feature vectors of signal strength differences for signal strength measurements taken at the test points for signals received from the base stations.

Artificial Intelligence Examples: US 9,183,288

Document Search using Latent Semantic Analysis

1. A computer-based method of organizing data for search, the method comprising the steps of:

- accessing a domain corpus;
- parsing the domain corpus into a plurality of documents;
- parsing each document into at least one term that corresponds to the document;
- generating a term-to-document matrix that correlates each document with the at least one term that corresponds to the document, the at least one term defining a document node for the document;
- performing a singular value decomposition and a dimension reduction on the term-to-document matrix to form a reformed term-to-document matrix having document nodes with fewer dimensions than the document nodes of the term-to-document matrix;
- comparing at least one document node of the reformed term-to-document matrix against another document node of the reformed term-to-document matrix; and

combining at least one document node of the term-to-document matrix with another document node of the term-to-document matrix, based on the comparison of the at least one document node of the reformed term-to-document matrix against the another document node of the reformed term-to-document matrix, to form a combined document node representing the combination of the at least one document node of the term-to-document matrix with the another document node of the term-to-document matrix, thereby clustering at least two document nodes of the term-to-document matrix.

Artificial Intelligence Examples: US 5,625,751

Resolving Faults in a Power Distribution System

1. A method for real-time evaluation of fault contingencies upon the dynamic security of a power system that includes power generators and power-carrying lines, the method comprising the following steps:

- (a) defining a set of indices describing a fault-induced deviation from a pre-fault steady state condition of said power system;
- (b) forming from said set of indices a subset of composite indices for each fault contingency of interest, wherein a fault contingency of interest includes a fault experienced by said power system, for which fault contingency real-time evaluation is desired, wherein said subset of composite indices is formed as follows:
 - (b-1) calculating a change from pre-fault steady-state condition of said power system for each system variable defined by an index in a said set of indices;
 - (b-2) segregating changes calculated at step (b-1) into positive-signed values and negative-signed values;
 - (b-3) normalizing said positive-signed values and said negative-signed values so segregated at step (b-2);
 - (b-4) raising to a power n , $n \geq 4$, values normalized at step b-3);

- (b-5) combine values so power-raised in step (b-4) to yield at least one composite index selected from the group consisting of (a) terms corresponding to at least some of said positive-signed values, (b) terms corresponding to at least some of said negative-signed values, (c) terms corresponding to at least some of said positive-signed values and corresponding to at least some of said negative-signed values, and (d) terms corresponding to a difference between at least some of said positive-signed values and some of said negative-signed values;

- (c) providing a computer system including a neural network to classify in terms of at least stability and instability each of said composite indices, said neural network receiving said composite indices as input; and
- (d) providing from an output of said neural network at least one indication of relative stability of said power system in response to a said fault contingency of interest.

WHEN WOULD AI PRESENT LITIGATION
ISSUES?

Liability for Infringement

Why Might This Come Up?

Pleading infringement

- Identifying accused technology prior to discovery?
- Sales and marketing as circumstantial evidence?
- Limited detail in factual allegations means early motion practice

Theory of Infringement

Why Might This Come Up?

Literal Infringement

- All elements rule
- Functional capability, not actual performance, for apparatus claims
- Capability to perform claimed method not enough

Doctrine of Equivalents

- Equivalency for AI?
- Changes in technique or improvements made possible after the patent application is filed

Theory of Infringement

Why Might This Come Up?

Contributory Infringement

- Knowledge that the component was especially made or adapted for use in an infringing manner
- Willful blindness

Induced Infringement

- Intentionally taken action that actually induced direct infringement
- Knowledge that that the acts it was causing would infringe the patent
- Willful blindness

Liability for Infringement

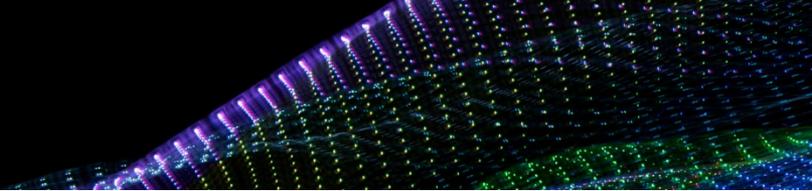
Why Might This Come Up?

Proving infringement

- Evolving and transient state
- Discovery to capture data not necessarily kept in normal course of business
- Third-party evidence

Liability for Infringement

What Can I Do?



Foresight when drafting

Train employees about IP relevant to industry

Implement guidelines aimed at avoiding infringement

Inventorship and Authorship

Patent: Why Might This Come Up?

Validity issues relating to inventorship

The inventor of a patent is the individual or individuals who conceives of the invention

Federal Circuit: inventors must be natural persons and cannot be corporations or sovereigns.

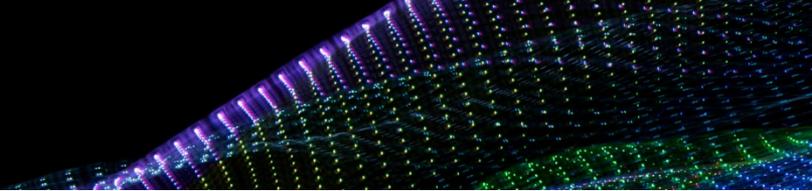
Inventorship and Authorship

Patent: Why Might This Come Up?

"Patentability shall not be negated by the manner in which the invention was made."

New Idea Farm. Equip. Corp. v. Sperry Corp., 916 F.2d 1561, 1566 n.4 (Fed. Cir. 1990):
"*people* conceive, not companies."

Inventorship and Authorship Patent: What Can I Do?



Confidential Invention Disclosure Forms

Laboratory Notebook Practice

Joint development agreements to ensure ownership of
technology developed by AI

Inventorship and Authorship

Copyright: Why Might this Come Up?



For works created by a single author and not as a work made for hire, the author is the person that reduces an idea to original expression and commits that expression to a tangible medium. 17 U.S.C. § 201(a).

Current work-for-hire doctrine does not apply to commissioned work of computer software.

Scenario: The AI's role in creating the work is undefined.

Inventorship and Authorship

Copyright: Why Might this Come Up?

The Office will not register works **produced by a machine or mere mechanical process** that operates **randomly or automatically** without any creative input or intervention from a human author.

Inventorship and Authorship

Copyright: Why Might This Come Up?



“Monkey
Selfies” Case

Inventorship and Authorship Copyright: What Can I Do?

Ensure licensing agreements
are thorough and up-to-date

Carefully craft agreements
with third party software
developers



§ 101 Patent-Eligible Subject Matter Why Might This Come Up?

PUREPREDICTIVE, Inc. v. H2O.AI, Inc., No. 17-CV-03049-WHO, 2017 WL 3721480 (N.D. Cal. Aug. 29, 2017)



PUREPREDICTIVE, Inc. v. H2O.AI, Inc., No. 17-CV-03049-WHO, 2017 WL 3721480 (N.D. Cal. Aug. 29, 2017)

A method for a predictive analysis factory, the method comprising:

pseudo-randomly generating a plurality of learned functions based on training data without prior knowledge regarding suitability of the generated learned functions for the training data, the training data received for forming a predictive ensemble customized for the training data;

evaluating the plurality of learned functions using test data to generate evaluation metadata indicating an effectiveness of different learned functions at making predictions based on different subsets of test data; and

forming the predictive ensemble comprising a subset of multiple learned functions from the plurality of learned functions, the subset of multiple learned functions selected and combined *based on the evaluation metadata, the predictive ensemble comprising a rule set synthesized from the evaluation metadata* to direct different subsets of the workload data through different learned functions of the multiple learned functions based on the evaluation metadata.

PUREPREDICTIVE

Step One

- “The method of the predictive analytics factory is directed towards collecting and analyzing information. The first step, **generating learned functions or regressions from data—the basic mathematical process of, for example, regression modeling, or running data through an algorithm—is not a patentable concept.**”
- “While PPI claims that this shows it would be impossible for a human to perform such a task, **just because a computer can make calculations more quickly than a human does not render a method patent eligible.**”
- “The **method takes the learned functions, evaluates their effectiveness, and selects those most effective to create a rule set.** These are mathematical processes that not only **could be performed by humans** but also go to the general abstract concept of predictive analytics rather than any specific application.”

PUREPREDICTIVE

Step Two

Distinguishing *DDR Holdings*:

- “PPI’s claims address the universal problem in any analytical framework of choosing between a more generally applicable or more specific and customized model.”
- “[W]hile the solutions in *DDR Holdings* were specifically engineered to construct a hybrid web page ‘stor[ing] visually perceptible elements from the identified host website,’ PPI’s solutions remain the abstract mathematical processes of collecting and analyzing data.”

PUREPREDICTIVE

Step Two

Distinguishing *BASCOM*:

- “PPI’s claims do not describe specific system architecture, and references to generic ‘modules’ do not provide any further specificity.”
- “PPI’s technology, while perhaps an effective method, is simply an implementation of the basic concept of predictive analytics on an apparatus, computer program product, or other medium.”

§ 101 Patent-Eligible Subject Matter

Why Might This Come Up?

Blue Spike, LLC v. Google Inc., No. 14-CV-01650-YGR, 2015 WL 5260506, at *5 (N.D. Cal. Sept. 8, 2015), *aff'd*, 2016 WL 5956746 (Fed. Cir. Oct. 14, 2016)



Blue Spike, LLC v. Google Inc.

A method for monitoring and analyzing at least one signal comprising:

receiving at least one reference signal to be monitored;

creating an abstract of said at least one reference signal wherein the step of creating an abstract of said at least one reference signal comprises:

inputting the reference signal to a processor;

creating an abstract of the reference signal using perceptual qualities of the reference signal such that the abstract retains a perceptual relationship to the reference signal from which it is derived;

storing the abstract of said at least one reference signal in a reference database;

receiving at least one query signal to be analyzed;

creating an abstract of said at least one query signal wherein the step of creating an abstract of said at least one query signal comprises:

inputting the at least one query signal to the processor;

creating an abstract of the at least one query signal using perceptual qualities of the at least one query signal such that the abstract retains a perceptual relationship to the at least one query signal from which it is derived; and

comparing the abstract of said at least one query signal to the abstract of said at least [1]east one reference signal.

Blue Spike, LLC v. Google, Inc.

Step One

“**The patents seek to ‘model,’ on a computer, ‘the highly effective ability of humans to identify and recognize a signal.’** By their own terms, therefore, the patents simply seek to cover a general purpose computer implementation of an abstract idea long undertaken within the human mind.”

“[O]n their face the patents do not purport to recognize aspects of the compared works that only a computer—but not a human—could reasonably detect. **The specification itself emphasizes the goal of modeling human capacity.** Nothing in the claim language suggests the patents were not intended to encompass computerized content comparisons based on human-perceptible characteristics.”

“The method by which the claims contemplate enabling these comparisons **mirrors the manner in which the human mind undertakes the same task. Perceptible characteristics of an item (e.g., a photograph) are used as a heuristic to compare that item to others.** For instance, to borrow an example from the specification, one might compare paintings of sunsets by focusing on ‘perceptual characteristics related to the sun,’ e.g., its color or position.”

Blue Spike, LLC v. Google, Inc.

Step Two

The claims “merely discuss **using routine computer components and methods (e.g., general purpose computers, compression, and databases) to accomplish this task** with, in certain circumstances, greater efficiency than a human mind could achieve.”

“Here, to the extent the asserted claims do encompass comparisons that a human is not readily capable of undertaking—an argument belied by the **specification—they nevertheless *also* cover and preempt a wide range of comparisons that humans can and, indeed, have undertaken from time immemorial.**”

§ 101 Patent-Eligible Subject Matter

What Can I Do?

A determination of whether claim limitations are well-understood, routine, and conventional to a person of ordinary skill in the art is a question of fact (*Berkheimer v. HP Inc.*, 881 F.3d 1360, 1368-69 (Fed. Cir. 2018)).

Claims that are results-focused and functional so as to effectively cover any solution to an identified problem are frequently ineligible under Section 101 (*Affinity Labs of Texas, LLC*, 838 F.3d at 1265).

Claims to pure data or transitory signals embedded with data that do not fall within any of the statutory categories of process, machine, manufacture, or composition of matter are not patent eligible subject matter (*Mentor Graphics Corp. v. EVE-USA, Inc.*, 851 F.3d 1275, 1294 (Fed. Cir. 2017)).

CONCLUSION

Morgan Lewis Technology May-rathon 2018

Morgan Lewis is proud to present Technology May-rathon, a series of tailored webinars and in-person programs focused on current technology-related issues, trends, and legal developments.

This year is our 8th Annual Tech May-rathon and we are offering over 30 in-person and virtual events on topics of importance to our clients including privacy and cybersecurity, new developments in immigration, employment and tax law, fintech, telecom, disruptive technologies, issues in global tech and more.

A full listing and of our tech May-rathon programs can be found at <https://www.morganlewis.com/topics/technology-may-rathon>

Tweet [#techMayrathon](#)

Morgan Lewis



Biography



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Drawing on 12 years of experience in software development, David V. Sanker, Ph.D. works with clients to build strong patent portfolios in a variety of areas, including artificial intelligence, machine learning, natural language processing, data visualization software, large-scale database architecture and storage infrastructure, data analytics software, and touch screen technology. David also handles reexaminations before the US Patent and Trademark Office (USPTO), and represents clients in patent litigation, including cases before the US International Trade Commission (USITC), the US Federal Circuit, and in federal district courts.

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Karon N. Fowler represents clients in intellectual property disputes involving patents, trademarks, copyrights, and trade secrets. Karon has had bench and jury trial experience throughout the United States, including before the US International Trade Commission. She has also contributed to post-grant proceedings before the US Patent and Trademark Office. Karon's experience spans a case's lifecycle from the time of filing, at trial, and through appeal.

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Serving as the leader of Morgan Lewis's semiconductor practice, Andrew J. Gray IV concentrates his practice on intellectual property (IP) litigation and prosecution and on strategic IP counseling. Andrew advises both established companies and startups on computer and Internet law issues, financing and transactional matters that involve technology firms, and the sale and licensing of technology. He represents clients in patent, trademark, copyright, and trade secret cases before state and federal trial and appellate courts throughout the United States, and before the US International Trade Commission.

Our Global Reach

Africa
Asia Pacific
Europe
Latin America
Middle East
North America

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