Technology, Innovation, and the Future of Legal Services

Daniel W. Linna Jr.

Northwestern Pritzker School of Law & McCormick School of Engineering Director of Law and Technology Initiatives & Senior Lecturer

CodeX – The Stanford Center for Legal Informatics *Affiliated Faculty*







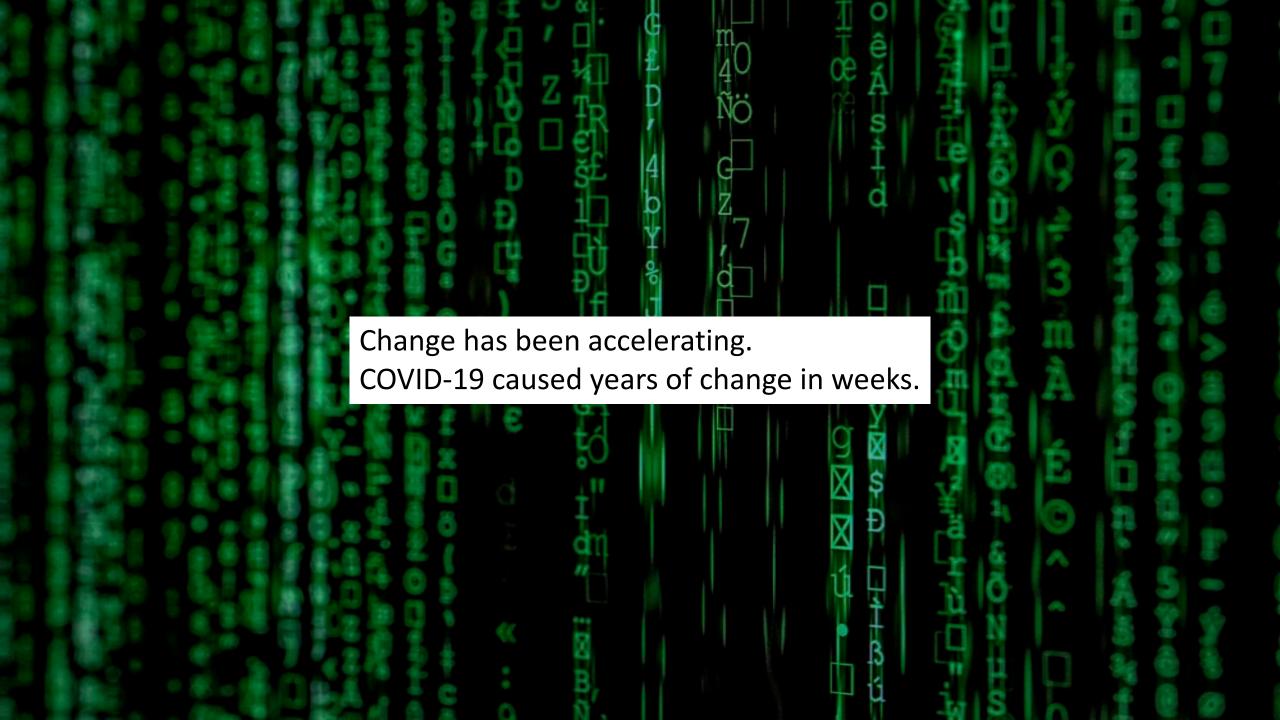
Who is in the room?

In the chat:

- Introduce yourself
- What is your background with technology?
- What's interesting to you about the future of law and technology?







The Digital World needs Digital Governance

What will legal services, legal systems, and the law look like in a digital world?



Law for Technology

Trustworthy AI FAT AI: fair, accountable, transparent

Technology for Law

Technology for Legal-Services Delivery, Legal Systems, and Law





World Justice Project What is the Rule of Law?

The Four Universal Principles

The World Justice Project's definition of the rule of law is comprised of the following four universal principles:



1. Accountability

The government as well as private actors are accountable under the law.



2. Just Laws

The laws are clear, publicized, stable, and just; are applied evenly; and protect fundamental rights, including the security of persons and property and certain core human rights.



3. Open Government

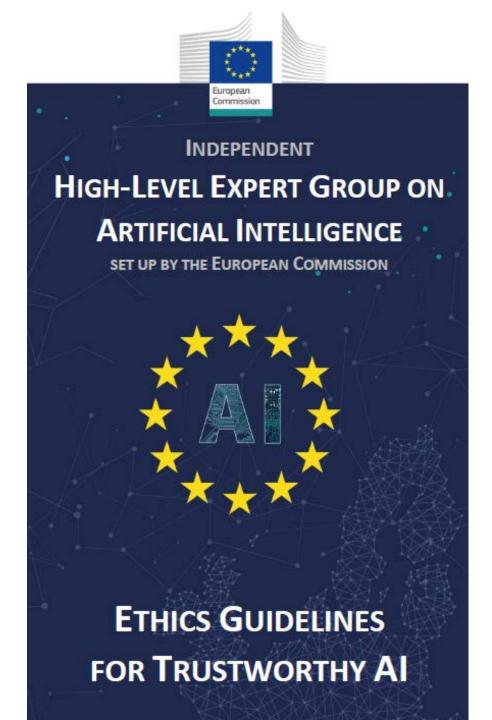
The processes by which the laws are enacted, administered, and enforced are accessible. fair, and efficient.



4. Accessible & Impartial Dispute Resolution

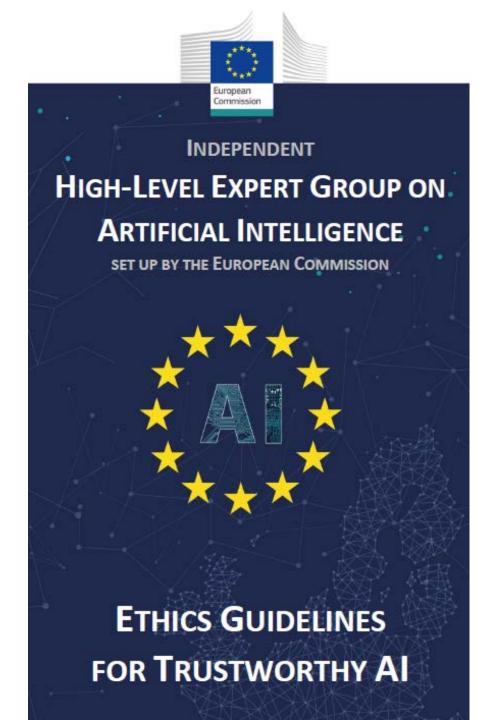
Justice is delivered timely by competent, ethical, and independent representatives and neutrals who are accessible, have adequate resources, and reflect the makeup of the communities they serve.













Chat: What are some of the ethical Al challenges that deserve attention?





To regulate AI we need new laws, not just a code of ethics

Paul Chadwick









Manufacturers need to pay very close attention.

Keith B. Belton | Mar 07, 2019



Is Al a threat or an opportunity?











Bernard Parker, left, was rated high risk; Dylan Fugett was rated low risk. (Josh Ritchie for ProPublica)

Machine Bias

There's software used across the country to predict future criminals. And it's biased against blacks.

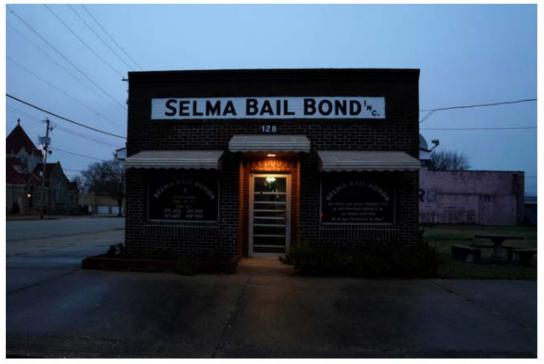
by Julia Angwin, Jeff Larson, Surya Mattu and Lauren Kirchner, ProPublica May 23, 2016



TheUpshot

Even Imperfect Algorithms Can Improve the Criminal Justice System

A way to combat the capricious and biased nature of human decisions.



Bail decisions have traditionally been made by judges relying on intuition and personal preference. Algorithms often yield immediate benefits: Jail populations can decline without hurting public safety. Carlo Allegri/Reuters

By Sam Corbett-Davies, Sharad Goel and Sandra González-Bailón



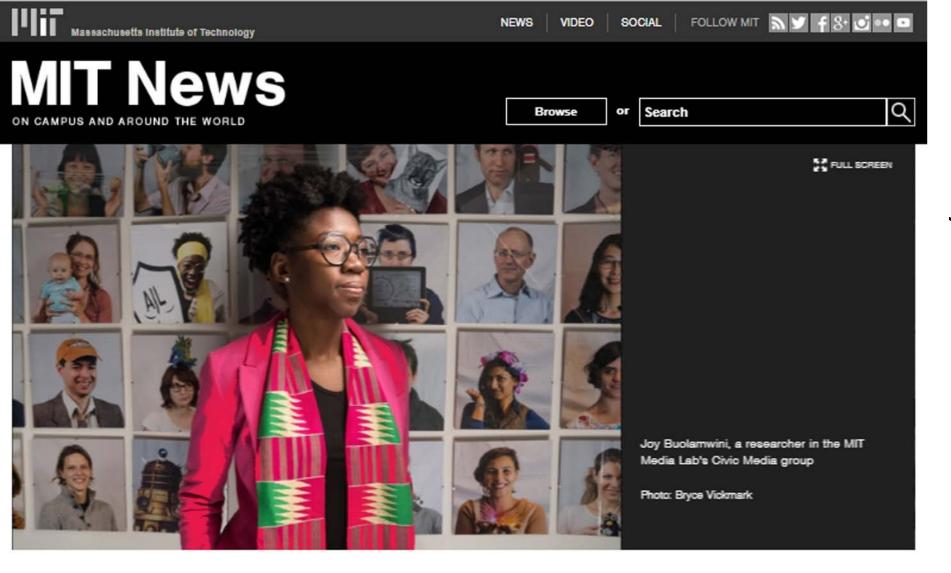












Joy Buolamwini, MIT Media Lab Researcher

Study finds gender and skin-type bias in commercial artificial-intelligence systems

Examination of facial-analysis software shows error rate of 0.8 percent for lightskinned men, 34.7 percent for dark-skinned women.



Gender Classifier	Darker Male	Darker Female	Lighter Male	Lighter Female	Largest Gap
Microsoft	94.0%	79.2%	100%	98.3%	20.8%
FACE**	99.3%	65.5%	99.2%	94.0%	33.8%
IBM	88.0%	65.3%	99.7%	92.9%	34.4%





San Francisco Bans Facial Recognition Technology



Attendees interacting with a facial recognition demonstration at this year's CES in Las Vegas. Joe Buglewicz for The New York Times

By Kate Conger, Richard Fausset and Serge F. Kovaleski











Opinion | THE PRIVACY PROJECT

We're Banning Facial Recognition. We're Missing the Point.

The whole point of modern surveillance is to treat people differently, and facial recognition technologies are only a small part of that.

By Bruce Schneier

Mr. Schneier is a fellow at the Harvard Kennedy School.

Jan. 20, 2020





ECONOMIC VIEW

Biased Algorithms Are Easier to Fix Than Biased People

Racial discrimination by algorithms or by people is harmful — but that's where the similarities end.



Tim Cook



DISCRIMINATION IN THE AGE OF ALGORITHMS

Jon Kleinberg*, Jens Ludwig**, Sendhil Mullainathan[†] and Cass R. Sunstein[‡]

ABSTRACT

The law forbids discrimination. But the ambiguity of human decision-making often makes it hard for the legal system to know whether anyone has discriminated. To understand how algorithms affect discrimination, we must understand how they affect the *detection* of discrimination. With the appropriate requirements in place, algorithms create the potential for new forms of transparency and hence opportunities to detect discrimination that are otherwise unavailable. The specificity of algorithms also makes transparent tradeoffs among competing values. This implies algorithms are not only a threat to be regulated; with the right safeguards, they can be a potential positive force for equity.



Access to Legal Services in the US

80% of Impoverished

50% of Middle Class

Many

Businesses





The Global Justice 5.1 billion people deprived of justice

Justice for All

The report of the Task Force on Justice

April 2019

Justice opportunities Lack proof of housing or land tenure Employed in the informal economy are excluded from social. Lack legal identity economic, and political opportunities that the Justice problem Justice was too slow. expensive, or unfair was not resolved have justice problems Didn't know where to Has a serious criminal seek justice or got no help civil, or administrative justice problem live in extreme conditions

4.5 billion

law provides

1.5 billion

they cannot solve

250 million

of injustice, without any meaningful legal protections

Technology to Improve Criminal Justice



Honorable Bridget M.

McCormack
Chief Justice,
Michigan Supreme Court

"The COVID-19 pandemic has laid bare the lack of technology and the archaic rules and processes embedded in our **justice system**. . . . [E]mergency responses [have created] a **new portrait of the criminal justice system** It includes updated technology, revised rules and processes that enhance the delivery of justice." (Emphasis added)

Leveraging technology for long-term change in the face of COVID-19, The Hill (Jun. 6, 2020), https://thehill.com/opinion/technology/503919-leveraging-technology-for-long-term-change-in-the-face-of-covid-19.

Rule of Law in a Digital World: Access for All?

The Columbus Convention Center Is Now a Pandemic Housing Court

As eviction hearings resume, the Ohio city has turned its empty convention hall into a one-stop shop for tenants in trouble. There are plenty to go around.

By Kriston Capps
June 18, 2020, 1:02 PM CDT



Part of the Greater Columbus Convention Center is now dedicated to hearing 100 eviction cases per day. Noelle Daumeyer/Columbus Legal Aid



This Photo by Unknown Author is licensed under <u>CC BY-NC-ND</u>



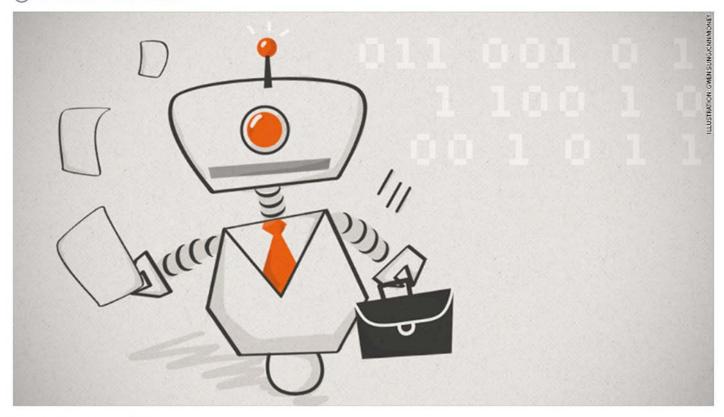


Here come the robot lawyers

by James O'Toole @jtotoole

(L) March 28, 2014: 7:16 AM ET





You've been served, humans.

The lawyers of the future may be less J.D. than R2D2.



What is artificial intelligence?

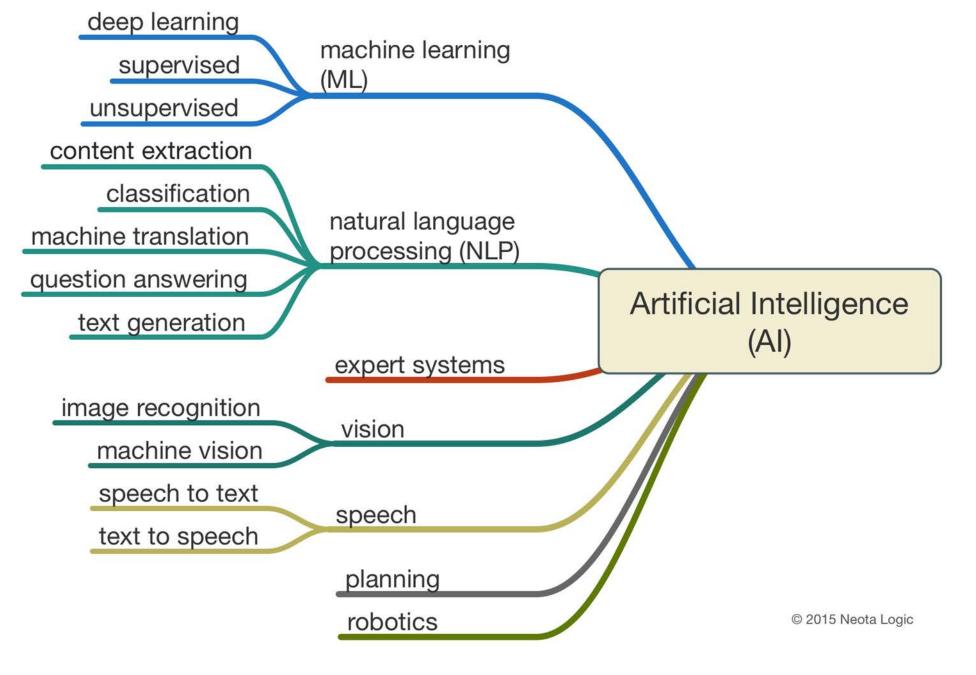
Wikipedia: Artificial intelligence (AI, also machine intelligence, MI) is intelligence demonstrated by machines, in contrast to the natural intelligence (NI) displayed by humans and other animals.



Phases of Artificial Intelligence

- Narrow AI skilled at one specific task
- Artificial General Intelligence human-level intelligence; can perform a wide range of tasks
- Super General Intelligence beyond the best humans in every field and dimension







What is artificial intelligence in law (today)?

- 1. Rules-Driven Artificial Intelligence
- E.g., Expert System
 - → Deterministic rules

- 2. Data-Driven Artificial Intelligence
- E.g., Machine Learning, Deep Learning, Natural Language Processing
 - → Probabilistic; Statistical models





Business Income and Expenses

How do you want to enter your business income?

Guide me

- Walks you through all income sections, one at a time
- Best if you want us to take you through all situations

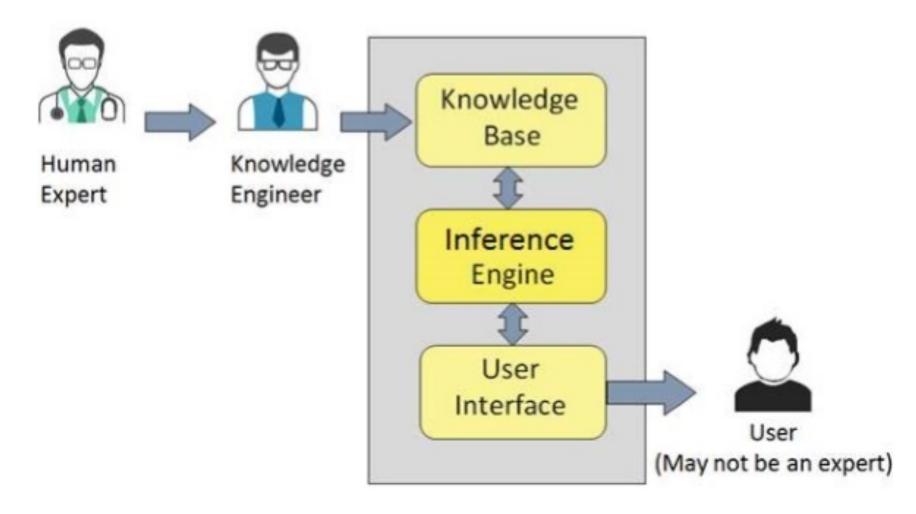
I'll explore on my own

- Choose specific types of income you want to work on
- Best if you know which situations apply to you

Walk me through everything

I'll choose what I work on

Expert Systems (Rules-Based AI)





U.S. Department of Homeland Security Washington, DC 20528



June 15, 2012

MEMORANDUM FOR: David V. Aguilar

Acting Commissioner, U.S. Customs and Border Protection

Alejandro Mayorkas

Director, U.S. Citizenship and Immigration Services

John Morton

Director, U.S. Immigration and Customs Enforcement

FROM: Janet Napolitano

Secretary of Homeland Security

SUBJECT: Exercising Prosecutorial Discretion with Respect to Individuals

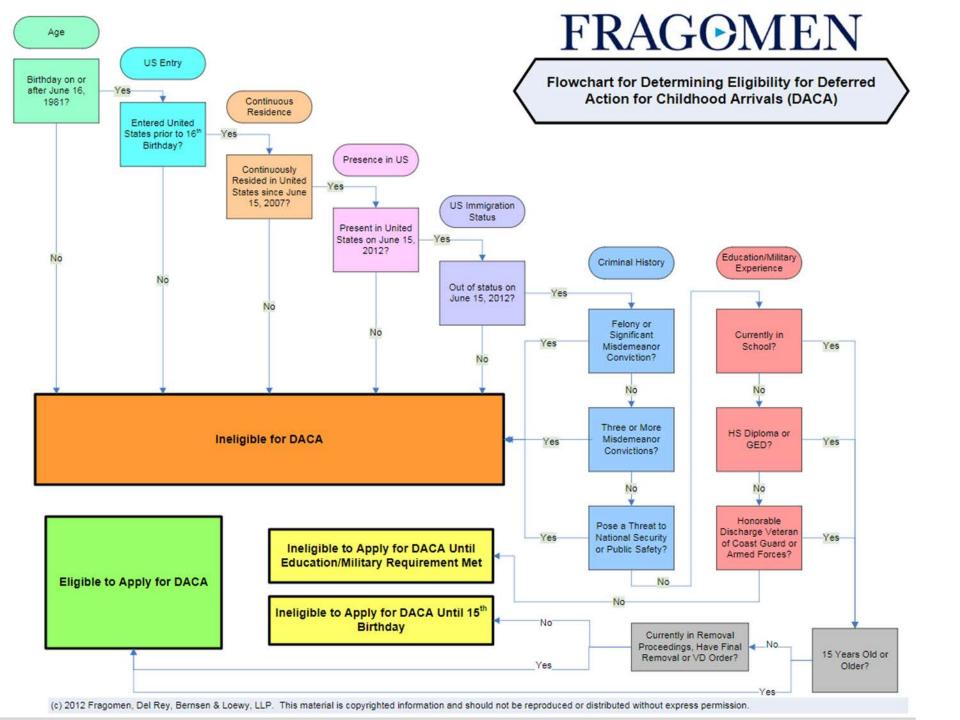
Who Came to the United States as Children

By this memorandum, I am setting forth how, in the exercise of our prosecutorial discretion, the Department of Homeland Security (DHS) should enforce the Nation's immigration laws against certain young people who were brought to this country as children and know only this country as home. As a general matter, these individuals lacked the intent to violate the law and our ongoing review of pending removal cases is already offering administrative closure to many of them. However, additional measures are necessary to ensure that our enforcement resources are not expended on these low priority cases but are instead appropriately focused on people who meet our enforcement priorities.

The following criteria should be satisfied before an individual is considered for an exercise of prosecutorial discretion pursuant to this memorandum:

- · came to the United States under the age of sixteen;
- has continuously resided in the United States for a least five years preceding the date of this memorandum and is present in the United States on the date of this memorandum;
- is currently in school, has graduated from high school, has obtained a general education development certificate, or is an honorably discharged veteran of the Coast Guard or Armed Forces of the United States;
- has not been convicted of a felony offense, a significant misdemeanor offense, multiple misdemeanor offenses, or otherwise poses a threat to national security or public safety; and
- is not above the age of thirty.







MICHIGAN LEGAL HELP

Helping Michigan residents solve their legal problems

Please Tell Us What You Think

Make a Donation







Organizations & Courts



CHANGE COUNTY



Home » Self-Help Tools » ††† Family



I Need a Divorce and I Have Children

This toolkit tells you about getting a divorce when you and your spouse have minor children. For general information about divorce, read the **Articles**. Read the **Common Questions** if you have a specific question. If you want to file for divorce, use the **Forms** links for help preparing the forms you will need. Use one of the **Checklists** below to follow all the steps in the process. The links under **Court Information** will tell you about the court that will handle your case, and if there is a **Self-Help Center** in your county you can get more help there.

If you don't think you can handle this problem on your own, you can search for an attorney using **Find A Lawyer** on this page. If you need something else related to your problem, an agency listed under **Community Services** may be able to help you. If you need a fee waiver, an interpreter, a court to accommodate your disability, or more information about going to court, visit the **Going to Court: Extra Tips and Forms Toolkit**.

Common Questions

- → How long do I have to live in Michigan before I can file for divorce?
- → Where do I file for divorce?
- → What if my spouse doesn't live in Michigan?



Forms

- → Do-It-Yourself Divorce
- → Do-It-Yourself Judgment of
- Do-It-Yourself Quitclaim Deed
- Do-It-Yourself Revoke Paternity
 Established by Marriage
- → Do-It-Yourself Divorce Dismissal

Articles

- Introduction to Divorce with Minor
- Preparing for the Divorce with Minor Children Interview
- → Custody and Parenting Time
- The "Best Interests of the Child"



Hi, you made it to Rentervention

Rentervention is a joint project of the Lawyers' Committee for Better Housing, Illinois Legal Aid Online, and the Lawyers Trust Fund of Illinois

Here's how this works

Rentervention's free bot asks questions. You answer. We help you with your housing issues. It's completely free and built by housing law advocates to support Chicago renters.

GET STARTED







A 19-year-old made a free robot lawyer that has appealed \$3 million in parking tickets



Leanna Garfield, Tech Insider







Over 1 million LLCs launched

Let's launch yours! See if your LLC name is available. 1

Enter your preferred LLC name

GET STARTED

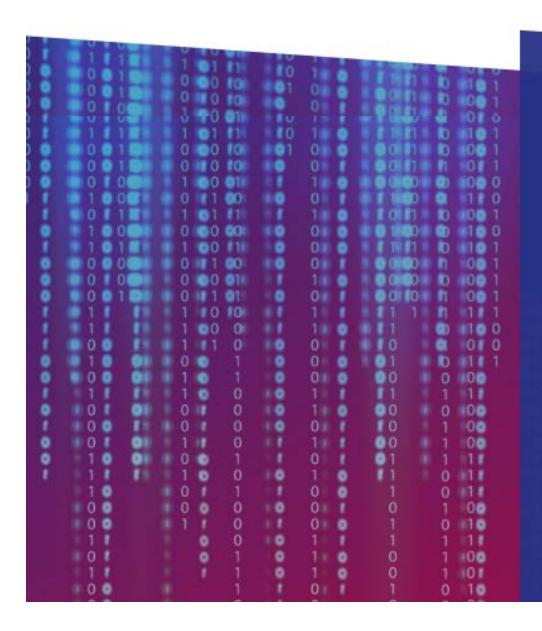
Still deciding on a business name? Start now and decide later.

Packages from only \$79 (plus filing fees) These costs are tax deductible. View sample









Breach RespondeRS

A data loss incident requires quick response and notification to state and federal regulators. Breach RespondeRS helps identify common factual issues addressed in breach notification laws in the United States, and can assist you in clarifying your response to a data loss incident. Answering the questions contained in this tool will help identify common risks and focus your investigation. The report provided serves only as reference material, not as legal advice.

GET STARTED

CONTACT US



The CCPA made simple.

In order to comply with the California
Consumer Privacy Act, companies should:
(1) create compliance documents, (2) map
consumer data flows, (3) collect and
manage consumer requests, and (4) train
relevant employees on the CCPA.

Big Law Business

Law Firms

In-House

Technology

Law Firms



matejmo/Getty Images

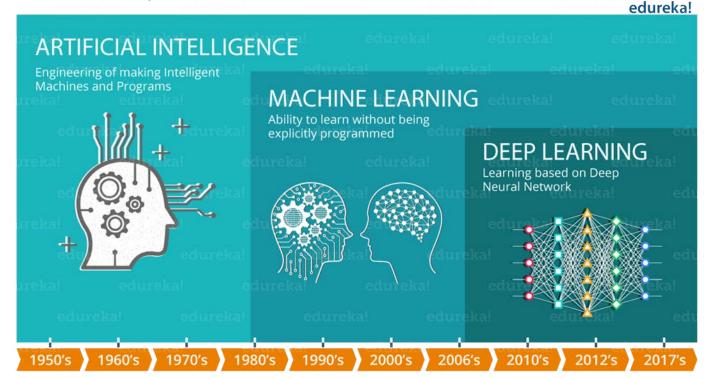
Wilson Sonsini Expects 'Millions' from New App at \$7,500 a Doc

Roy Strom - Bloomberg Law June 3, 2019



Data-Driven Artificial Intelligence

- E.g. Machine Learning, including Deep Learning
 - → Probabilistic; Statistical models



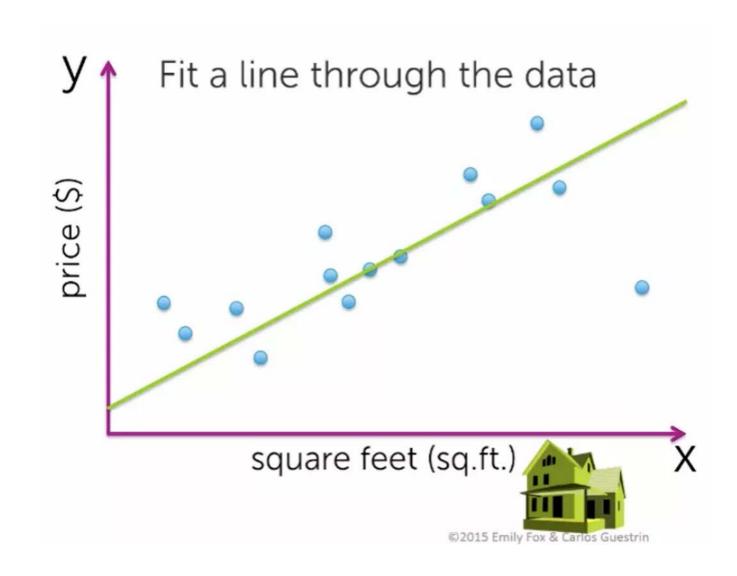


Classification: Supervised - Categorical





Regression: Supervised - Continuous



Carlos Guestrin and Emily Fox, Coursera Machine Learning Specialization



Machine Learning

	Categorical	Continuous
Supervised	Classification	Regression
Unsupervised	Clustering	Dimension Reduction

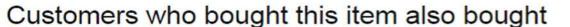


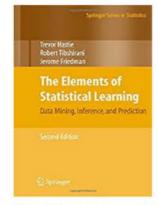
An Introduction to Statistical Learning: with Applications in R (Springer Texts in Statistics) 1st ed. 2013, Corr. 6th printing 2016 Edition

by Gareth James ▼ (Author), Daniela Witten ▼ (Author), Trevor Hastie ▼ (Author), Robert Tibshirani ▼ (Author)



#1 Best Seller (in Mathematical Physics





The Elements of Statistical Learning: Data Mining, Inference, and... Trevor Hastie

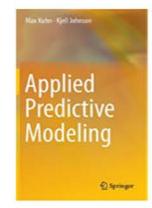
全全全公 94

#1 Best Seller in

Bioinformatics

Hardcover

\$72.06 **Prime**



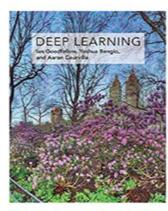
Applied Predictive Modeling

Max Kuhn

金金金金金 59

Hardcover

\$74.28 **Prime**



Deep Learning (Adaptive Computation and Machine Learning series)

) Ian Goodfellow

★★★★☆ 56

#1 Best Seller (in Artificial

Intelligence...

Hardcover

\$72.00 **Prime**



R for Data Science: Import, Tidy, Transform, Visualize, and Model Data Hadley Wickham

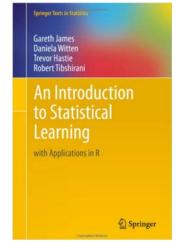
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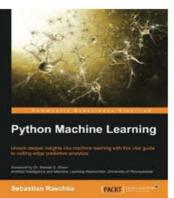
#1 Best Seller (in

Mathematical & Statistical...

Paperback

\$33.59 **Prime**





Python Machine Learning

Sebastian Raschka

全全全全公 100

Paperback

\$39.00 **Prime**





Because you watched Steve Jobs: One Last Thing









Because you watched Sour Grapes









Because you watched Somm: Into the Bottle











The New York Times

Armies of Expensive Lawyers, Replaced by Cheaper Software

By JOHN MARKOFF MARCH 4, 2011





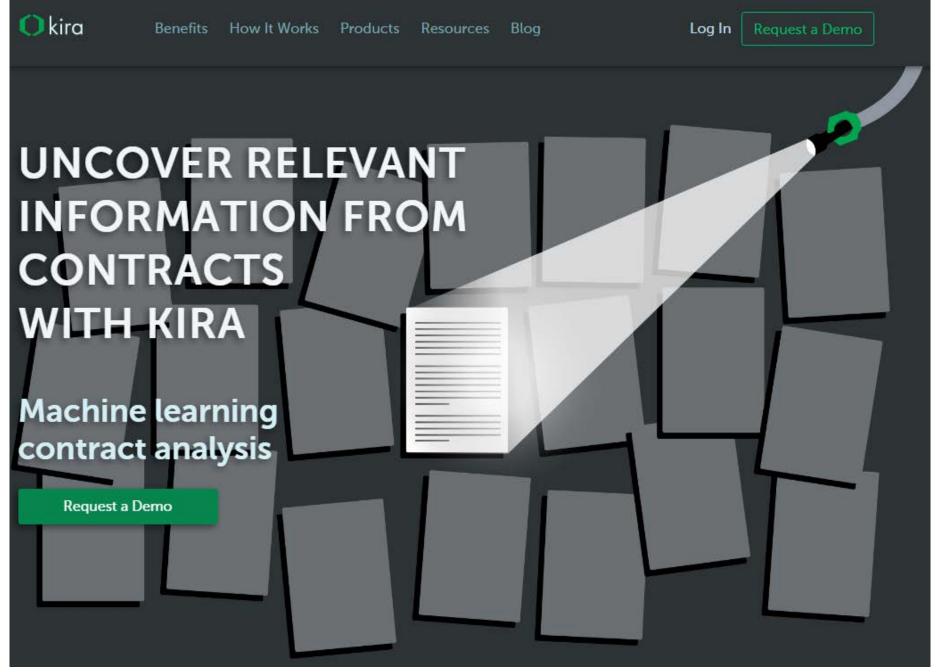
















The practice of law is changing fast

A DAY'S WORK IN ABOUT TWO MINUTES

LegalMation leverages the power of IBM Watson™ to produce high-quality draft litigation work in about two minutes

▶ WATCH THE INTRO (1:20)





Automated Contract Negotiation Race Heats Up with Seal

Roy Strom - Bloomberg Law Oct. 2, 2019













- Seal Now highlights problematic contract terms in Microsoft Word docs
- Part of growing competition to automate contract negotiation

"BlackBoiler ... said companies spend \$7 billion on lawyers reviewing contracts that it believes it can automate."



How is the industry changing?

- People
- Process
- Data
- Technology



Legal Technology

- Basic
 - E.g., Word, Excel, PDFs, metadata, eDiscovery, cloud computing, case management systems
- Intermediate
 - E.g., Document automation, expert systems
- Advanced
 - E.g., Machine learning, natural language processing, artificial intelligence



People

- Improve our people skills
 - Leadership
 - Management
 - Listening
 - Coaching
 - Counseling
 - Empathy
 - Process, Data, & Technology skills

- Law very lawyer focused
 - Opportunities for others to deliver value



21st Century Legal Services

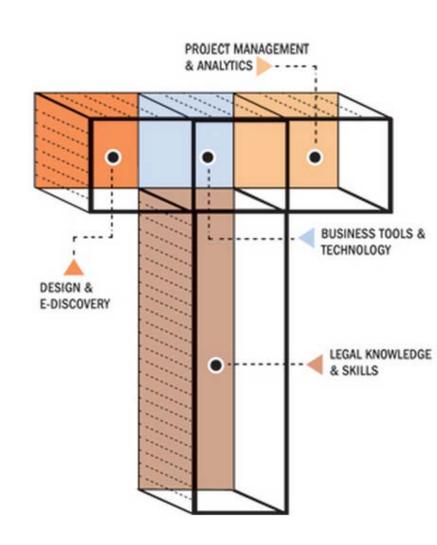
- Business of law (i.e., legal operations)
- Process improvement
- Project management
- Knowledge management
- Metrics
- Data analytics
- Technology

The 21st-Century T-Shaped Lawyer

Volume 40 Number 4

В

R. Amani Smathers





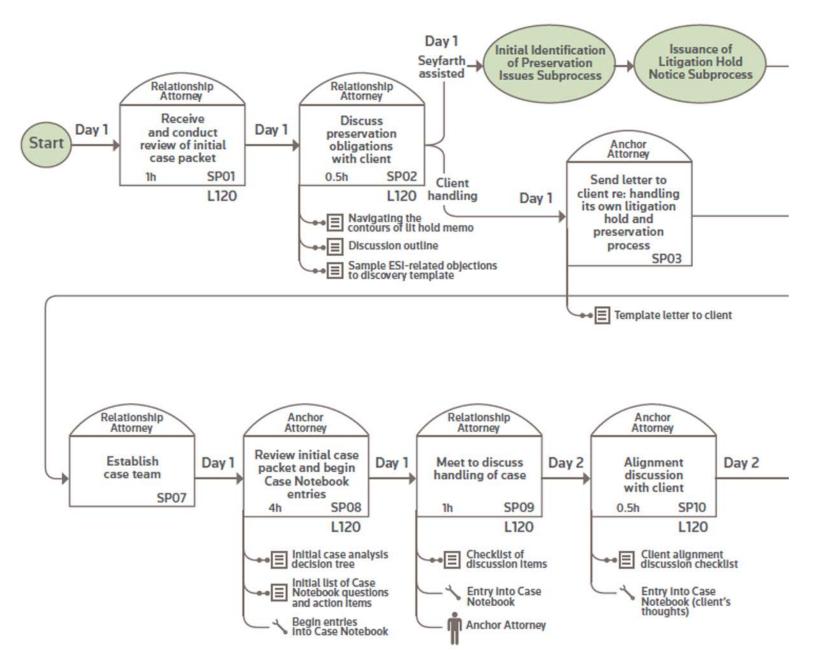
Process

- Disaggregate legal work
 - Discrete tasks and processes
 - Establish standards and best practices
 - Not all is "practice of law"
- Who does the work?
 - Make versus buy?
 - Outsource?
 - Automate with Technology?
- Development of legal supply chain



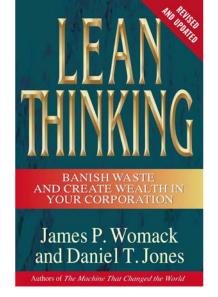
Sample Process Map: Commercial Litigation

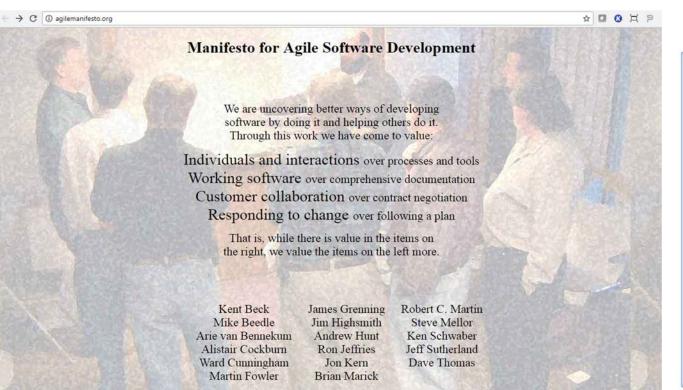




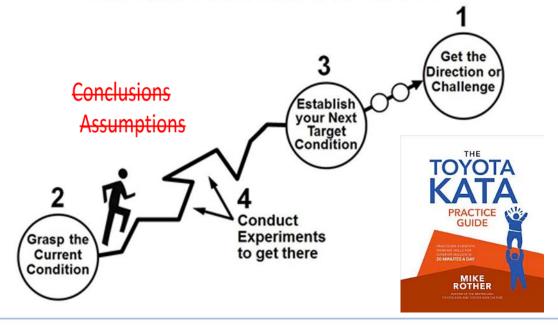




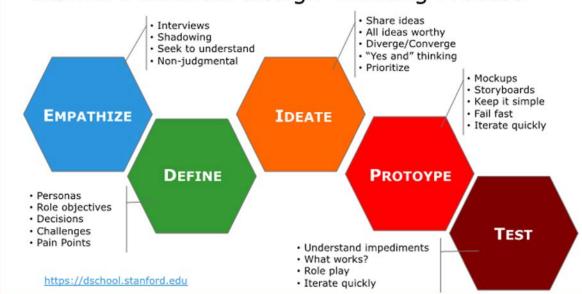




THE FOUR STEPS OF THE IMPROVEMENT KATA



Stanford d.school Design Thinking Process



Data

"Big Data" and Technology

- Automation
 - Expert Systems and document automation
 - Artificial Intelligence (e.g., Machine Learning)
- Data Analytics (aka, prediction)
 - Litigation, Compliance,
 Transactions, etc.
 - Preventing problems (Proactive Law)

Data-driven decision making

- Metrics
 - Benchmarks
 - Efficiency
 - Quality
- Small data



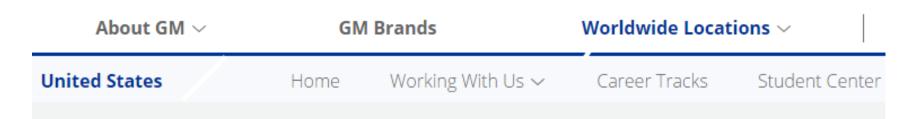
Data Analytics Opportunities

- Lawyers make lots of predictions
 - Rely on intuition and experience
 - Bias; noise
 - Al enables better, faster, cheaper predictions









Data Scientist - Legal

Detroit, MI, US











ADD TO JOB CART >

Position summary

Data Scientist - Legal - LEG0000499

Description

The Data Scientist is responsible for litigation analysis, benchmarking of product liability claims, plaintiff's attorneys, and defense attorneys, and identifying emerging vehicle issues within the privileged legal database and the safety databases by analyzing, mining, and monitoring relevant data. This requires identifying trends and patterns in Team Connect and other databases.





Littler hires first-ever national director of data analytics, intros new data center

Data analytics plays a more central role in corporate governance and decision-making than ever before

BY AMANDA CICCATELLI SEPTEMBER 16, 2015

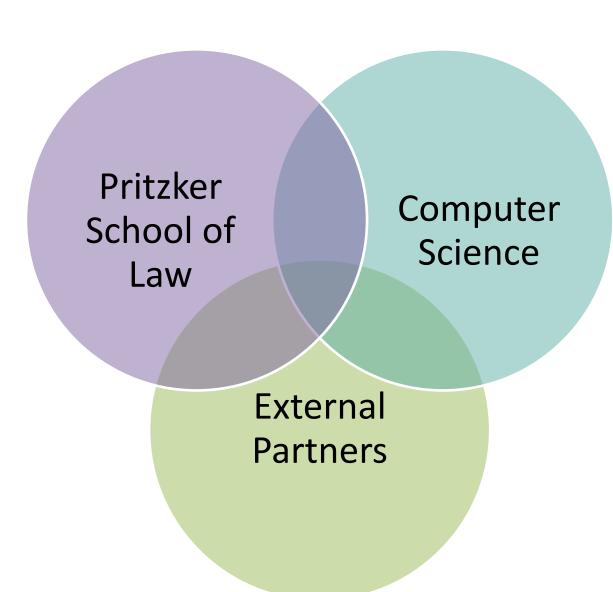


FOLLOW INSIDECOUNSEL





Northwestern Law and Technology Initiative



Vision

 Build law and technology community, share research and information, gather feedback about practitioner needs

Activities

- Monthly meetings
- Academic Conferences
- Training Workshops
- Research



LegalTech Lever

Leveraging legal innovation and technology to improve legal services.

Northwestern Law and Technology Initiative: 120 Attendees Discuss Law and Technology Challenges and Opportunities



Professors Dan Linna and Kris Hammond kick off the Northwestern Law and Technology Initiative meeting at Northwestern Pritzker School of Law on September 5, 2019.

By Daniel Linna on September 29, 2019

POSTED IN ARTIFICIAL INTELLIGENCE, INNOVATION, LEGAL EDUCATION, LEGAL OPERATIONS

Guest Post By Alex Crowley and Mona Kalantar

$Northwestern \left| \begin{smallmatrix} \mathsf{MocCORMICK} & \mathsf{SCHOOL} & \mathsf{OF} \\ \mathsf{ENGINEERING} \end{smallmatrix} \right|$

Engineering News

NEWSLETTER SIGNUP

EVENTS

Law and Technology Initiative Kicks off First Meeting

More than 100 scholars and practitioners came together to brainstorm potential collaborations through the initiative

SEP 11, 2019 // ALEXANDRIA JACOBSON



Expert Systems & Document Automation Workshop – Tuesday, Sept. 24, 4-5:50pm

This hands-on workshop introduces expert systems and document automation basics and explores use cases. We will work with Documate and QnA Markup. This workshop is part of the Northwestern law school "Al & Legal Reasoning" class taught by Dan Linna.

Space is limited. Attendance is FREE, but you must register by Friday, 9/20. Additional details will be provided to registrants.

Offered in connection with the Northwestern Law and Technology Initiative

Northwestern PRITZKER SCHOOL OF LAW

Northwestern
McCORMICK SCHOOL
OF ENGINEERING

Training Seminar: AI in the Enterprise (Legal-Services Version)

Friday, Dec. 6, 9:00am - 1:30pm

Event Sponsor:



Today's Agenda

- 4:00 Welcome Dan Linna (@DanLinna) & Kris Hammond (@KJ Hammond)
- 4:05 to 5:10 Case Studies (6-8 minute presentation & 7-9 minutes of Q&A)
 - Amy Clark, Director of Strategic Partnerships, Illinois Legal Aid Online
 - Nick Long, Sr. Dir. Legal Operations, Reed Smith
 - Jeroen Plink, CEO, Clifford Chance Applied Solutions
 - Jeff Sharer, Chief Innovation Counsel, Actuate Law
- 5:10 to 5:30 Q&A with all Presenters
- 5:30 6:30 Networking Reception



Amy Clark



Jeroen Plink (@jplink)



Nick Long (@NicholasALong7)



Jeff Sharer (@JeffSharer)



@NLawBizTech #NLawCS

Law, AI, and Computational Technologies (CS + Law)

Northwestern Pritzker School of Law

December 7, 2018

Northwestern



Bridges not Barriers: The Law-STEM Alliance as a Catalyst for Innovation



Bridges II: The Law-STEM Alliance & Next Generation Innovation

Second Annual Junior Faculty Forum for Law and STEM

CS + Law Faculty Talks

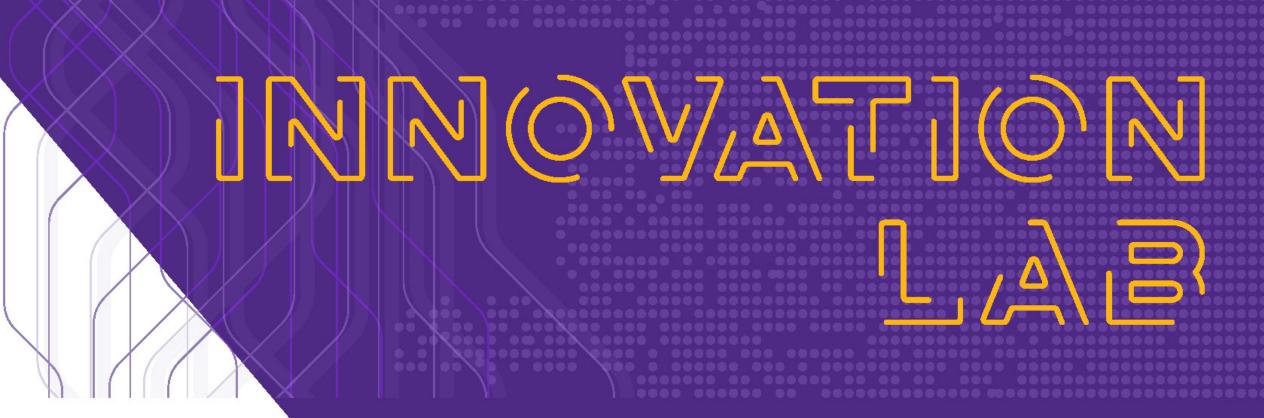
Wednesday, February 26 5 – 8 p.m.

Beyond our Borders: A Global Legal Innovation Summit



Thursday-Friday, May 3-4, 2018





Northwestern
McCORMICK SCHOOL
OF ENGINEERING

Northwestern

PRITZKER SCHOOL OF LAW

LAW AND TECHNOLOGY DEMOS



2019 Project Partners and Challenges

- Actuate Law: telemedicine compliance
- Reed Smith: rationalizing legal research
- **Bluhm Legal Clinic:** deliver know-your-rights immigration info to young people
- Mayer Brown: assessing AI liability for financial services
- Northwestern: court data exploration
- Mayer Brown: contract terms review



ReedSmith

Northwestern

PRITZKER SCHOOL OF LAW

Bluhm Legal Clinic

MAYER BROWN
Northwestern



2020 Project Partners & Challenges

- Actuate Law & Allstate: Building Better Privacy Compliance: Data Subject Access Requests
- Bluhm Legal Clinic: Eviction Court Navigator
- Cook County State's Attorney's Office: Orders of Protection Domestic Violence
- Honigman: Health Law: Innovating Compliance with Stark Law
- Simplifire-IACCM: Distance Measurement for Contract Revisions
- Orrick, Supreme Court & Appellate Group: Case Information Extraction and Flashcard Generation
- Thomson Reuters Labs & Judge Wilfredo Martinez: Human Trafficking Judicial Case Management















Law and Technology @ Northwestern

- Open to Northwestern Faculty,
 Staff, & Students
- Resources and discussion about law and technology
 - Conferences, calls for papers
 - Research and Collaboration
 - Educational resources
 - News
 - Student opportunities



Click here to join the Team

