Artificial Intelligence and the Law – A Primer for Lawyers. Will We All Become Obsolete?

Rory Radding (Moderator)
Partner, Locke Lord LLP

Alexander Puutio (Moderator)
Administrative Officer, United Nations

Diane Holt
Team Lead – Transactions, Bloomberg Law – Introduction to AI

Jonathan Askin
Professor, Brooklyn Law School – AI, IP and Legal Tech

Matthew D'Amore
Associate Dean, Cornell Tech – AI in Law Practice and Legal Education

Ned Gannon
President, eBrevia – Application of AI in the Legal Profession

Locke Lord LLP

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The Pitfalls, Problems and
Impact of Artificial Intelligence on IP Rights:
Inventorship, Ownership and Infringement

Rory Radding

Partner, Locke Lord, LLP

New York, New York, U.S.A.

Rory.Radding@lockelord.com

Atlanta | Austin | Boston | Chicago | Dallas | Hartford | Hong Kong | Houston | Istanbul | London | Los Angeles | Miami | Morristown | New Orleans
New York | Orange County | Providence | Sacramento | San Francisco | Stamford | Tokyo | Washington DC | West Palm Beach

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Overview

- **Definitions** - Many definitions exist but a workable definition is from the Association for the Advancement of Artificial Intelligence
  - "the scientific understanding of the mechanisms underlying thought and intelligent behavior and their embodiment in machines." See www.aaai.org

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2

Overview

- Types of AI
    - Machine learning
    - Neural networks
    - Deep learning
    - Search
    - Probabilistic reasoning
    - Prediction

Overview

- **A Little History**
    - 4th century BC – Aristotle invented syllogisitc logic, the first formal deductive reasoning system.
    - 13th century – in 1206 A.C., Ismail Al-Jazari, an Islamic scholar and prolific automation inventor, designed a programmable humanoid robot – a boat carrying four mechanical musicians powered by waterflow
    - 1926-1940 – Alan Turing proposes the universal computing machine (0's and 1's)
    - 1950 – Turing publishes "Computing Machinery and Intelligence" (mimic human behavior)
    - 1950s – Algorithms play checkers and image recognition
    - 1956 – John McCarthy created the term "artificial intelligence" at Dartmouth
    - 1959 – Arthur Samuel (IBM) coins "machine learning"

Overview

- **A Little History**
  - 1962 – First industrial robot company, Unimation, founded
  - 1966 – semantic nets created
  - 1969 – First International Joint Conference on Artificial Intelligence in Washington, D.C.
  - 1974 – First expert system
  - 1978 – "satisficing" decision making,
  - 1979 – "Stanford Cart": First computer controlled autonomous vehicle
  - 1981 – Danny Hillis connection machine – parallel computing. He later founds Thinking Machine, Inc.

Overview

- **A Little History**
  - 1990s to the present - Major advances in all areas of AI, with significant demonstrations in machine learning, intelligent tutoring, case-based reasoning, multi-agent planning, scheduling, uncertain reasoning, data mining, natural language understanding and translation, vision, virtual reality, autonomous vehicles, games (chess, checkers, Go) and other topics, some using IBM's Deep Blue.
  - 2006 – Geoffrey Hinton coins "deep learning" – multilayer neural networks.
  - 2010 – Siri personal assistant
  - 2011 – IBM's Watson
  - 2014 – Amazon's Alexa

Patents

Basic Concepts
    Has the invention been created autonomously by the AI system?
        AI generated invention
        AI enabled invention

Possible actors in producing/creating inventions

software programmers

creator of the AI algorithm but may not focus on the application of the AI system

data suppliers -- AI system sifts through data to learn

checkers of AI system results to correct them, if necessary

owner of the AI system, e.g., IBM owns Watson

operators -- licensee or service provider

public

government

investor

the AI system itself

How to Identify the Actual Owner of AI Patent Rights?

First Must Identify Inventor

Because conception is the touchstone of inventorship, **each joint inventor must generally contribute to the conception of the invention**.

Conception is the "formation in the mind of the inventor, of a **definite and permanent idea of the complete and operative invention**, as it is hereafter to be applied in practice."

Joint inventors must be "**aware**" of each other's work on the invention. If they have had no contact whatsoever and are completely unaware of each other's work, they cannot be joint inventors.

Merely adding **routine** knowledge, well-known principles", techniques, or skill is **not** an inventive contribution.

Then Who is the Owner?

Ownership initially vests in each **inventor**, absent an agreement to the contrary.

Each co-owner's ownership rights carry with them the **right to license others**, a right that also does not require the consent of any other co-owner.

Ordinarily, one co-owner has the **right to impede the co-owner's ability to sue infringers** by refusing to voluntarily join in such a suit.

Who Can infringe?

Usually need some form of human involvement

U.S. patent law states "whoever" makes, uses, sells, offers for sale or import.

Computer owner, developer and user are different entities.

Joint Infringement

System or Apparatus

infringing use does not require a party to exercise physical or direct control over each individual element of the system. **The party collecting the information may still be said to be using the system** because if the user did not make the request, then the processing would not be put into service demonstrating '**control**' of the system.

But not owning or directly controlling the AI may not be sufficient to avoid infringement.

Who Can Infringe? (continued)

Method

Consider who is designing, controlling, and owning the AI.

Infringement outside the U.S. by AI system or apparatus located and operated outside U.S. if control exercised there.

Infringe inside the U.S. for a method since all steps must be performed in U.S.

Inducing infringement

Knowingly causes another to infringe and knowing the other will infringe

Can a computer infringe?

If human owns AI then human infringer.

But AI learns and modifies to produce a product as action -- is the owner still the infringer?

Is the AI an inducer?

Copyright

■ An original work of <u>authorship</u> fixed in any tangible medium of expression, now known or later developed from which they can be perceived, reproduced, or otherwise communicated, either directly or with the aid of a machine or device

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The Basic Question: Is a work of authorship created solely by a machine using AI an "original work of authorship"?

■ The cases break into two answers:
  ■ Would instructing the machine as to what areas you want it to create be sufficient?
    ■ Under U.S. law, the Copyright Office has accepted such works as being "works of authorship", entitled to copyright protection.
  ■ What if the machine does all of the creation itself, as an independent actor without additional human instruction?
    ■ Under U.S. law, the Copyright Office has rejected such works as not having sufficient "human authorship" to qualify for registration
    ■ Such works now fall into the public domain and are unprotectable under law.
  ■ How does this impact foreign created works copyrighted under the laws of other countries?
    ■ Registration for such works is not required in the United States for them to be enforceable so it will be a matter for U.S. Courts.
■ The practical use of such AI technologies today and in the future in creating what are now copyrighted works if made by humans suggest Copyright law reform is necessary.

Human Must Create Copy Work

- <u>Naruto v. Slater</u> (2016)
  - Naruto, a crested macaque, took a selfie using David Slater's camera
  - Slater published the photographs
  - Naruto, through People for the Ethical Treatment of Animals, sued Slater for infringing Naruto's copyrights in the photos
  - The Court dismissed the case, finding Naruto not the "author" under the Copyright Act – not human

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Copyright and Artificial Creativity By Territory

- May the works of artificial intelligence be copyrighted?
  - No: the USA, the EU, Canada, Australia, Singapore
    - The obstacle generally lies in the requirement of human author
  - Yes: the UK, Ireland, New Zealand, Hong Kong, India
  - However, even where copyrights may subsist, the law may treat AI –generated works differently:
    - Different duration (UK and HK)
    - Moral rights (such as the right to be identified as the author)

Should We Grant Copyright/Patents to AI Created Works?

- Two major rationales:
    - 1. The functional, utilitarian approach: copyrights granted in order to "promote the progress of Science and the useful Arts"
        - Generally accepting of artificial creativity, as long as society benefits in the end.
    - 2. The moral-rights approach: copyrights are granted in order either to recognize the labor of the artists or because creative works are an expression of individualism and identity, and are thus protected as part of the creator's essential personhood
    - 3. Possible compromise: some jurisdictions which grant copyright to AI works nonetheless grant them different moral rights

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Who painted this painting?

Who is the Author of this AI-created poem?

"The crow crooked on more beautiful and free,
He journeyed off into the quarter sea.
His radiant ribs girdles empty and very- lease
beautiful as dignified to see"

Where do we go from here?

- Questions with no easy answers:
    - 1. What is creativity, what is its purpose, and who should benefit from it?
    - 2. What is the relationship between creativity, personhood, and humanity?
        - Are they inextricably linked, or may emerging AIs independently possess some of these traits selectively?
        - What might the policy considerations be to "outsourcing" elements of creativity to AIs?
    - 3. If an AI possesses sufficient creativity and personhood to be the author of an original work, do ethical concerns arise regarding the creation and exploitation of such AIs?
    - 4. Without patent or copyright, how will the investment in these technologies be recouped?

AI & the Law: A Primer

NYSBA Emerging Trends Program

Diane Holt, Team Lead – Transactions
April 5, 2019

The Imitation Game

I propose to consider the question, "Can machines think?"

…

An important feature of a learning machine is that its teacher will often be very largely ignorant of quite what is going on inside, although he may still be able to some extent to predict his pupil's behavior.

Three Critical Questions to Focus Your Analysis

1. What Type of "Artificial Intelligence" Are We Talking About?
2. What Laws Impact Instance of AI?
3. What's the Problem We're Trying To Solve?

Artificial intelligence is an advanced technology that allows a computer to develop its own program by learning from data.

- **Algorithm** = formula; hard coding an output; line-by-line coding; rules
  - Example: credit score

- **Machine learning** shifts burden of program-writing to the computer

- **Supervised learning** uses training data so that a computer can develop inferences. More data = more accuracy. Uses some or all labeled data.
  - Example: credit card fraud screening; "you might like"

- **Deep Learning**
  - Examples: analyzing faces; CT scan study (The Lancet, December 1, 2018), Google's Deep Mind, Stock Fish, chess

In which functional parts of the company are AI projects used? (Select all that apply.)
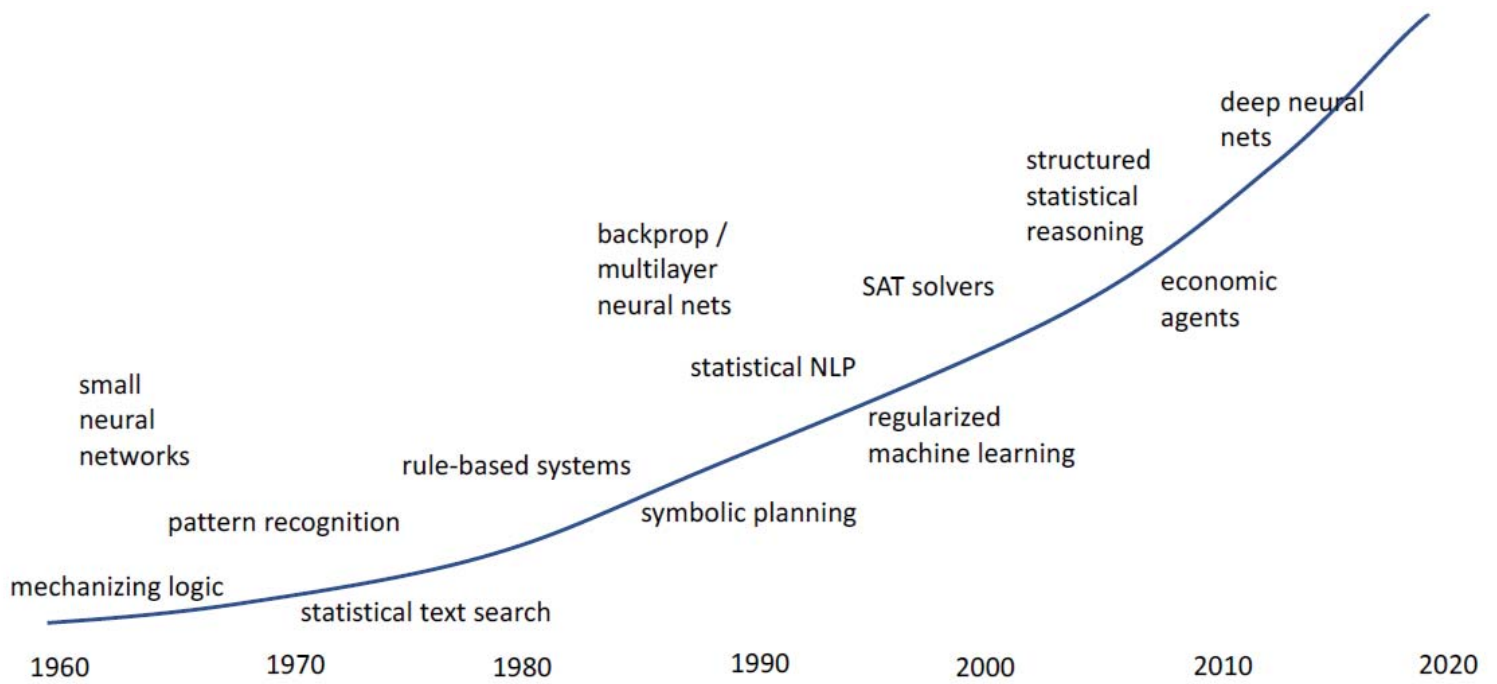
% of all respondents

Function	%
Research and Development	50%
Customer Service	34%
IT	33%
Operations, Facilities, Fleet Management	22%
Marketing, Advertising, PR	21%
Finance and Accounting	16%
Manufacturing, Production	15%
Sales	15%
Purchasing, Logistics, Supply Chain	11%
Human Resources	9%
Distribution	7%
Legal	5%
N/A	12%

deep neural
nets

structured
statistical
reasoning

backprop /
multilayer
neural nets

SAT solvers

economic
agents

statistical NLP

small
neural
networks

regularized
machine learning

rule-based systems

pattern recognition

symbolic planning

mechanizing logic

statistical text search

1960   1970   1980   1990   2000   2010   2020

Brainspace™

8

Evolving Technology
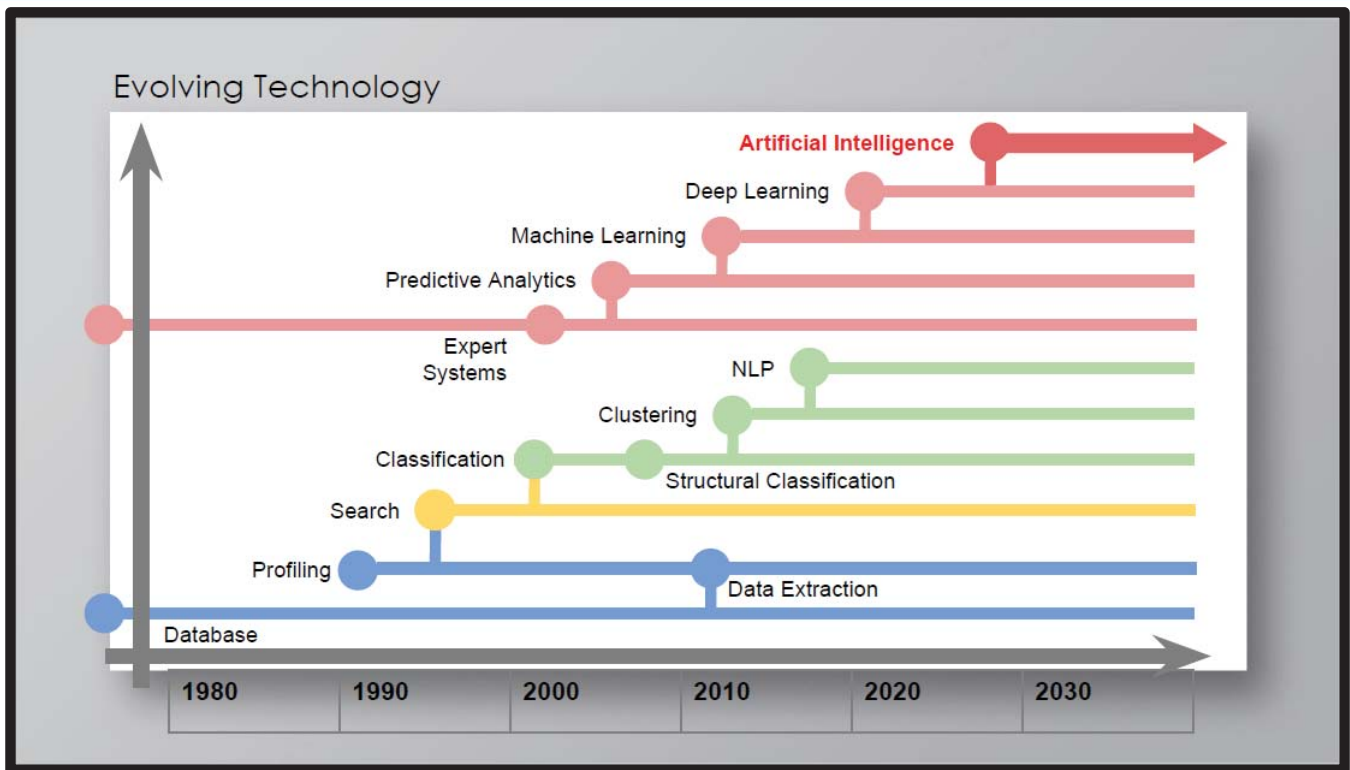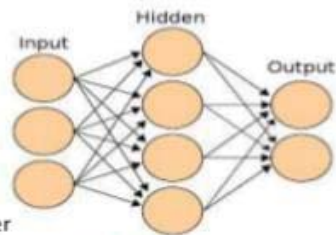
- Added layers in neural network to solve width problem in single–layer networks for universal approximation.
- More effective in learning features of the data.
- Like sifting data with multiple sifters to distill finer and finer pieces of the data.
- Computationally intensive and requires architecture design and optimization.

- Ethical rules – which may constrain the use of AI – or require it
  - Model Rules 1.1 (competence), 2.1 (independent judgement), confidentiality (1.6), 5.1 & 5.3 (supervise)
- Statutes and regulations
- Case law

  ➢ Understanding the technology itself is critical to understanding compliance

12

Maintaining Competence

[8] To maintain the requisite knowledge and skill, a lawyer should keep abreast of changes in the law and its practice, including the benefits and risks associated with relevant technology, engage in continuing study and education and comply with all continuing legal education requirements to which the lawyer is subject.
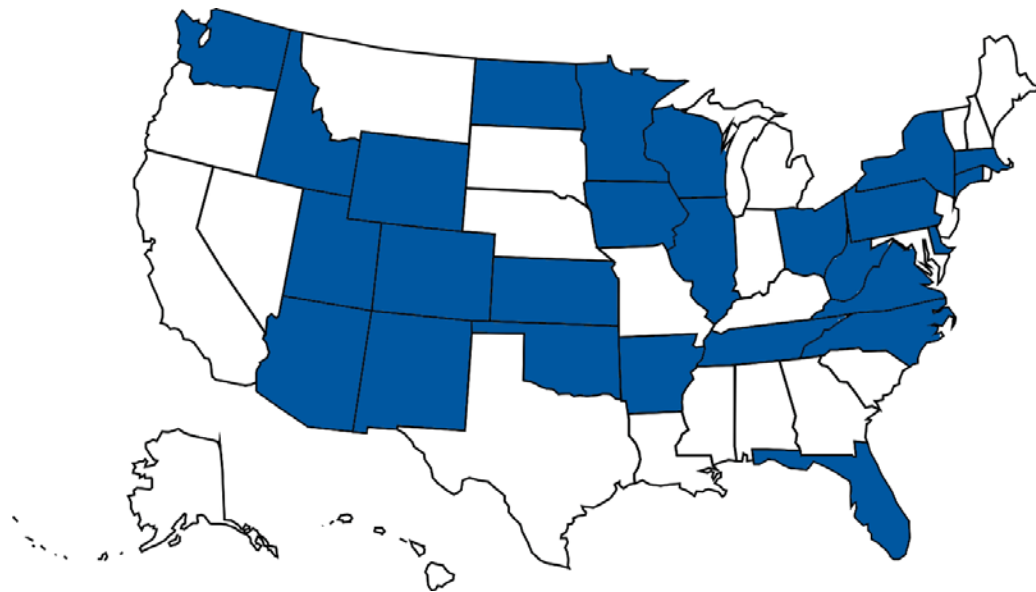
- Prohibiting discrimination
  – Equal Credit Opportunity Act
  – Fair Housing Act
- Prohibiting unfair or deceptive acts or practices
  – Federal Trade Commission Act, section 5
  – Dodd-Frank Wall Street Reform and Consumer Protection Act
  – Many state laws
- Employment Laws
  – Federal and State
- Privacy Laws
  – California Consumer Privacy Act (effective January 1, 2020), creates consumer right to privacy and right of action for damages
  – Hawaii, Illinois, Maryland, Massachusetts, New Jersey, New Mexico, New York, Rhode Island, Texas and Washington

European Union's General Data Protection Regulation, effective May 25, 2018

- Article 22: "The data subject shall have the right not to be subject to a decision based solely on automated processing, including profiling, which produces legal effects concerning him or her or similarly significantly affects him or her."
- Recital 71: "Automated decision-making and profiling based on special categories of personal data should be allowed only under specific conditions."

Moving from Hype to Savvy

- What is the stated purpose of the tool?
- Why do we want the tool?
  - Efficiency? Insights? Cost savings? Additional billings?
- How does the tool work?
  - What is the dataset over which it runs?
  - How effective is the tool?
- How will we use the tool?
  - How will we confirm its effectiveness?
- Is it meeting our objectives?
  - How do we know it is?

[A]n individual who, in the course of reviewing discovery documents, undertakes tasks that could otherwise be performed entirely by a machine cannot be said to engage in the practice of law.

Lola v. Skadden, Arps, Slate, Meagher & Flom LLP, 620 Fed. Appx. 37, 45, 2015 BL 235274, 8 (2d Cir. 2015)

- Michael Simon says that this case represents "the first federal appellate court to draw a distinction between the roles of person and machine in the 'practice of law.'"

1. Design and create the machine's thinking
2. Provide big-picture perspective
3. Integrate and synthesize across multiple systems and results
4. Test and monitor
5. Know how to best apply the system
6. Elicit the necessary information
7. Persuade humans to take action on automated recommendations

Michael Simon, Alvin F. Lindsay, Loly Sosa & Paige Comparato, 20 Yale J.L. & Tech. 234 (2018) (citing and quoting Only Humans Need Apply by Thomas Davenport & Julia Kirby).

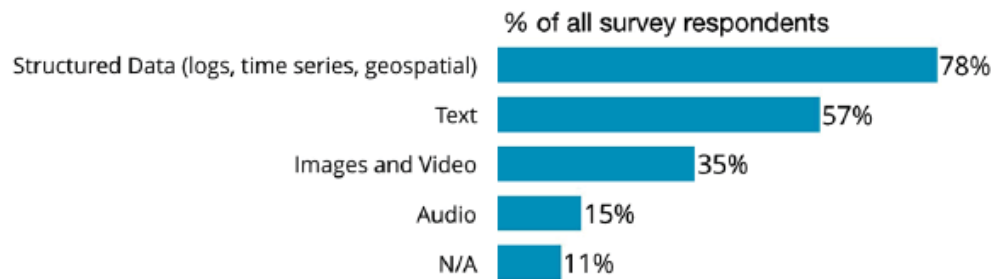What kind of data are you using for training your AI systems? (Select all that apply.)

% of all survey respondents

Data Type	%
Structured Data (logs, time series, geospatial)	78%
Text	57%
Images and Video	35%
Audio	15%
N/A	11%

- Each data point
    - Is each data point relevant to the task?
    - If there is no nexus with the principle being examined, is there legal risk?
    - Example: Is zip code relevant to creditworthiness?

- Inferences from the dataset
    - Does the entire set of data contain problems that will be magnified? Will the data change over time?
    - Are the data accurate, reliable and representative? Have they been validated for the purpose at hand?
    - Example: Historical employment demographics vs desired employment demographics

See, e.g., "Keeping Fintech Fair: Thinking About Fair Lending and UDAP Risks," by Carol A. Evans (Consumer Compliance Outlook, Second Issue 2017). See also "Accountable Algorithms," by Joshua A. Kroll et al. (U. Penn. L. Rev. 2017).

Source: BDO USA

Diane Holt

Team Lead – Transactions
Bloomberg Law

Dholt@BloombergLaw.com

AI and the Next Gen Lawyer

Prof. Jonathan Askin

Brooklyn Law School

Founder/Director, Brooklyn Law Incubator & Policy Clinic

Faculty Chair and Innovation Catalyst, Center for Urban Business Entrepreneurship

Visiting Professor, MIT

@jaskin

Brief History of the Evolution of Law and Technology (not to scale)

British Middle Ages	Acceleration in 19th Century	Innovation in 20th Century	Internet-Enabled Future
General Legal Regimes			**Industry-Specific Legal Regimes**

Common Law	Statutory Law	Administrative Law	Inflection Point Like We Have Never Seen Before
New issues/needs:	**New issues/needs:**	**Establishment of:**	-Internet Governance
			-Technical Standards
Property	Corporations	ICC	-Openness/Transparency
			-Accountability
Contracts	Consumer Protection	SEC	-Privacy
			-Security
		FCC	-Jurisdiction
Torts	Copyright (for analog world)	FTC	-Online liberties/rights
			-Government services
		State Agencies	-Political process
Common Carriage (transport carriers and public houses)	Antitrust		-Innovation policy
			-Sharing Economy
			-Economic/Social progress
			-Transactions
			-IPR / Digital Rights
			-Big Data
Public Utilities			-Algorithmic Law
			-Blockchain

3

Zax Bypass: Lawyers as Roadblocks

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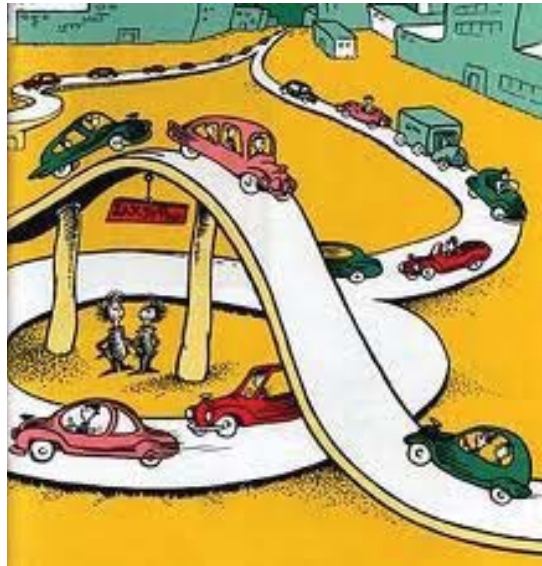
A Young Lawyer Learns the Entrepreneur's Lesson the Hard Way

Lawyers as Enablers

Lawyers, politics and revolution

The Lawyer's Role?

digital revolution
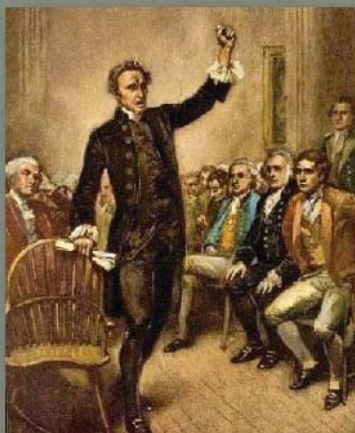
The Future of Lawyers

- *"The future is here already, it's just not evenly distributed."* - William Gibson
- Need for legal minds greater than ever
  - Legal processes and rules and implications of emerging world
  - Haven't figured out how to deploy

GROWTH

Arthur C. Clarke's three "laws" of prediction:

1) When a distinguished but elderly scientist states that something is possible, he is almost certainly right. When he states that something is impossible, he is very probably wrong.

2) The only way of discovering the limits of the possible is to venture a little way past them into the impossible.

3) Any sufficiently advanced technology is indistinguishable from magic.

13

The Innovation Matrix –
Where does the Innovative Lawyer Fit?

Old Tech/Old Apps	New Tech/Old Apps
Mailing/Faxing Depositions InPerson Depositions	LegalZoom Docracy
Old Tech/New Apps	New Tech/New Apps
?What lawyer has done the equivalent of building the airplane with bicycle parts?	How does the Next-Gen Lawyer move into this box?

14
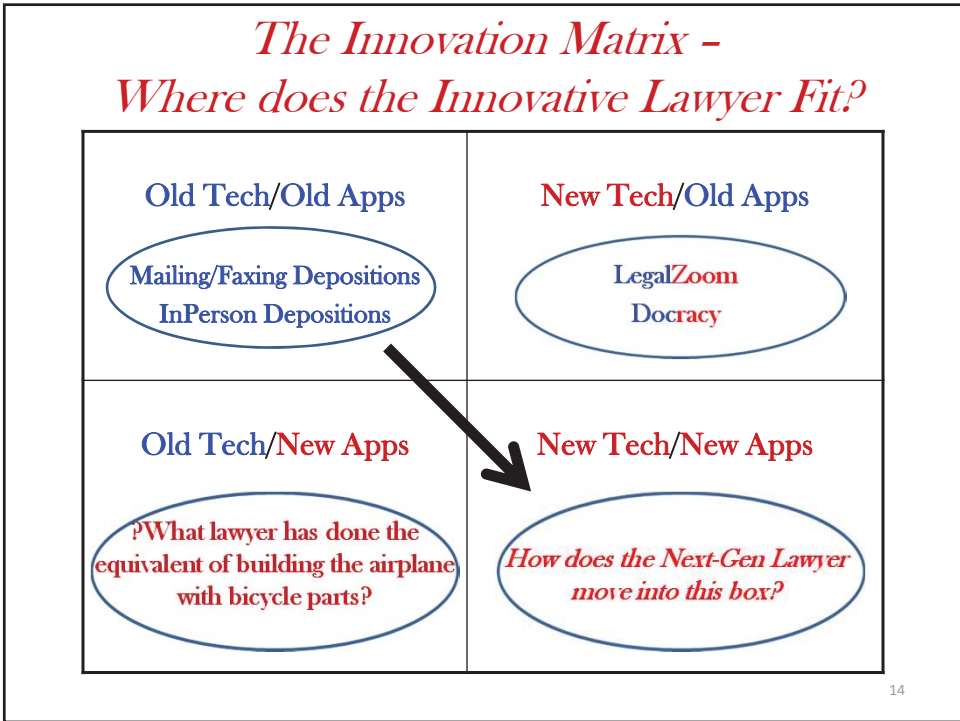
Low   High Hanging Fruit
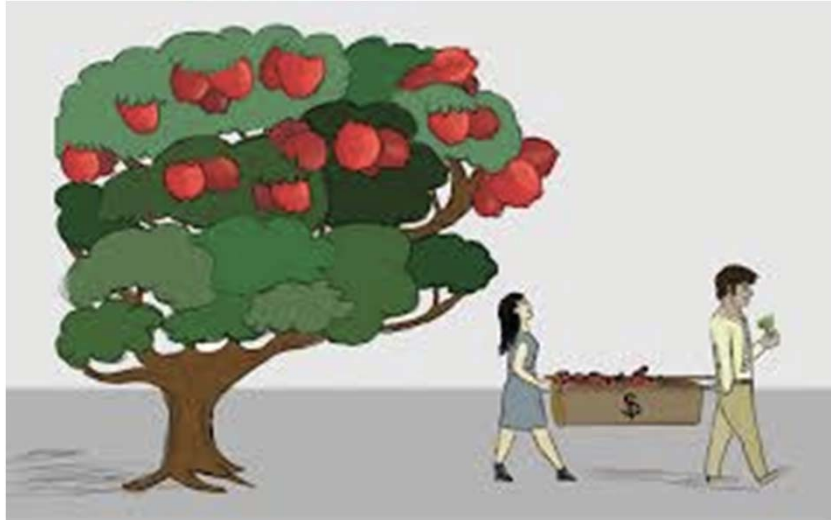
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From Geometric Representation to Accurate Topology
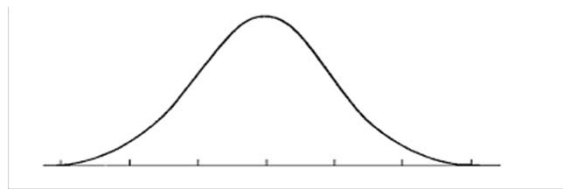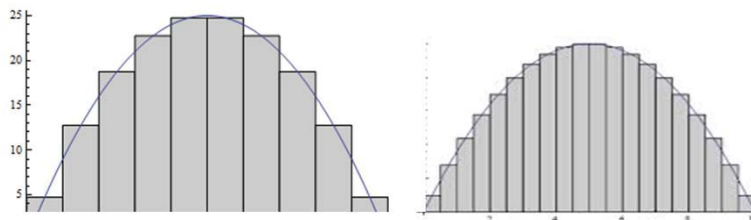
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Lawyer value in an AI World:
Working in the Gray Area

Lawyers should learn from Internet Ventures: Do what you do best -- link to the rest.

Legal Automation and Rudimentary AI

- GDPR:
  - Learning Tool:
    https://potkewitz.github.io/QnA/GDPR_Learner.html
  - Letter Tool:
    https://potkewitz.github.io/QnA/GDPR_Letter.html
- FOIAs, expungements, takedowns

**Current Generation of Lawyer Ill-Equipped
But is AI Better Equipped?**

**Human/Bot battles and/or collaborations
AI as fact-finder / Lawyer as ethicist**

AI as Creator
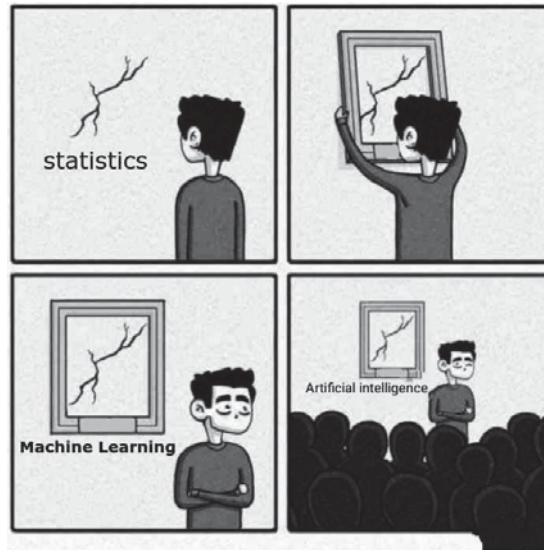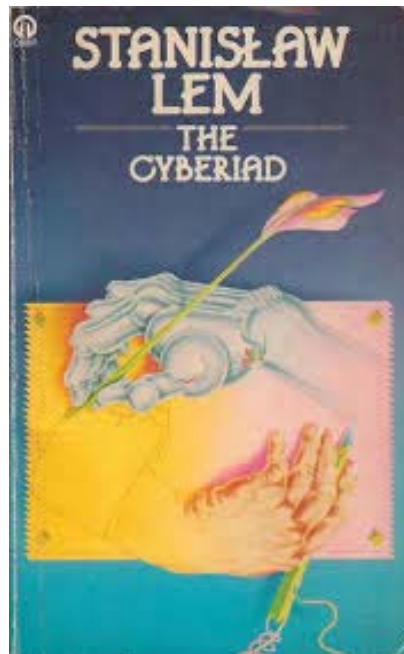
Remember when the IP Implications of 3D Printing seemed Profound?

GOOGLE A.I. JUST CREATED A SONG

UPDATE

27

DEVELOPING STORY
SELFIE DISPUTE OVER MONKEY'S VIRAL SNAP
PHOTOGRAPHER SQUARING OFF AGAINST WIKIPEDIA
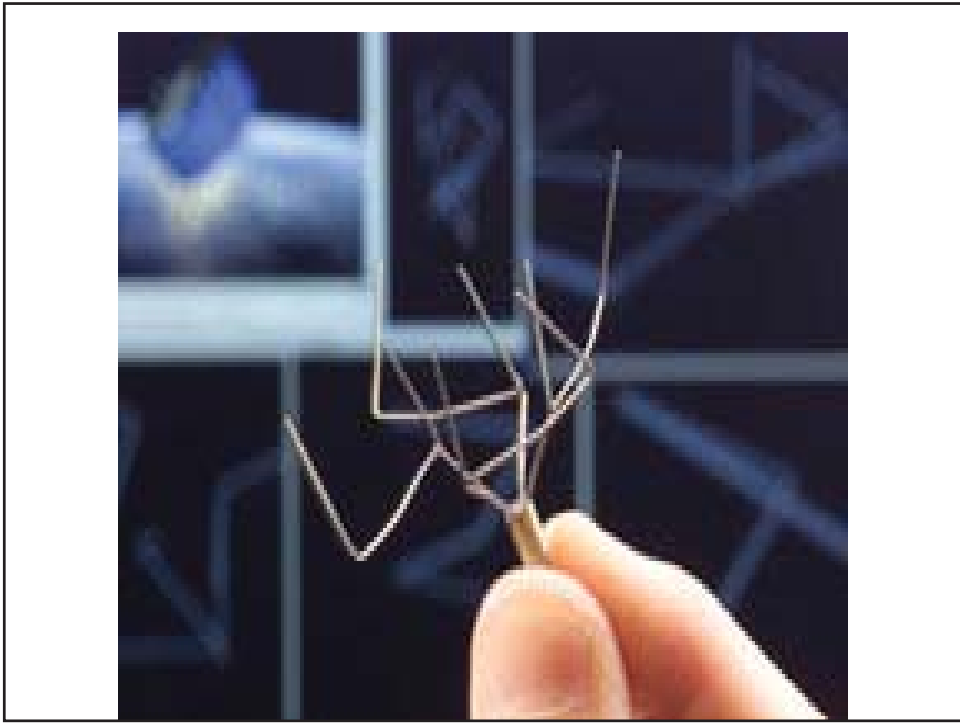
28

AI and Facial Recognition

AI and Deepfakes
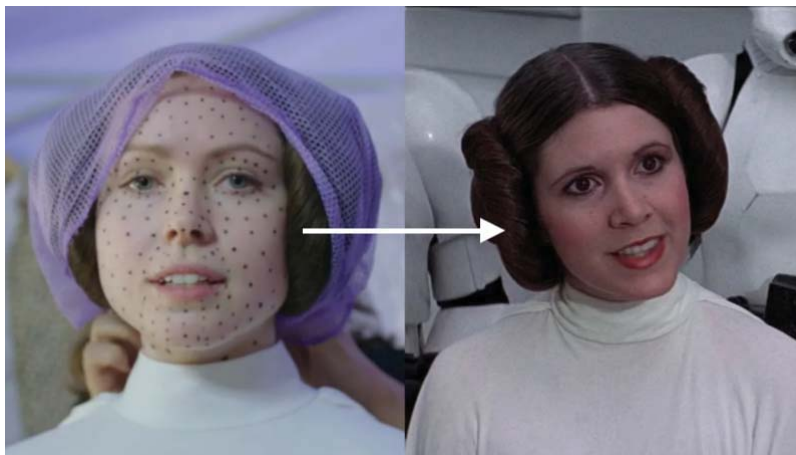
Legal testbeds and infinite legal simulators

ROBOTS SEARCH FOR PEOPLE'S
PERSONAL INFORMATION IN THE CLOUD
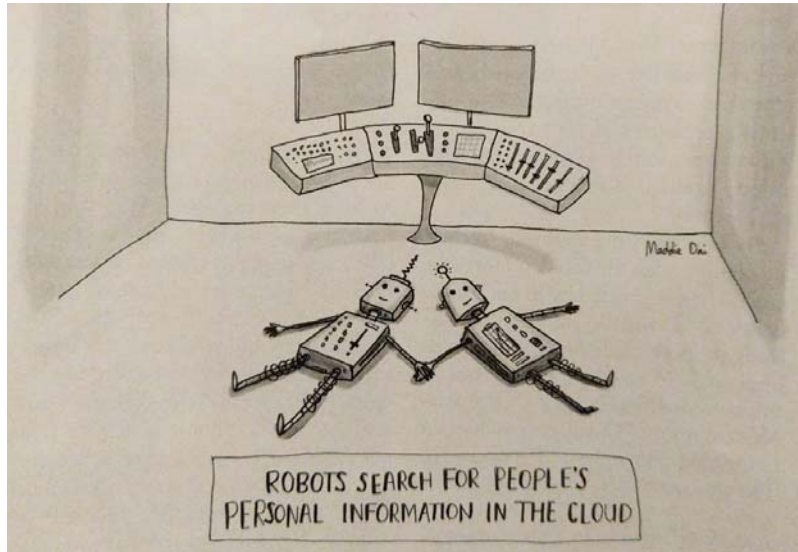
AI at The Adjacent Possible Party

AI and the Law School: Challenges and Innovations
Presented to: New York State Bar IP Section, April 5, 2019

Matthew D'Amore
Associate Dean, Cornell Tech
Professor of the Practice
Cornell Tech
Cornell Law School

1) Innovators have been looking to "artificial intelligence" in law for thirty years.[1]

   a) Early work in expert systems to improve access to the law and to legal decision-making[2]

      i) But note unintended consequences of algorithmic bias and secrecy.[3]

2) Today: An Explosion of Innovation

   a) More than 1100 legal tech startups in the market.[4]

   b) Millions of dollars in funding[5]

   c) Significant acquisition activity[6]

   d) Many law firms developing in-house incubators and innovation laboratories[7]

3) Law schools have been innovating also[8]

   a) Innovation labs to app development to service delivery examples abound

4) How to Teach AI at the Law School Level?

   a) Who is the "consumer"?

   b) What is the goal?

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[1] See Berman and Hafner, The Potential of Artificial Intelligence to Help Solve the Crisis in our Legal System, Communications of the ACM, 32:8 (Aug. 1989) 928

[2] *Id.*

[3] Michael Veale, Max Van Kleek, and Reuben Binns. 2018. Fairness and Accountability Design Needs for Algorithmic Support in High-Stakes Public Sector Decision-Making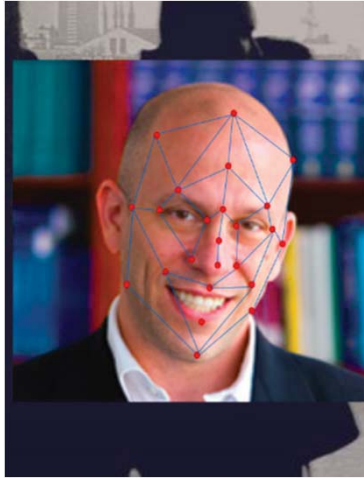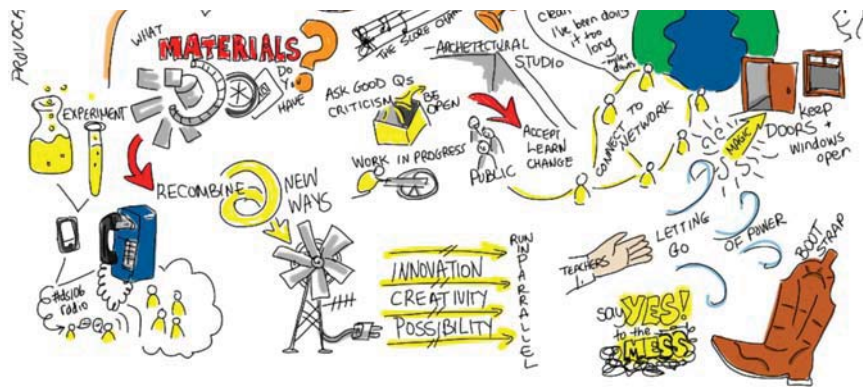. In Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems (CHI '18). ACM, New York, NY, USA, Paper 440, 14 pages. DOI: https://doi.org/10.1145/3173574.3174014; N. Ram, Innovating Criminal Justice, 112 Nw. U. L. Rev. 659 (2018).

[4] https://techindex.law.stanford.edu/

[5] https://blog.lawgeex.com/3-charts-that-show-the-unstoppable-growth-of-legal-tech/

[6] Id.

[7] R. Strom, Build or Buy? Orrick to Do Both as Firm Plans to Invest in Legal Tech Startups, The American Lawyer, Nov. 15, 2018. https://www.law.com/americanlawyer/2018/11/15/build-or-buy-orrick-to-do-both-as-firm-plans-to-invest-in-legal-tech-startups/

[8] Z. Warren, You Think Legal Education Can't Change? 8 Innovative Ideas from Law Schools, Legaltech News, Nov. 20, 2018. https://www.law.com/legaltechnews/2018/11/20/you-think-legal-education-cant-change-8-innovative-ideas-from-law-schools/

c) How to teach legal tech / AI alongside the rule against perpetuities?

5) Who is the consumer?

    a) Law students?[9]

        i) Law students choose among a market of competing law schools; is tech a consideration?

        ii) Want thought-provoking deep learning opportunities (aka "tech is cool")

            (1) Some portion will enter legal academia or policy making roles in these areas (e.g., NGOs, FCC, FTC, FDA; also corresponding international bodies)[10]

        iii) Want work as a lawyer

            (1) Different firms and practices have different needs (see below)

        iv) May want non legal tech-centric jobs

            (1) E.g. legal tech or e-discovery[11]

    b) Law firms?

        i) Law students compete for attorney jobs; is AI knowledge or experience needed?

        ii) Large law firm tech needs: knowledge management, e-discovery/due diligence, data management, expert systems, document creation/automation (plus client management – e.g., billing, timekeeping, etc.)

        iii) Small law firm tech needs: automation/workflow, document creation/automation, intake, client/matter management tools; and maybe all of the above.

        iv) Both large and small firms serving technology companies need attorneys who can speak "client"

        v) Same questions arise: Do we want lawyers who "know" AI or "use" AI, and how are they valued in the market?

    c) Legal Tech companies?

        i) Legal industry knowledge, practice experience, thought leadership, product and business development skills, design skills, product management, sales

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[9]See generally A. Bottner, Law Technology Today, April 13, 2016. https://www.lawtechnologytoday.org/2016/04/know-youll-study-law-school-next-semester/

[10] See, e.g., A. Tutt, An FDA for Algorithms, 69 Admin. L. Rev. 83 (2017)

[11] G. Simons, Hack Your Way to a Job in Legal Technology, Lawyerist, Nov. 16, 2018 https://lawyerist.com/hack-legal-tech-job/; K. Twigger, The Crucial Role Of The Project Manager In eDiscovery, Above the Law, Sept. 12, 2017. https://abovethelaw.com/2017/09/the-crucial-role-of-the-project-manager-in-ediscovery/

    d) New service delivery models[12]

        i) E.g., Legal Process Outsourcing and Alternative Legal Service Providers

6) Teaching the Law of AI

    a) Closest to traditional law teaching (but maybe a little more fun)

    b) Key issues

        i) Regulation of autonomous devices

        ii) Bias in AI decision making (esp. when used for judicial / legal procedures)

        iii) "Causation Challenge" - tort law issues

        iv) Privacy / big data

    c) Examples: Law of AI and AI regulation

        i) University of Pittsburgh Law School: Artificial Intelligence and Legal Reasoning Seminar[13]

        ii) Stanford Law School: Regulating Artificial Intelligence[14]

        iii) Columbia Law School: Technology, Business, Law and Policy of AI[15]

        iv) Cornell Law School / Cornell Tech: Law of Robots[16]

        v) Vanderbilt Law School: Robots, Artificial Intelligence and the Law[17]

    d) Big Data approaches

        i) Hofstra School of Law: Law, Logic and Technology Research Laboratory[18]

7) Use of AI / Legal Tech for the Practice of Law

    a) Lexis / Westlaw taught in law school for decades

        i) Legal tech as legal research

        ii) Give away the razors, sell the blades

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   b) E-discovery programs

      i) Responding to litigation demand for eDiscovery

   c) Examples:

      i) Vermont Law School: ELawyering and Big Data[19]

      ii) Vanderbilt Law School: Electronic Discovery and Information Governance[20]

      iii) Cleveland-Marshall College of Law EDiscovery Professional Certificate[21]

      iv) Duke Law: Writing Seminar: Electronic Discovery[22]

      v) Chicago-Kent School of Law: legal tech as legal research and training[23]

8) The University of Oklahoma College of Law Model[24]

   a) Understand the target market: small law firms

   b) Focus on software / AI utilization

   c) Build curriculum around utilization

9) Hybrid Models

   a) UC Hastings:[25]

      i) Using Artificial Intelligence in Legal Practice

      ii) Legal Tech Startup Skills

   b) Cornell Law School / Cornell Tech Master of Laws in Law, Technology and Entrepreneurship[26]

   c) Duke Center on Law and Technology[27]

   d) Brooklyn Law Incubator & Policy Clinic[28]

10) Law schools as incubators for legal tech and access to justice innovation

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a) App Development, Expert Systems and Self Help

    i) Cornell Law School / Cornell Tech: Delivering Legal Services Through Technology[29]

    ii) Cornell Law School Technology, Innovation and the Law Clinic[30]

    iii) Cornell Law School Legal Information Institute[31]

    iv) Columbia Law School Lawyering in the Digital Age Clinic[32]

    v) Chicago Kent College of Law Center for Access to Justice & Technology[33]

    vi) Stanford Law School: Legal Design Lab[34]

b) Data driven approaches

    i) Access to Justice Lab at Harvard Law School[35]

    ii) National Center for Access to Justice at Fordham Law School[36]

11) How to Teach AI at the Law School Level?

a) No single approach is right:

    i) Law schools need to follow their market

        (1) Will differ for each law school

        (2) Will evolve as each market changes

    ii) Will need to adapt more quickly to changing legal technology and legal practice models

b) Public / private partnerships may be important

    i) Westlaw, Lexis, UnitedLex, Neota

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AI and the Law School: Challenges and Innovations

Matthew D'Amore

Associate Dean, Cornell Tech
Professor of the Practice
Cornell Tech
Cornell Law School

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AT CORNELL TECH

Cornell Law School

SPECIAL SECTION

Social Aspects of Computing

Rob Kling
Editor

The Potential of Artificial Intelligence to Help Solve the Crisis in Our Legal System

Donald H. Berman and Carole D. Hafner

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928 *Communications of the ACM*

August 1989 Volume 32 Number 8

Today: An Explosion of Innovation

https://blog.lawgeex.com/3-charts-that-show-the-unstoppable-growth-of-legal-tech/legal-ai-landscape-lgeex/
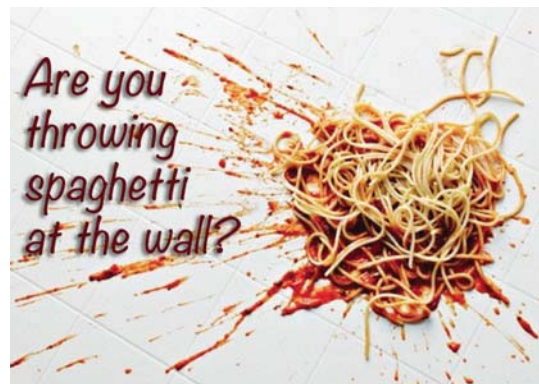
Today: An Explosion of Innovation

How to Teach AI at the Law School Level?

- Several approaches:
  - Law of AI
  - Use of AI / Legal Tech
  - Development of AI / Legal Tech
  - Access to Justice (A2J)
  - Hybrid Models

http://technosiren.com/amm/wp-content/uploads/sites/18/2015/03/throwing-spaghetti.jpg

Cornell Law School

Considerations and Context

- Who is the "consumer"?
- What is the goal?
- How is legal tech / AI used in practice?
- How to teach legal tech / AI alongside the rule against perpetuities?

Who is the consumer?

- Law students?
  - Want thought-provoking deep learning opportunities
  - Find AI exciting and cutting edge ("Law of Robots")
  - Want legal jobs
  - May want non legal jobs
- Law firms?
  - Big vs. small vs. solo
- In-house legal departments?
- Legal Tech companies?

What is the goal?

- PRACTICE OF LAW FOR AI CLIENTS
- USE AI FOR THE PRACTICE OF LAW
- LEGAL TECH INNOVATION

Teaching the Law of AI

- Closest to traditional law teaching (but maybe a little more fun)
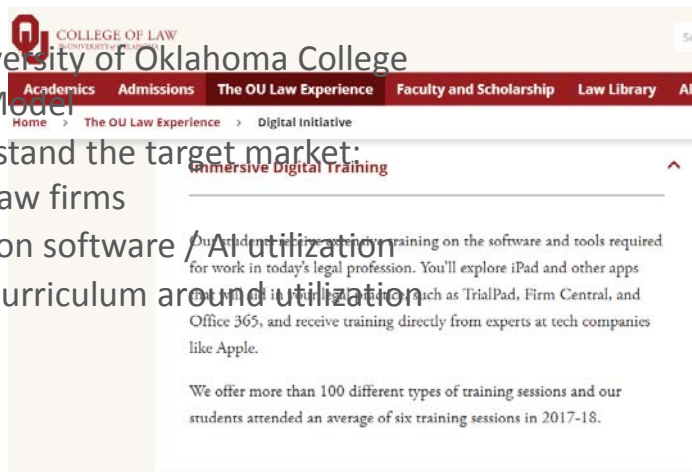
Teaching the law of AI

- Key issues
  - Regulation of autonomous devices
  - Bias in AI decisionmaking (esp. when used for judicial / legal procedures)
  - "Causation Challenge" - tort law issues
  - Privacy / big data
    - Data needed to build the AI tool in the first place
  - Clinics to deliver legal services to startups in the field (Brooklyn Law)

Use of AI / Legal Tech for the Practice of Law

- The University of Oklahoma College of Law Model
  - Understand the target market: small law firms
  - Focus on software / AI utilization
  - Build curriculum around utilization

Use of AI / Legal Tech for the Practice of Law

MAY 28, 2015

Legaltech© news ONLINE

An ALM Publication

FOUR U.S. LAW SCHOOLS AND UNITEDLEX LAUNCH LEGAL RESIDENCY PROGRAM

Emory University School of Law, the University of Miami School of Law,
The Ohio State University Moritz College of Law and Vanderbilt Law School
participate in first-ever legal residency program.

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Cornell Law School

Legal Tech Innovation

HOFSTRA | LAW

LAW, LOGIC & TECHNOLOGY

RESEARCH LABORATORY

The Research Laboratory for Law, Logic and Technology (LLT Lab) conducts
empirical research on argument and reasoning patterns in diverse samples of
legal documents, creating the semantic data, training protocols, and software
analytics needed to develop technology to assist legal reasoning.

D DUKE LAW TECH LAB

— What We Do —

We accelerate the next generation of startups that will change the way legal and civic services are
delivered

SLS THE LEGAL DESIGN LAB

The Legal Design Lab is an
interdisciplinary team based at Stanford
Law School & d.school, building a new
generation of legal products & services.

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NEOTA LOGIC

IMPACT
Runway Startups

Legal Tech Innovation

Access to Justice

Expert Systems & Selfhelp

Data-driven approaches

Welcome to the National Center for Access to Justice at Fordham Law School

Our vision:

The National Center for Access to Justice at Fordham Law School is the national organization using data to accomplish change that assures access to justice. Access to justice — the ability to understand the law and obtain its protection — often makes all the difference for people, enabling families to stay together, to save their homes, to protect themselves from harm, and even to preserve their liberty.

Lawyering in the Digital Age Clinic

Center for Access to Justice & Technology

LAW 7960 - Technology, Innovation and the Law Clinic

ACCESS TO JUSTICE LAB
AT HARVARD LAW SCHOOL
OUR VISION

Imagine if lawyers, judges, and policymakers used rigorous evidence to design and run the U.S. justice system.

Hybrid Models

UC Hastings Law to Add AI, Startup Tech Courses

"Using Artificial Intelligence in Legal Practice" will help students build familiarity in using AI-based research platforms, while "Legal Tech Startup Skills" will guide students through launching their own companies.

By **Gabrielle Orum Hernández** | November 21, 2017 at 11:30 AM

https://www.law.com/legaltechnews/sites/legaltechnews/2017/11/21/uc-hastings-law-to-add-ai-start-up-tech-courses

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Hybrid Models

DUKE CENTER ON LAW&TECH

Courses on Law & Technology at Duke Law

Law of Robots and Exponential Technologies	The Law and Policy of Innovation: the Life Sciences
Frontier Tech of Legal Practice	Patent Law and Policy
Contract Drafting: The Next Generation	Data Breach Response and Cybersecurity Due Diligence
FinTech and the Law	Trademark Protection and the Changing Landscape of the Internet
eDiscovery	
Introduction to Technology in the Law Office	Law & Policy: Blockchain
Information Privacy and Government Surveillance Law	Designing Creative Legal Solutions
Frontier AI & Robotics: Law & Ethics	

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Hybrid Models

Master of Laws (LLM) in Law, Technology, and Entrepreneurship

Cornell Law School

JD Program in Information and Technology Law (Cornell Tech campus)

SELECTED COURSE OFFERINGS INCLUDE:

- Law of Financial Technology
- Internet Law, Privacy, and Security
- Cyber Enforcement, Regulation & Policy Analysis
- Venture Capital
- Free Speech Law on the Internet
- Trade Secrets Law and Practice
- Intellectual Property
- Law of Robots
- Digital Health Law

How to Teach AI at the Law School Level?

x

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How to Teach AI at the Law School Level?

- No single approach is right:
  - Law schools need to follow their market
    - Will differ for each law school
    - Will evolve as each market changes
- Public / private partnerships
  - Westlaw, Lexis, UnitedLex, Neota
- Law schools as incubators for legal tech innovation
- Law schools as incubators for access to justice innovation

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CONTRACT ANALYTICS – APPLICATION OF AI

I. AN OVERVIEW OF MACHINE LEARNING (ML)

    a. <u>What is Artificial Intelligence (AI)?</u>

The term artificial intelligence was coined in 1955 by John McCarthy, a math professor at Dartmouth. Ever since then, the field has given rise to many extravagant claims and promises. At its core, Artificial Intelligence is essentially a machine that can perform tasks thought to require human level intelligence. As a result, AI has as varied applications as the applications of human cognition itself.

To provide some context, let's draw a distinction between Strong AI and Weak AI.

- Strong AI is essentially a machine with a "mind" that is roughly as capable as a human at any task requiring general intelligence.

- Weak AI, also known as "Applied AI," is where AI development in the current world has really focused. Weak AI relates to the use of a purpose-built machine to perform a specific task that has traditionally required a human.

  Weak certainly doesn't mean incapable. Weak AI can: (i) land airplanes in bad weather, (ii) detect insider trading; and (iii) translate between languages.

The biggest advances to date in weak AI have been in two broad areas of AI: perception and cognition.

In the former category some of the most practical advances have been made in relation to speech. Voice recognition is still far from perfect, but millions of people are now using it — think Siri, Alexa, and Google Assistant. A study by the Stanford computer scientist James Landay and colleagues found that speech recognition is now about three times as fast, on average, as typing on a cell phone (source: Stanford News, August 24, 2016, https://news.stanford.edu/2016/08/24/stanford-study-speech-recognition-faster-texting/). "The error rate, once 8.5%, has dropped to 4.9%. What's striking is that this substantial improvement has come not over the past 10 years but just since the summer of 2016." (source: "Artificial Intelligence & Machine Learning: Demystified," https://www.cpm-int.com/icc/blog/post/artificial-intelligence-machine-learning-demystified/)

In the latter category of cognition and problem solving, machines have already beaten the finest (human) players of poker and Jeopardy; achievements that experts had predicted would take at least another decade. Intelligent agents are being used by cybersecurity companies such as Deep Instinct to detect malware, and by PayPal to prevent money laundering. Dozens of companies are using this form of weak AI, and specifically machine learning, to decide which trades to execute on Wall Street, and more and more credit decisions are made with its help.

Below are some types of Artificial Intelligence:
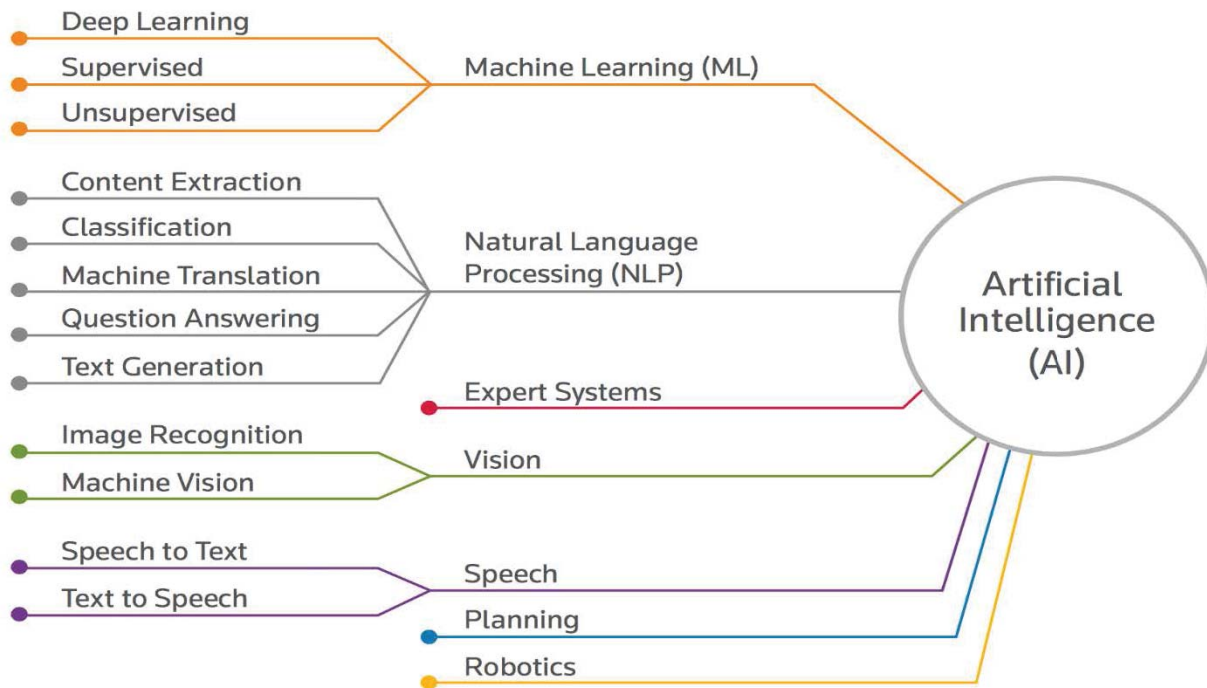
(source for diagram: "Artificial Intelligence: Definition, Types, Examples, Technologies, by Chethan Kuman GN, https://becominghuman.ai/artificial-intelligence-definition-types-examples-technologies-962ea75c7b9b)

Many of the legal applications that incorporate Artificial Intelligence leverage machine learning and natural language processing.

- Natural language processing or NLP is an area that is a confluence of AI and linguistics. It involves intelligent analysis of written language. It is a field of AI that researches how computers can create, understand or consume human language. If you have a lot of data written in plain text and you want to automatically get some insights from it, you need to use NLP techniques. These insights could be – sentiment analysis, information extraction, information retrieval, search, etc.

- Machine learning is an area of AI that utilizes a set of statistical techniques for problem solving. Machine learning studies programs that can learn concepts or recognize patterns on their own, without being programmed for each task. These techniques can be applied to a wide variety of problems. In order to apply ML techniques to NLP problems, we need to convert the unstructured text into structured format. The most important thing to understand about ML is that it represents a fundamentally different approach to creating software: The machine learns from examples, rather than being explicitly programmed for a particular outcome.

b. How does Machine Learning work?

Here is an example of machine learning in the legal world:

Imagine you wanted to teach the software to identify Change of Control provisions. You could provide it with examples and the system could memorize the examples. Every time it encountered a new document where the language matched one of the examples it would be able to identify the relevant language as Change of Control with 100% accuracy.

However, we all know that in the real world, legal concepts can be expressed in a wide variety of ways. Change of Control could be expressed using language like "assignment by operation of law" or "sale of all or substantially all of a company's assets." We wouldn't want to miss these because the software had not seen the exact wording before.

Let us contrast this to how humans work:

Human's may discover some simple rules of thumb which helps to guide their analysis. For example, if 'Change' appears within 3 words of 'Control' the provision is likely Change of Control **OR "**assignment by operation of law" is a synonym of "change of control".

With machine learning, the system reviews numerous examples of a concept. It tries millions of different rules and keeps those with predictive power. It's then able to make predictions on new documents that it hasn't seen before.

This will not achieve 100% accuracy, but can perform at 90% or more on never-before-seen documents.

To think about it another way we could use two examples that were cited in a recent article in Business Law Today called "A Simple Guide to Machine Learning" written by Warren E. Agin. To wit, humans are good at deductive reasoning.

- Example 1: If someone were to tell you that a bankruptcy claim for rent was limited to one year's rent, you would easily figure out the amount of the allowed claim. If the total rent claim were $100,000, but one year's rent was $70,000, you would apply the rule and deduce that the allowable claim is $70,000. Now reverse the process. Assume you were told that your client was owed $100,000 and that the annual rent was $70,000, and then told you that the allowable claim was $70,000. Could you determine how that answer was obtained? You might guess that the rule is that the claim is limited to one year's rent, but could you be sure? Perhaps the rule was something entirely different. This is inductive reasoning, and it is much more difficult to do. (source: "A Simply Guide to Machine Learning" by Warren E. Agin, Business Law Today, February 2017, https://www.americanbar.org/content/dam/aba/publications/blt/2017/02/machine-learning-201702.pdf)
- Example 2: Think about a series of numbers: 2, 4, 6, 8, 10 and you're asked to identify the next number. Here we induce a rule that you add 2 to each number in the series and determine that the next number would be 12. (source: "A Simply Guide to Machine Learning" by Warren E. Agin, Business Law Today, February 2017, https://www.americanbar.org/content/dam/aba/publications/blt/2017/02/machine-learning-201702.pdf)

Machine learning techniques are computational methods for figuring out "the rules," or at least approximations of the rules, given the factual inputs and the results. Those rules can then be applied to new sets of factual inputs to deduce results in new cases. In a more complicated setting to build a prediction model, contract analytics would be utilized by having attorneys annotate language and then create a training set and a test set. Then we would begin to analyze the various relationships among the data points in our training set using statistical methods. Statistical analytics can help us identify the factors that seem to correlate with the known results and the factors that clearly do not matter.

c. AI in Knowledge Work

Bank of America Merrill Lynch predicts that AI will have a $9 trillion dollars impact on knowledge work by 2025. The McKinsey Global Institute says AI is driving transformation of society at a rate of "3,000 times the impact" of the Industrial Revolution. (source: "The return of the machinery question" The Economist, June 25, 2016, https://www.economist.com/special-report/2016/06/25/the-return-of-the-machinery-question)

A widely cited study by Carl Benedikt Frey and Michael Osborne of Oxford University, published in 2013, found that 47% of jobs in America would be impacted by "computer capital". (source: "The Future of Employment: How

Susceptible Are Jobs to Computerisation?" by Carl Benedikt Frey and Michael A. Osborne, September 17, 2013, https://www.oxfordmartin.ox.ac.uk/downloads/academic/The_Future_of_Employ ment.pdf)

d. <u>Applications of ML</u>

There are a variety of ways in which AI is being leveraged in the legal profession. These include:

- eDiscovery
- Litigation Analysis and Outcome Prediction which identify which courts are more likely to render favorable verdicts.
- Legal Research
- Intellectual Property Law
- Contract Review and Due Diligence

II. CONTRACT ANALYTICS

Before we get in to AI-based contract analytics specifically, let us consider the traditional approach to large scale contract review. This is less about reviewing drafts of one-off contracts that you're in the midst of negotiating and more about reviewing a large volume of contracts such as when conducting due diligence in M&A or going through your company's customer contracts to track certain data points or to ensure compliance with the new revenue recognition accounting standards.

Attorneys or other reviewers will typically read through the contracts looking for key data. They'll then summarize the contract by copying & pasting key data into Excel, Word or a Contract Management System. Abstracts and summaries go through multi-step quality control review. The process can take weeks or months. It is typically slow, expensive and error-prone.

Contract Analytics, on the other hand, deploys machine learning and natural language processing technology. This type of software is able to extract legal concepts regardless of the specific vocabulary used or the location of the concept in the document. In other words, as we discussed earlier, the software is trained to extract a concept like Change of Control whether it is described using the phrase "Change of Control", "assignment by operation of law" or "sale of all or substantially all of a company's assets." It is also designed to identify this concept whether it is in a standalone Change of Control section or buried somewhere in a Termination section. Some contract analytics systems also allow users to train the software themselves to extract custom terms to meet their specific needs.

The main reasons corporations and law firms will leverage contract analytics is for time savings, cost savings and accuracy improvements.

- Time savings are variable and depend on the complexity of the project and experience of the reviewer. In many situations they are significant.
- From a corporate legal department standpoint, time savings translates into cost savings. Many of the junior attorneys performing due diligence at outside law firms for example are billed out at hundreds of dollars per hour.
- Improvements in accuracy is really the third part of the value proposition associated with leveraging this type of software. This is not so much a situation where it is measured by human against machine but really more an attorney using the software against an attorney without the software. In a due diligence setting, it is often 1st and 2nd year associates going through complex documents at 2 am which makes it easy for things to fall through the cracks. Leveraging contract analytics tools can help to prevent this from happening.

The following are some typical contract analytics use cases.

a. <u>M&A and other Transactional Uses (Buy & Sell side in M&A)</u>

Machine learning can be leveraged on both the buy side and sell side for transactional work.

On the buy side, it can be used to go through the target companies contracts to summarize their content and identify problematic provisions.

On the sell side, it can also be used to review the company's contracts and populate the disclosure schedules to the merger agreement, stock purchase agreement or asset purchase agreement.

We're seeing increasing numbers of cases where corporations are the licensee of contract analytics software but it is their outside counsel that is primarily using it on their behalf.

b. <u>Contract and Knowledge Management; Vendor and Customer Management</u>

Corporate legal departments use contract analytics to extract information from current and legacy contracts to reduce risk of non-compliance or missing key contractual data and commitments.

In many cases, because they don't have insight into their contracts, companies are paying for things they no longer use or missing out on revenue opportunities.

Contract analytics are used by companies to gain insights into relationships with customers, vendors and partners. We also see companies using contract analytics to assist with complying with the new accounting standards related to revenue recognition and leases.

Because some contract analytics tools allow users to train the system themselves, non-technical users are leveraging their own domain expertise to teach the systems to assist in addressing their own specific pain points as well.

c.   Commercial Real Estate and other Leases – Lease Abstraction

Contract analytics can also be used to extract data from company leases. For example, real estate companies are using contract analytics tools to look through their contracts for terms like expiration dates, rent payments, etc. We are also seeing REITs and companies that advise REITs using contract analytics to ensure compliance with REIT regulations and monitoring.

d.   Audit & Compliance

- The ASC 606/IFRS 15 Revenue Recognition Standard(s), Revenue From Contracts With Customers, provides accounting guidance related to revenue from contracts with customers. The core principle behind ASC 606 is that an entity recognizes revenue to depict the transfer of promised goods or services to customers in an amount that reflects the consideration to which the entity expects to be entitled in exchange for those goods or services. Following this core principle, an entity recognizes revenue by applying the following steps:

  Step 1: Identify the contract(s) with a customer
  Step 2: Identify the performance obligations in the contract
  Step 3: Determine the transaction price
  Step 4: Allocate the transaction price to the performance obligations in the contract
  Step 5: Recognize revenue when (or as) the entity satisfies a performance obligation

  Contract Analytics has immediate overlap in assisting entities and their audit/accounting firms in identifying the performance obligations in a contract (Step 2) and determining the transaction price (Step 3).

- Corporations looking to understand their financial position from the company's contracts use auditors to review and analyze a large sample set of documents.

  Contract analytics helps auditors to analyze contracts and extract relevant audit data. Reviewers are able to review contracts significantly more efficiently and auditors can review larger sample sets within time and budget constraints. This decreases the audit risk of certifying a company's financial statements.

e.   <u>Future of Contract Analytics</u>

We're really just at the threshold of what artificial intelligence can do in the context of contract review and within the legal industry generally.

We'll continue to see contract analytics move out horizontally as it gets into new contract specific domains.

We'll also see it move vertically up the value chain as well. Currently, most contract analytics systems are primarily focused on extracting data from contracts. As AI continues to evolve, these systems will take an increased role in analyzing text as well.

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Contract Analytics
Application of AI
NYSBA CLE Presentation – 4/5/19
Ned Gannon, President, eBrevia, Inc.

eBREVIA
AI-powered document analysis

DFIN

1

Agenda

1. AI in the legal industry

2. Why now?

3. Benefits & limitations

4. Contract Analytics

5. Use cases

AI in legal

- eDiscovery

- Litigation Analysis and Outcome Prediction

- Legal Research

- Intellectual Property Law

- Contract Review and Due Diligence

- 606 and 842 Compliance

Artificial Intelligence

Very simply, an Artificial
Intelligence is a machine that
can perform tasks thought to
require human level intelligence.
Its applications are as varied as
the applications of human
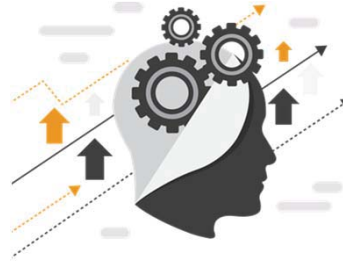cognition.
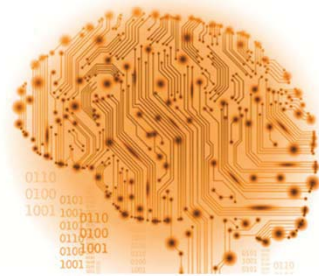
What is AI: Strong vs. Weak AI

Strong AI

A machine with a "mind" that is roughly as capable as a human at any task requiring general intelligence.
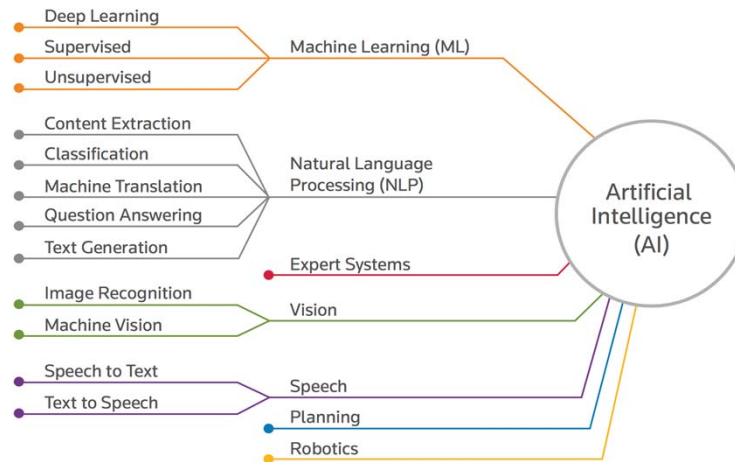
Weak AI

Also "Applied AI". Use of a purpose-built machine to perform a specific cognitive task that has traditionally required a human.

Weak doesn't mean incapable. Weak AIs can:
- Drive cars and land airplanes in bad weather
- Recognize faces
- Read documents
- Detect insider trading
- Translate between languages

Artificial Intelligence

- Deep Learning
- Supervised
- Unsupervised
  → Machine Learning (ML)

- Content Extraction
- Classification
- Machine Translation
- Question Answering
- Text Generation
  → Natural Language Processing (NLP)

- Expert Systems

- Image Recognition
- Machine Vision
  → Vision

- Speech to Text
- Text to Speech
  → Speech

- Planning
- Robotics

→ Artificial Intelligence (AI)

Learning to identify a cat

How does ML work (2 minute version)

...in the event of

a Change in Control

an assignment by operation of law
a sale of all or substantially all of Party B's assets
Party A shall have the right to...

100% accuracy

How does ML work (2 minute version)

...in the event of

a Change in Control

an assignment by operation of law

a sale of all or substantially all of Party B's assets

Party A shall have the right to...

100% accuracy

But only on clauses that match what we have seen exactly.

How does ML work (2 minute version)

How do humans work? A human may discover some simple rules:

If 'Change' appears within 3 words of 'Control' the provision is likely Change of Contr

"assignment by operation of law" is a synonym of "change of control".

How does ML work (2 minute version)

Will not achieve 100% accuracy, but can perform at 90% or more on never-before-seen documents.

AI in Knowledge Work

"

The technological breakthroughs of recent years — allowing machines to mimic the human mind — are enabling machines to do knowledge jobs and service jobs…"
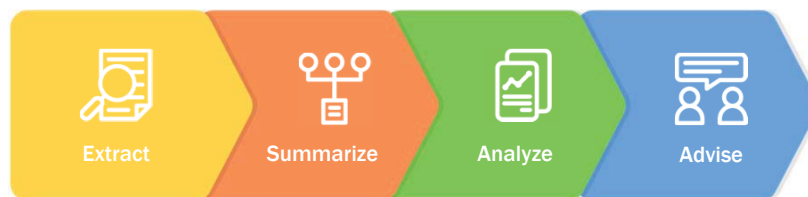
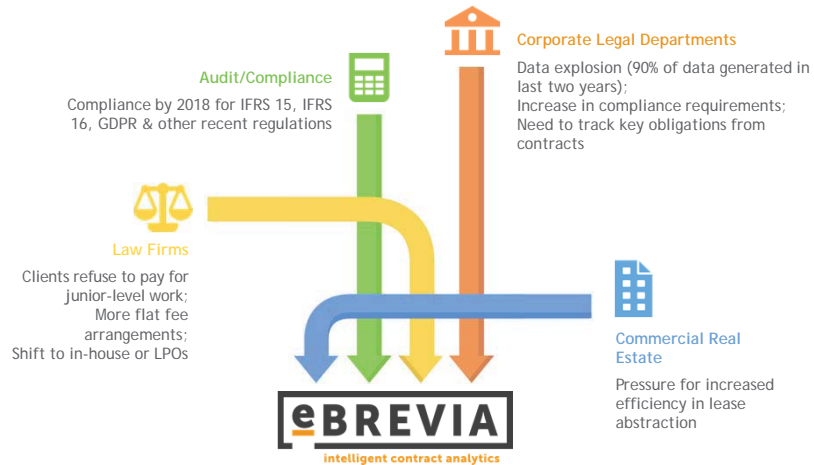*– New York Times, 12/15/14*

Meet your new associate?
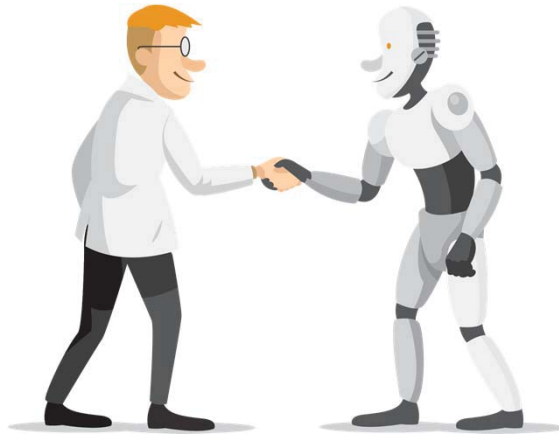
What type of work?

Best fit is routine repetitive work

Extract   Summarize   Analyze   Advise

Contract Analytics

Machine learning & natural language processing

Legal concepts extracted regardless of specific words used & location in documents

Use pre-trained provisions or tailor software to extract custom terms.

Multi-format exports & multi-system integration using APIs

Quantifying ROI

Time savings

Cost savings

Accuracy Improvements

Effects on Business Models

- Alternative fee arrangements

- Rethink pyramid structure

- Segmenting legal work

- Non-traditional services providers

- Enhanced coordination between corporates and outside service providers

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Use Cases

01 Contract Management & Digitization

02 M&A & Other Transactional Diligence

03 Audit & Compliance

04 Vendor & Customer Management

05 Real Estate & Other Leases

06 IP Procurement & Management

07 Human Resources

08 Bespoke

M&A Due Diligence

Junior Attorneys | Senior Attorneys

Extract → Summarize → Analyze → Advise

Junior attorneys bill **$300-$500/hour** to manually review thousands of contracts to identify and summarize obligations, liabilities, and red flags.

Contract Management

Used to extract information from current and legacy contracts to reduce risk of non-compliance or missing key contractual data and commitments.

Used to gain insights into relationships with customers, vendors and partners.
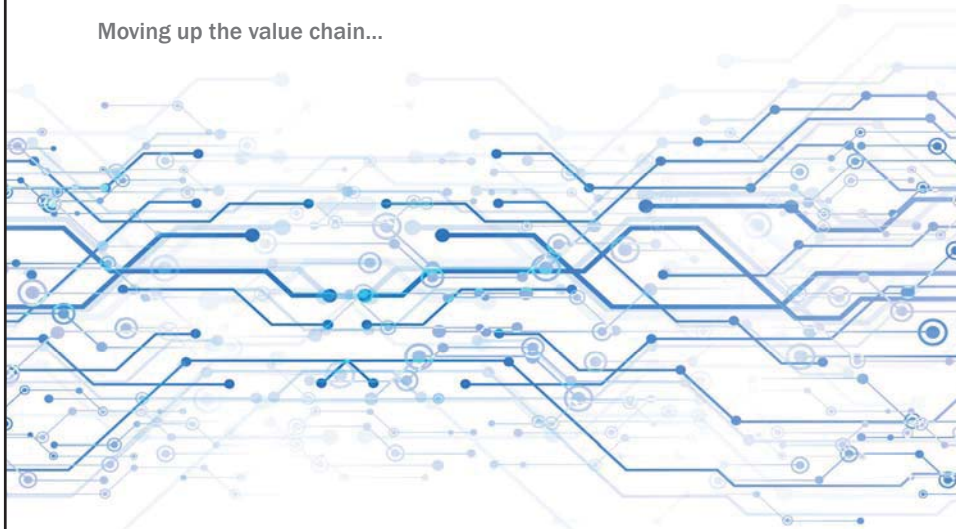
Implementation

- Pilots

- Cloud vs. On-premise

- Defining Objectives & Measuring Results

- Project Management

- Training

- Internal Experts

- Resources

- Integrations

The Future of Contract Analytics

Moving up the value chain...

Questions?

NED GANNON

✉ ngannon@ebrevia.com

📱 +1 (203) 870-3000