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Law and Artificial Intelligence
University of Minnesota Law School
LAW 6896
Fall 2017

Professor Francis X. Shen

Date: Tuesdays, 4:05-6:00 pm
Location: Room N202

Administrative Memo & Syllabus

> The machines will convince us that they are conscious, that they have their own agenda worthy of our respect. They will embody human qualities and will claim to be human. And we'll believe them.
>
> – Ray Kurzweil [1]

Description: Increasingly the world, and even the law, is being run by self-learning algorithms, autonomous robots, and other technologies that have replaced tasks historically performed by human beings. At the same time, virtual reality and brain-machine interface are creating new, unprecedented opportunities for human experience. It is not yet clear how these many interrelated technological developments will play out. But what is certain is that the law will play a central role in shaping this future. This seminar will thus explore the many legal implications of this rise in algorithms, artificial intelligence, robots, virtual reality, and brain-machine interface. Through assigned readings, weekly discussion, and engagement with local experts in AI, robotics, and neural engineering, students will explore the many promises and perils of AI. Topics for coverage will include modules on: how AI is transforming legal practice in areas such as e-discovery; labor market impact of AI; the possibility of non-human adjudication of cases; use of AI to understand legal language; rights, harms, and legal liability in virtual worlds; rights and liability for robots; legal and ethical dimensions of brain-machine interface; transhumanism; regulation of self-driving cars and drones; governance of autonomous weapons systems; and how law should address the rise of predictive analytics in determining liability. The seminar fulfills the Law School's Upper Division Writing Requirement.

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Shen Office Hours:	After class and by appointment

[1] The Age of Spiritual Machines: When Computers Exceed Human Intelligence 63 (Penguin Books, 2000)

Required Text:	EUGENE VOLOKH, ACADEMIC LEGAL WRITING (5TH ED) All additional readings will be made available via email or on TWEN.
Grading:	See Section III below. A/F system, and no pass/fail.
TWEN:	TWEN course ID is: 245885

I. Aims and Learning Outcomes

Aims. This seminar has several interrelated aims: (1) to explore the legal implications of recent and rapid developments in the related fields of artificial intelligence, machine learning, robotics, neural engineering, virtual reality, brain-machine interface, and so forth; (2) to introduce students to new tools that might aid legal theory and practice; (3) to engage with deep and difficult conceptual and philosophical problems related to the rise of non-human decision-making in law and life; (4) to expose students to interdisciplinary dialogue outside the conventional Law School context; and (5) to improve student analytic and writing skills through the completion of a 20-page research paper.

Specific Learning Outcomes. By the end of this class, students will be able to:

- Describe the promises and perils of a variety of new artificial intelligence technologies;
- Discuss the regulatory context in which these technologies are governed (or not);
- Identify the legal and ethical issues emerging from the development of artificial intelligence;
- Think critically about how legal practice might be aided, or harmed, by adoption of various artificial intelligence; and
- Develop legal and policy solutions to existing and anticipated problems brought on by these technologies.

II. Format and Requirements

This is a two-credit seminar offered in the Law School. The seminar will meet for 2 hours once a week over the course of the 13-week semester. Each class session will involve a mix of lecture and discussion, all focusing on the week's reading material. For some classes, guest speakers may join us. The requirements for the seminar are:

1. *Class attendance:* Class attendance and active participation both in class and through e-communication, is required. You are expected to attend class regularly, complete all of the assignments noted below, and be an active member of the class during discussion periods. Attendance will be taken each session.

2. *Reading and Viewing:* Each class session will require you to read and/or view materials. You are expected to read and view those materials before class, so that you are prepared to discuss them in the seminar. Other than readings from the assigned Volokh book, readings and viewing will be posted to the TWEN cite or circulated via email.

3. *Weekly TWEN posting:* Each week before class you will be required to Submission, for each class, of a TWEN post related to the readings for the week.

4. *Class Presentation.* At the end of the semester you will be required to make a short presentation of the argument made in your final paper. Guidelines for the presentation will be provided.

5. *Paper Outline.* Submission of an outline of the paper or brief (minimum 2 pages). By Monday, October 9, 2018 (or a similar date depending on individual circumstances) you will be required to submit to me a short (~2-3 pages) outline for your paper.

6. *Final Paper.* A final paper of at least 5,000 words (approximately 20 pages), not including bibliography and table of contents, is required. The paper will be due by 4:30 pm on the last day of the Law School exam period (Wednesday, Dec. 20, 2017). The seminar paper must be primarily of an analytical rather than descriptive nature. Factors relevant to the grading of papers (in no particular order) are: Depth of Research; Organization and Clarity; Thoroughness; Originality; Accuracy and Professionalism; Compliance with Directions; and Strict Compliance with Honor Code (including proscriptions against plagiarism).

III. Grading

Basis for Grades. Grading will be comprised of the following components:

- 15%: Class participation (including the submission of the weekly TWEN posts)
- 5%: Preparation and presentation of the sound bite oral presentation.
- 80%: Final Paper

Class Participation (15%). This is a class in which active participation with classmates and meaningful engagement with class materials is expected. More than one unexcused absence from class may result in a reduction in the overall course grade. Class participation includes timely submission of the TWEN posting; regular attendance, thorough preparation of reading and written assignments; scholarly, and constructive critique of readings; adherence to the cell phone and laptop policies discussed below; and avoidance of unexcused absences.

Class Presentation (5%). The class presentation will be a short presentation in which you present the class with the claim of your paper, and then respond to questions about the claim.

Final Paper (80%). See description above. Please note that deadlines are taken very seriously. Late submissions yield grade reductions, in keeping with law school policy.

IV. Policies and Academic Integrity

Cell Phones, Smart Phones, and Laptops

Our time together each week will be cell phone and smart phone free. When you walk into the room, you are expected to silence your phones. Exceptions will be made only in exceptional circumstances (which you should discuss with me before class). Law school policy prohibits unauthorized use of laptops during class. You are expected to refrain from any computer use that is not germane to the class. Violation of the laptop use policy will result in a reduced class participation grade.

You are expected to abide by the Law School Academic Rules, which require regular attendance and adequate preparation, and to satisfy the University's Teaching and Learning Student Responsibilities, which note student responsibility for attending class, for meeting all course requirements, observing all deadlines and course procedures, maintaining academic integrity, seeking academic help and accommodation as warranted, respecting intellectual property, and keeping the classroom in good order.

The University seeks an environment that promotes academic achievement and integrity, that is protective of free inquiry, and that serves the educational mission of the University. Similarly, the University seeks a community that is free from violence, threats, and intimidation; that is respectful of the rights, opportunities, and welfare of students, faculty, staff, and guests of the University; and that does not threaten the physical or mental health or safety of members of the University community.

As a student at the University you are expected adhere to the Board of Regents Policy: Student Conduct Code. Note that the conduct code specifically addresses disruptive classroom conduct, which means "engaging in behavior that substantially or repeatedly interrupts either the instructor's ability to teach or student learning. The classroom extends to any setting where a student is engaged in work toward academic credit or satisfaction of program-based requirements or related activities."

The Law School's Academic Rules can be found at:
http://www.law.umn.edu/current/policies.html

The University's Code of Student Conduct can be found at:
https://oscai.umn.edu/

You are encouraged to study together and to discuss information and concepts covered in class. With the exception of any clearly noted collaborative tasks, this permissible cooperation should never involve a student submitting as her/his own work as the work of another. If at any time you have questions about the right way to proceed, simply ask.

V. Disability Accommodations & Mental Health

Students with disabilities should consult with the University's Office of Disability Services (612-626-1333) and the Law School's Assistant Dean of Students Office regarding any necessary classroom or exam-related accommodations. The University is committed to providing quality education to all students regardless of ability. Determining appropriate disability accommodations is a collaborative process. You as a student must register with

Disability Services and provide documentation of your disability. The course instructor must provide information regarding a course's content, methods, and essential components. The combination of this information will be used by Disability Services to determine appropriate accommodations for a particular student in a particular course. For more information, please reference Disability Services: http://ds.umn.edu/student-services.html

As a student you may experience a range of issues that can cause barriers to learning, such as strained relationships, increased anxiety, alcohol/drug problems, feeling down, difficulty concentrating and/or lack of motivation. These mental health concerns or stressful events may lead to diminished academic performance and may reduce your ability to participate in daily activities. University of Minnesota services are available to assist you. You can learn more about the broad range of confidential mental health services available on campus via the Student Mental Health Website: http://www.mentalhealth.umn.edu

VI. Professionalism

All students are expected to comply at all times with the Law School's Honor Code and the University's Student Conduct Code. You should conduct yourself in this class and throughout your Law School career in accordance with the principles of professionalism applicable to practicing attorneys, the profession to which you aspire. The Hennepin County Bar Association Lawyers' Pledge of Professionalism says lawyers should encourage respect for the law and our legal system through their words and actions and be courteous to everyone during the course of their work. The Minnesota Supreme Court and MSBA Professionalism Aspirations say that "a lawyer's conduct should be characterized at all times by personal courtesy and professional integrity in the fullest sense of those terms" and "lawyers and judges owe each other respect, diligence, punctuality, and protection against unjust and improper criticism and attack." I expect the same behavior in your interactions with me and other faculty, with your fellow students, and with Law School staff.

VII. Class Schedule and Reading Assignments
(Detailed reading assignments listed on following pages)

Date	Topic
Tues, Sept 5, 2017	**Introduction to Law and AI: History and Themes**
Tues, Sept 12, 2017	**AI Governance (and Robot Rights?)**
Tues, Sept 19, 2017	**Robots and the Law** Special (virtual) guest: Professor Ryan Calo, University of Washington Law School. Professor Calo is the world's leading thinker on robotics and law.
~~Tues, Sept 26, 2017~~	*Class rescheduled to Fri, Sept 29*
Fri, Sept 29, 2017 ***4:05-6:00 pm (food served)***	**AI and Robots in Society: Learning from Fiction**
Tues, Oct 3, 2017	**Labor Markets and Sexbots**
Tues, Oct 10, 2017	**Killer Robots, Enhanced Soldiers, Homeland Security, and National Defense**
Tues, Oct 17, 2017	**Brain Machine Interface: Man Meets Machine / Trans-Humanism and Enhanced Humans**
Tues, Oct 24, 2017	**Black Box Medicine** Special (virtual) guest: Dr. Mason Marks, JD, MD, Yale Law School Information Society Project. Dr. Marks is exploring regulation of machine learning as used in medicine.
Tues, Oct 31, 2017	**Automated Attorneys (and Guilt by Algorithm?)**
Tues, Nov 7, 2017	**Deep Learning** Special (in person) guest: Dr. Jed Ellision, PhD, University of Minnesota Institute of Child Development. Dr. Ellison is leading efforts to use deep learning to predict onset of autism.
Tues, Nov 14, 2017	**Law and Virtual Reality**
Tues, Nov 21, 2017	**Autonomous Vehicles**
Tues, Nov 28, 2017	**Final Class and Student Presentations**

Detailed Reading and TWEN Posting Assignments

Preliminary note #1: There are many additional resources available on the topics listed below, and there are many topics not listed below that fall under the broad heading of Law and Artificial Intelligence. If you would like help finding something, or would like additional reading suggestions on a particular topic, please let me know.

Preliminary note #2: The field of law and artificial intelligence is several decades old. At the core of the field are foundational explorations of how artificial intelligence could mimic legal reasoning. Those studies continue today, and there are courses in Law and Artificial Intelligence that focus exclusively on that body of literature. An example of this type of course is Professor Kevin D. Ashley's Seminar on Artificial Intelligence and Law.[2] The International Association for Artificial Intelligence and Law (http://www.iaail.org/) has, since 1987, explored this intersection. The academic journal, *Artificial Intelligence and Law*, has primarily focused on issues related to technology designed to carry out legal reasoning.[3] In this seminar, we are focusing on a series of topics that are at the intersection of AI and law. we are not diving into the coding and programs that might allow non-humans to carry out legal reasoning. But for those interested in those issues, here are some texts that may be of interest:

- Kevin D. Ashley, Reasoning with Cases and Hypotheticals in HYPO, 34 Int'l J. of Man-Mach. Stud. 753 (1991).

- Kevin D. Ashley, Teaching Law and Digital Age Legal Practice with an Ai and Law Seminar, 88 Chi.-Kent L. Rev. 783 (2013)

- Semantic Information Processing (Marvin Minsky, ed., 1968).

- Jurix, The Foundation for Legal Knowledge Based Systems, http:// www.jurix.nl

- Law, Logic & Technology Research Laboratory, http://www.lltlab.org

- Edwina L. Rissland, Artificial Intelligence and Law: Stepping Stones to a Model of Legal Reasoning, 99 Yale L. J. 1957, 1957-58 (1990).

- Anne von der Lieth Gardner, An Artificial Intelligence Approach To Legal Reasoning 4 (1987)

- Kevin D. Ashley & Stefanie Brüninghaus, Computer Models for Legal Prediction, 46 Jurimetrics 309 (2006).

- Vincent Aleven, Using Background Knowledge in Case-Based Legal Reasoning: A Computational Model and an Intelligent Learning Environment, 150 Artificial Intelligence 183 (2003).

[2] Syllabus available online at http://www.lrdc.pitt.edu/Ashley/ailawsyl07.htm
[3] http://www.springer.com/computer/ai/journal/10506

- Edwina L. Rissland & David B. Skalak, CABARET: Statutory Interpretation in a Hybrid Architecture, 34 Int'l J. of Man-Mach. Stud. 839 (1991).

- Bruce G. Buchanan & Thomas E. Headrick, *Some Speculation About Artificial Intelligence and Legal Reasoning*, 23 Stan. L. Rev. 40 (1970)

- Edwina L. Rissland, *Artificial Intelligence and Law: Stepping Stones to A Model of Legal Reasoning*, 99 Yale L.J. 1957 (1990)

1. **Introduction to Law and AI: History and Themes**
    a. *Read carefully:* Chapters 1-3 of the Volokh book.
    b. *Read:* John Markoff, *The Rapid Advance of Artificial Intelligence*, NY Times, Oct. 14, 2013
        i. The NYT piece is a quick read, providing a high-level overview of some recent AI developments.
    c. *Read:* Jerry Kaplan, Artificial Intelligence: What Everyone Needs to Know 1-12, 89-112 (2017). [on TWEN]
        i. Pay special attention to Kaplan's thoughts on the legal implications of AI. You don't have to agree with him, but hopefully it will begin to spark paper ideas.
    d. *Read / skim*: Alison Gopnik, *An AI That Knows the World Like Children Do*, 28 Scientific American 21 (2017). [on TWEN]
        i. This is also a fairly quick read, giving you a very recent (as in just published earlier this month) review of cutting-edge AI.
    e. Read / skim: Keith Frankish & William R. Ramsey, The Cambridge Handbook of Artificial Intelligence 1-33 (2014). [on TWEN]
        i. This is more for background, but it will be useful for you to understand the history of modern AI.

2. **Robot Governance (and Robot Rights?)**
    a. Post on TWEN in one of three ways:
        i. What would be your "Three Laws of AI/Robotics"?
        ii. Reaction (of any sort) to I, Robot
        iii. "Ripped from the headlines" post
    b. Reading
        i. *Read:* Chapters IX and XIX of the Volokh book.
        ii. *Read:* Oren Etzioni, *How to Regulate Artificial Intelligence*, NY Times, Sept 1, 2017
        iii. *Read (and enjoy!):* ISAAC ASIMOV, I, ROBOT (1950).
        iv. A free version is online at: https://www.ttu.ee/public/m/mart-murdvee/Techno-Psy/Isaac_Asimov_-_I_Robot.pdf
    c. Additional Resources
        i. Look at the "We Robot" conference proceedings (there have been 6 annual conferences):
            1. http://www.werobot2017.com/
            2. http://www.werobot2017.com/pastconferences
        ii. RAY KURZWEIL, THE AGE OF SPIRITUAL MACHINES: WHEN COMPUTERS EXCEED HUMAN INTELLIGENCE (Penguin Books, 2000)
        iii. RAY KURZWEIL, THE SINGULARITY IS NEAR (2005).
        iv. Lawrence B. Solum, *Legal Personhood for Artificial Intelligences*, 70 N.C. L. Rev. 1231 (1992)
        v. Benjamin Soskis, *Man and the Machines: It's Time to Start Thinking About How We Might Grant Legal Rights to Computers*, Legal Aff. (2005).

vi. Jennifer Robertson, *Human rights vs. robot rights: Forecasts from Japan*, 46 CRITICAL ASIAN STUDIES 571 (2014).
vii. *Robot Ethics: Morals and the Machine*, The Economist 15 (June 2, 2012).
viii. David J. Calverley, *Imagining a Non-Biological Machine as a Legal Person*, 22 AI & SOC. 523 (2008).
ix. Samir Chopra and Laurence White, *Artificial Agents - Personhood in Law and Philosophy*, Proceedings of the European Conference on Artificial Intelligence (2004)
x. RODNEY BROOKS, FLESH AND MACHINES: HOW ROBOTS WILL CHANGE US (2003).
xi. Neil Richard & William Smart, *How Should the Law Think About Robots?* (May 10, 2013).
xii. F. Patrick Hubbard, *"Do Androids Dream?": Personhood and Intelligent Artifacts*, 83 Temp. L. Rev. 405 (2011)
xiii. Matthew U. Scherer, *Regulating Artificial Intelligence Systems: Risks, Challenges, Competencies, and Strategies*, 29 Harv. J.L. & Tech. 353 (2016)
xiv. PATRICK LIN, ET AL, ROBOT ETHICS: THE ETHICAL AND SOCIAL IMPLICATIONS OF ROBOTICS (2011) (link)
xv. Keith Kirkpatrick, Keith. *Legal Issues With Robots*, 56 COMMUNICATIONS OF THE ACM 17 (2013).
xvi. Wendell Wallach, From Robots to Techno Sapiens: Ethics, Law and Public Policy in the Development of Robotics and Neurotechnologies, 3 Law, Innovation and Technology 185 (2011).
xvii. M. Ryan Calo, Robots and Privacy, in Robot Ethics: The Ethical and Social Implications of Robotics (Patrick Lin, George Bekey, and Keith Abney, eds.) MIT Press (2011)

3. **Robots and the Law**, with special (virtual) guest: Professor Ryan Calo, University of Washington Law School. Professor Calo is the world's leading thinker on robotics and law.
    a. Post on TWEN in one of two ways:
        i. Search online, post a link to a video of your favorite robot, and tell us why it caught your attention (e.g. it's the most human looking robot, it's doing something amazing, some other reason) + AND pose a question for Professor Calo
        ii. "Ripped from the headlines" post + AND pose a question for Professor Calo
    b. Viewing
        i. Watch this 5 minute video, Ryan Calo, *Machining Ethics*: https://youtu.be/bNBLR6al8ME
    c. Reading
        i. *Read:* Ryan Calo, *Robots in American Law* (2016): https://ssrn.com/abstract=2737598

ii. *Read:* Ryan Calo, *Artificial Intelligence Policy: A Roadmap* (2017): https://ssrn.com/abstract=3015350

d. Additional Resources
   i. Check out posts on this site: https://qz.com/on/machines-with-brains/
   ii. Ryan Calo, *Robotics and the Lessons of Cyberlaw*, 103 Cal. L. Rev. 513 (2015)
   iii. ROBOT LAW (Ryan Calo, A. Michael Froomkin & Ian Kerr eds., 2016)
   iv. Jack M. Balkin, *The Path of Robotics Law*, 6 Cal. L. Rev. Circuit 45 (2015)
   v. Daniel H. Wilson, *Fear of a Robot Planet*, Politico (Aug 4, 2017), http://www.politico.com/magazine/story/2017/08/04/fear-of-a-robot-planet-215460
   vi. 2014 symposium issue in University of Washington Law Review on *Artificial Intelligence and the Law*: https://digital.law.washington.edu/dspace-law/handle/1773.1/169/browse?value=Symposium%3A+Artificial+Intelligence+and+the+Law&type=subject
   vii. 2016 special issue of European Journal of Risk Regulation, *Special Issue on the Man and the Machine*, including:
      1. Thomas Burri, The Politics of Robot Autonomy, 7 Eur. J. Risk Reg. 341 (2016)
      2. Madeleine de Cock Buning, Autonomous Intelligent Systems As Creative Agents Under the Eu Framework for Intellectual Property, 7 Eur. J. Risk Reg. 310 (2016)
   viii. Maja J Mataric, The Robotics Primer (2007)
   ix. Susanne Frennert & Britt Östlund, *Review: Seven Matters Of Concern Of Social Robots And Older People*, 6 INTERNATIONAL JOURNAL OF SOCIAL ROBOTICS 299 (2014).
   x. Excerpt from: AIMEE VAN WYNSBERGHE, HEALTHCARE ROBOTS: ETHICS, DESIGN AND IMPLEMENTATION (2016).
   xi. Mark Malloy, Rogue factory robot blamed for death of human colleague (March 14, 2017), http://www.telegraph.co.uk/technology/2017/03/14/rogue-factory-robot-blamed-death-human-colleague/
   xii. Christina Mulligan, *Revenge Against Robots* (2017), https://ssrn.com/abstract=3016048
   xiii. Google, Neuroscience, and AI
      1. Manny Reyes, Google Combines Neuroscience Into DeepMind AI Platform (Aug 12, 2017), https://www.androidheadlines.com/2017/08/google-combines-neuroscience-deepmind-ai-platform.html
      2. Jamie Condliffe, Google's AI Guru Says That Great Artificial Intelligence Must Build on Neuroscience (July 20, 2017), https://www.technologyreview.com/s/608317/googles-ai-guru-says-that-great-artificial-intelligence-must-build-on-neuroscience/
   xiv. Ryan Calo, *Robots As Legal Metaphors*, 30 Harv. J.L. & Tech. 209 (2016)

xv. Neil Richards & William Smart, How Should the Law Think About Robots?, in Robot Law 4 (Ryan Calo, A. Michael Froomkin & Ian Kerr eds., 2016)
xvi. Christopher Harper & Gurvinder Virk, *Towards The Development Of International Safety Standards For Human Robot Interaction,* 2.3 International Journal of Social Robotics 229 (2010).
xvii. Michael Nagenborg, et al., *Ethical Regulations On Robotics In Europe*, 22.3 AI & Society 349 (2008).
xviii. RoboLaw: http://www.robolaw.eu/consortium.htm
xix. Margi Murphy, Hacked robots could attack humans, burgle people's homes and KILL their pets, experts warn (March 2, 2017), https://www.thesun.co.uk/news/2982832/hacked-robots-willl-burgle-peoples-homes-and-kill-their-pets-experts-warn/
xx. Rick Paulas, How humans will lose control of artificial intelligence (April 2, 2017), http://theweek.com/articles/689359/how-humans-lose-control-artificial-intelligence
xxi. Amanda Sharkey, *Should we welcome robot teachers?*, 18 ETHICS AND INFORMATION TECHNOLOGY 283 (2016).
xxii. Wendy Moyle, et al, *What effect does an animal robot called cuddler have on the engagement and emotional response of older people with dementia? a pilot feasibility study*, 8 INTERNATIONAL JOURNAL OF SOCIAL ROBOTICS 145 (2016).
xxiii. Ignatius Michael Ingles, *Regulating Religious Robots: Free Exercise and Rfra in the Time of Superintelligent Artificial Intelligence*, 105 GEO. L.J. 507 (2017)
xxiv. QZ Machines with Brains site: https://qz.com/on/machines-with-brains/
xxv. Melanie Reid, *Rethinking the Fourth Amendment in the Age of Supercomputers, Artificial Intelligence, and Robots*, 119 W. Va. L. Rev. 863 (2017)
xxvi. Bryan Casey, *Amoral Machines, or: How Roboticists Can Learn to Stop Worrying and Love the Law*, 111 Nw. U.L. Rev. Online 231 (2017)
xxvii. Toy Biz v. United States (2003) (considering whether X-Men are "human" or "non-human"), http://www.cit.uscourts.gov/SlipOpinions/Slip_op03/slip-op%2003-2.pdf

e. Videos (optional):
i. Two robots debate the future of humanity https://youtu.be/w1NxcRNW_Qk
ii. Sophia Awakens Episode 1 https://youtu.be/LguXfHKsa0c
iii. CREEPY VIDEO Charlie Rose Interviews a Robot ! https://youtu.be/nvZphyWFeXk

4. **AI in Society: Learning from Science Fiction** [note: I will make both movies available on DVD for reserve and we will have at least one optional group viewing]
    a. Post on TWEN in one of two ways:
        i. As you watch these movies, think creatively: how should the law respond to these potential realities ahead of us? [If you can, reference a particular scene and we can watch it and discuss in class.]
        ii. "Ripped from the headlines" post
    b. Watch *Her* (2013)
        i. Description: "From the unique perspective of Oscar®-nominated filmmaker Spike Jonze (Being John Malkovich, Adaptation) comes an original love story that explores the evolving nature -- and the risks -- of intimacy in the modern world. Set in the Los Angeles of the slight future, HER follows Theodore Twombly (Joaquin Phoenix), a complex, soulful man who makes his living writing touching, personal letters for other people. Heartbroken after the end of a long relationship, he becomes intrigued with a new, advanced operating system, which promises to be an intuitive entity in its own right, individual to each user. Upon initiating it, he is delighted to meet "Samantha" (Scarlett Johansson), a bright, female voice, who is insightful, sensitive and surprisingly funny. As her needs and desires grow, in tandem with his own, their friendship deepens into an eventual and unconventional love for each other."
    c. Watch *Ex Machina* (2015)
        i. Description: "Alex Garland, writer of 28 Days Later and Sunshine, makes his directorial debut with the stylish and cerebral thriller, EX MACHINA. Caleb Smith (Domhnall Gleeson), a programmer at an internet-search giant, wins a competition to spend a week at the private mountain estate of the company's brilliant and reclusive CEO, Nathan Bateman (Oscar Isaac). Upon his arrival, Caleb learns that Nathan has chosen him to be the human component in a Turing Test--charging him with evaluating the capabilities, and ultimately the consciousness, of Nathan's latest experiment in artificial intelligence. That experiment is Ava (Alicia Vikander), a breathtaking A.I. whose emotional intelligence proves more sophisticated--and more deceptive--than the two men could have imagined."
    d. And if you want to read academic commentary on these and related fiction see:
        i. Jason Zenor, *Sins of the Flesh? Obscenity Law in the Era of Virtual Reality*, 19 Comm. L. & Pol'y 563 (2014)
        ii. Gabriel Hallevy, *"i, Robot - i, Criminal"-When Science Fiction Becomes Reality: Legal Liability of Ai Robots Committing Criminal Offenses*, Syracuse Sci. & Tech. L. Rep., Spring 2010, at 1
        iii. Chip Stewart, *Do Androids Dream of Electric Free Speech? Visions of the Future of Copyright, Privacy and the First Amendment in Science Fiction*, 19 Comm. L. & Pol'y 433 (2014)

5. **Labor Markets and Sexbots**
    a. Post on TWEN in one of three ways:
        i. As you read below, you will notice that there are a variety of (conflicting) predictions about the future labor market implications of robots and AI. In your TWEN post, make a prediction about some aspect of the labor market implications. Explain your prediction, with reference to at least one of the readings (and note: you can disagree with the authors below.)
        ii. Read the materials on Sexbots and post on how you think the law should respond (and note: to "respond" may include *not* criminalizing or further regulating).
        iii. "Ripped from the headlines" post
    b. **Watch**
        i. *Watch* (15 mins): Humans Need Not Apply; https://www.youtube.com/watch?v=7Pq-S557XQU
        ii. *Watch* (5 mins): Service robots in nursing homes: Care-O-bot 3 and CASERO https://youtu.be/dx0zxr3D_zU
    c. ***Quickly Read*** these short magazine and news stories:
        i. Tyler Durden, *Meet Tally: The Grocery Stocking Robot About To Eradicate 1,000's Of Minimum Wage Jobs* (July 27, 2017), http://www.zerohedge.com/news/2017-07-26/meet-tally-grocery-stocking-robot-about-eradicate-1000s-minimum-wage-jobs
        ii. Geoffrey Mohan, *As California's labor shortage grows, farmers race to replace workers with robots* (July 21, 2017), http://www.latimes.com/projects/la-fi-farm-mechanization/
        iii. Sherisse Pham, *Jack Ma: In 30 years, the best CEO could be a robot* (April 24, 2017), http://money.cnn.com/2017/04/24/technology/alibaba-jack-ma-30-years-pain-robot-ceo/
        iv. Catherine Cliffort, *Facebook CEO Mark Zuckerberg: Elon Musk's doomsday AI predictions are 'pretty irresponsible'* (July 24, 2017), https://www.cnbc.com/2017/07/24/mark-zuckerberg-elon-musks-doomsday-ai-predictions-are-irresponsible.html
        v. Tracy You, *Wifi-equipped robots triple work efficiency at the warehouse of the world's largest online retailer* (Aug 2, 2017), http://www.dailymail.co.uk/news/article-4754078/China-s-largest-smart-warehouse-manned-60-robots.html
        vi. Chico Harlan, *Rise of the Machines* (Aug 5, 2017), https://www.washingtonpost.com/national/rise-of-the-machines/2017/08/05/631e20ba-76df-11e7-8f39-eeb7d3a2d304_story.html
        vii. Jasper Hamill, *Former Facebook executive says society will COLLAPSE within 30 years as robots put half of humans out of work* (Aug 4, 2017), https://www.thesun.co.uk/tech/4170364/former-facebook-executive-says-society-will-collapse-within-30-years-as-robots-put-half-of-humans-out-of-work/
    d. **Read ONE** of the following:

i. Carl Benedikt Frey & Michael Osborne, *The Future Of Employment: How Susceptible Are Jobs To Computerisation?* (2013), http://www.oxfordmartin.ox.ac.uk/publications/view/1314
ii. Executive Office of the President, *Artificial Intelligence, Automation, and the Economy* (Dec 20, 2016), https://obamawhitehouse.archives.gov/sites/whitehouse.gov/files/documents/Artificial-Intelligence-Automation-Economy.PDF
iii. Executive Office of the President, Preparing for the Future of Artificial Intelligence (October 2016), https://obamawhitehouse.archives.gov/sites/default/files/whitehouse_files/microsites/ostp/NSTC/preparing_for_the_future_of_ai.pdf

e. **On Sexbots**
   i. **Read quickly** these news stories
      1. Beth Timmins, New Sex Robots with 'Frigid' Settings Allow Men to Simulate Rape (July 19, 2017), http://www.independent.co.uk/life-style/sex-robots-frigid-settings-rape-simulation-men-sexual-assault-a7847296.html
      2. Kate Hardiman, Law professor warns: Congress must act on growing sexbot industry (Aug 8, 2017), https://www.thecollegefix.com/post/35300/
      3. Nature Editorial: Let's talk about sex robots (July 13, 2017), http://www.nature.com/news/let-s-talk-about-sex-robots-1.22276
      4. Jamie Michlethwalte, Porn star behind world's most expensive sex robot (Aug 1, 2017), http://www.dailystar.co.uk/news/latest-news/634004/porn-star-asa-akira-sex-robot-asa-takigami-abyss-creations-wicked-real-doll
      5. Mark Hodge, World's most lifelike sex doll will keep randy perverts happy thanks to its incredible ability to speak, smile and even sing (July 26, 2017), https://www.thesun.co.uk/news/4107689/sex-doll-speak-smile-sing-robot-head/
   ii. ***Skim***
      1. Thomas E. Simmons, *Sexbots; an Obloquy*, 2016 Wis. L. Rev. Forward 45 (2016)
      2. John Danaher, *Robotic Rape and Robotic Child Sexual Abuse: Should They Be Criminalised?*, 11 Crim. L. & Phil. 71 (2017)
   iii. And if you want to write in this area see:
      1. Anthony Ferguson, The Sex Doll: A History (2010)

f. Additional Resources
   i. Kevin Kelly, The Myth of a Superhuman AI (April 25, 2017), https://www.wired.com/2017/04/the-myth-of-a-superhuman-ai/
   ii. Susan Seager, *No, It's Not Fake News, It's Robot-Written News* (July 14, 2017), https://www.thewrap.com/no-its-not-fake-news-its-robot-written-news/
   iii. Chantel McGee, *The man who built a virtual nervous system explains how humans will interact with machines in ten years* (May 21, 2017),

https://www.cnbc.com/2017/05/21/mark-sagar-how-humans-will-interact-with-machines-in-ten-years.html

iv. Elizabeth Gibney, How rival bots battled their way to poker supremacy (March 2, 2017), http://www.nature.com/news/how-rival-bots-battled-their-way-to-poker-supremacy-1.21580

v. Libby Plumber, Google's DeepMind creates an AI with 'imagination' 9July 26, 2017), http://www.wired.co.uk/article/googles-deepmind-creates-an-ai-with-imagination

vi. David Z. Morris, Elon Musk Says Artificial Intelligence Is the 'Greatest Risk We Face as a Civilization' (July 15, 2017), http://fortune.com/2017/07/15/elon-musk-artificial-intelligence-2/

vii. Ian Sample, Artificial intelligence survey finds UK public broadly optimistic (April 24, 2017), https://www.theguardian.com/technology/2017/apr/25/artificial-intelligence-survey-finds-uk-public-broadly-optimistic-mass-unemployment

viii. RAS 2020 Robotics and Autonomous Systems, https://connect.innovateuk.org/documents/2903012/16074728/RAS%20UK%20Strategy

ix. Mark Malloy, Real-life Robocops will soon replace human police (March 20, 2017), http://www.telegraph.co.uk/technology/2017/03/20/real-life-robocops-will-soon-replace-human-police/

x. Carry on Automat(r)on: Legal and Ethical Issues relating to Healthcare Robots, https://www.scl.org/articles/2811-carry-on-automat-r-on-legal-and-ethical-issues-relating-to-healthcare-robots

    1. Note: Much has been written on "care" robots, both for elder care and for childcare. For those interested, I can suggest citations.

6. **Killer Robots, Enhanced Soldiers, Homeland Security, and National Defense**
    a. Post on TWEN in one of three ways:
        i. Respond critically to the argument(s) of one of the academic articles below. Discuss one point of agreement, and one point of disagreement, with the author(s).
        ii. Based on the readings below, pose one idea for how the law should respond to (one of) these many developments at the intersection of robotics, AI, and national security / war.
        iii. "Ripped from the headlines" post
    b. Watch (optional)
        i. Dr. Ronald Arkin on robot ethics in the military https://youtu.be/SRHFXMzsHZU
        ii. Peter Singer: Military Robots and the Future of War, https://www.ted.com/talks/pw_singer_on_robots_of_war
    c. ***Quickly read*** these short news stories:
        i. Carl Prine, *Robots Poised To Take Over Wide Range Of Military Jobs* (2017), http://www.sandiegouniontribune.com/military/sd-me-robots-military-20170130-story.html
        ii. Chris Pash, The world's top artificial intelligence companies are pleading for a ban on killer robots (Aug 21, 2017), http://www.businessinsider.com/top-artificial-intelligence-companies-plead-for-a-ban-on-killer-robots-2017-8
        iii. Mark Prigg, US military reveals $65m funding for 'Matrix' projects to plug human brains directly into a computer (July 10, 2017), http://www.dailymail.co.uk/sciencetech/article-4683264/US-military-reveals-funding-Matrix-projects.html
        iv. Declan Butler, *AI summit aims to help world's poorest* (June 6, 2017), https://www.nature.com/articles/n-12339880
        v. Super SEALs: Elite Units Pursue Brain-Stimulating Technologies (April 2, 2017), http://www.military.com/daily-news/2017/04/02/super-seals-elite-units-pursue-brain-stimulating-technologies.html
        vi. Russian Humanoid Robot 'Fedor' Learns to Shoot Using Both Arms (April 14, 2017), https://sptnkne.ws/ee5w
    d. ***Quickly Read:***
        i. Human Rights Watch, *Losing Humanity: The Case Against Killer Robots* (2012).
    e. ***Read* ONE of the following:**
        i. Oren Gross, *The New Way of War: Is There a Duty to Use Drones?,* Florida L. Rev. (2015).
        ii. John Yoo, *Embracing the Machines: Rationalist War and New Weapons Technologies*, 105 Cal. L. Rev. 443 (2017)
        iii. Kenneth Anderson & Matthew Waxman, *Law and Ethics for Robot Soldiers*, Policy Review (2012).
        iv. Peter Margulies, *Surveillance by Algorithm: The NSA, Computerized Intelligence Collection, and Human Rights*, 68 Fla. L. Rev. 1045 (2016)

v. Rebecca Crootof, *War Torts: Accountability for Autonomous Weapons*, 164 U. Pa. L. Rev. 1347 (2016)
vi. Michael N. Schmitt & Jeffrey S. Thurnher, *"Out of the Loop": Autonomous Weapon Systems and the Law of Armed Conflict,* 4 Harv. Nat'l Sec. J. 231 (2013)
vii. Gary E. Marchant, Braden Allenby, Ronald Arkin, Edward T. Barrett, Jason et. al., *International Governance of Autonomous Military Robots*, 12 Colum. Sci. & Tech. L. Rev. 272 (2011)

f. Additional Resources
i. JONATHAN D. MORENO MIND WARS: BRAIN SCIENCE AND THE MILITARY IN THE 21ST CENTURY (2012)
ii. Look at the work of Eric Horvitz: http://erichorvitz.com/
iii. Michael Horowitz, *Public Opinion And The Politics Of The Killer Robots Debate*, 3 Research & Politics 1 (2016).
iv. Greg Allen & Taniel Chan, Artificial Intelligence and National Security (July 2017), http://www.belfercenter.org/sites/default/files/files/publication/AI%20NatSec%20-%20final.pdf
v. Alan L. Schuller, *At the Crossroads of Control: The Intersection of Artificial Intelligence in Autonomous Weapon Systems with International Humanitarian Law*, 8 Harv. Nat'l Sec. J. 379, 380 (2017)
vi. Frank Sauer & Niklas Schörnig. *Killer drones: The 'silver bullet' of democratic warfare?* 43 SECURITY DIALOGUE 363 (2012).
vii. Amos N. Guiora, Accountability and Decision Making in Autonomous Warfare: Who Is Responsible?, 2017 Utah L. Rev. 393, 394 (2017)
viii. Vik Kanwar, *Post-Human Humanitarian Law: The Law of War in the Age of Robotic Weapons*, 2 Harv. Nat'l Sec. J. 577 (2011)
ix. Bertram F. Malle, et al, *Sacrifice one for the good of many?: people apply different moral norms to human and robot agents*." Proceedings of the tenth annual ACM/IEEE international conference on human-robot interaction, pp. 117-124. ACM, 2015.
x. Gregory P. Noone & Diana C. Noone, *The Debate over Autonomous Weapons Systems*, 47 Case W. Res. J. Int'l L. 25 (2015)
xi. James Farrant, Christopher M. Ford, *Autonomous Weapons and Weapon Reviews: The Uk Second International Weapon Review Forum*, 93 Int'l L. Stud. 389 (2017)
xii. Samuel Mark Borowski, *Balancing Privacy with National Security Is Artificial Intelligence the Key to Warrantless Wiretaps?,* ABA SciTech Law., Spring 2010, at 18
xiii. [UMN Law student!] Amanda McAllister, *Stranger Than Science Fiction: The Rise of A.I. Interrogation in the Dawn of Autonomous Robots and the Need for an Additional Protocol to the U.N. Convention Against Torture*, 101 Minn. L. Rev. 2527 (2017).

7. **Brain Machine Interface: Man Meets Machine / Trans-Humanism and Enhanced Humans**
    a. Post on TWEN in one of three ways:
        i. Respond critically to the argument(s) of one of the academic articles below. Discuss one point of agreement, and one point of disagreement, with the author(s).
        ii. Discuss (one or a few of) the legal implications of transhumanism.
        iii. "Ripped from the headlines" post
    b. Videos (optional):
        i. Real Cyborgs and Brain Implants! https://youtu.be/_49Mp3wf6ac
        ii. CYBORG BLOB HAS ROBOT BRAIN AND LIVING TISSUE https://youtu.be/U5g1igQF6Yg
        iii. This real-life cyborg has an antenna implanted into his skull https://youtu.be/NivuCuwZ944
        iv. 10 Real Life Cyborgs https://youtu.be/zGca2IISfgE
        v. Nick Bostrom
            1. The end of humanity: Nick Bostrom at TEDxOxford https://youtu.be/P0Nf3TcMiHo
            2. Nick Bostrom, What happens when our computers get smarter than we are? https://youtu.be/MnT1xgZgkpk
        vi. Our Post-Human Future | David Simpson | TEDxSantoDomingo https://youtu.be/uAb-mSq615g
        vii. Elon Musk on becoming transhuman cyborgs to compete with A.I. https://youtu.be/2frtUraRWjI
            1. And see: Nick Statt, Elon Musk launches Neuralink, a venture to merge the human brain with AI (March 27, 2017), https://www.theverge.com/2017/3/27/15077864/elon-musk-neuralink-brain-computer-interface-ai-cyborgs
    c. **Read quickly** these magazine and news stories:
        i. Cade Metz, Facebook's Race to Link Your Brain to a Computer Might Be Unwinnable (April 27, 2017), https://www.wired.com/2017/04/facebooks-race-link-brain-computer-might-unwinnable/
        ii. Edd Gent, Brain-computer interfaces are coming: 'Consensual telepathy,' anyone? (June 11, 2017), https://www.washingtonpost.com/national/health-science/brain-computer-interfaces-are-coming-consensual-telepathy-anyone/2017/06/09/9345c682-46ef-11e7-98cd-af64b4fe2dfc_story.html
        iii. Kristen V. Brown, DARPA's Brain Chip Implants Could Be the Next Big Mental Health Breakthrough—Or a Total Disaster (March 6, 2017), http://gizmodo.com/darpa-s-brain-chips-could-be-the-next-big-mental-health-1791549701
    d. **Read**
        i. Nick Bostrom, Transhumanism-The World's Most Dangerous Idea?, (2004) https://nickbostrom.com/papers/dangerous.html

1. Skim: Excerpts from NICK BOSTROM, SUPERINTELLIGENCE: PATHS, DANGERS, STRATEGIES (2015)

ii. OWEN D. JONES, JEFFREY D. SCHALL & FRANCIS X. SHEN, LAW AND NEUROSCIENCE (2014), chapter on Brain-Machine Interface

iii. Excerpts from MICHAEL BESS, OUR GRANDCHILDREN REDESIGNED: LIFE IN THE BIOENGINEERED SOCIETY OF THE NEAR FUTURE (2015)

e. Additional Resources

i. Nick Bostrom, "A history of transhumanist thought." Journal of evolution and technology 14, no. 1 (2005): 1-25.

ii. Roland Benedikter, & Katja Siepmann. "“Transhumanism”: A New Global Political Trend?." *Challenge* 59, no. 1 (2016): 47-59.

iii. Susan W. Brenner, *Humans and Humans+: Technological Enhancement and Criminal Responsibility*, 19 B.U. J. Sci. & Tech. L. 215, 215 (2013)

iv. A number of relevant papers in the Journal of Evolution & Technology, online at http://jetpress.org/

v. Mark A. Attiah & Martha J. Farah. "Minds, motherboards, and money: futurism and realism in the neuroethics of BCI technologies." Frontiers in systems neuroscience 8 (2014): 86.

vi. Grübler, Gerd, and Elisabeth Hildt. "On Human–Computer Interaction in Brain–Computer Interfaces." In Brain-Computer-Interfaces in their ethical, social and cultural contexts, pp. 183-191. Springer Netherlands, 2014.

vii. Sean Burch, Meet the Human Cyborg Who Could Pave the Way for the Future (may 24, 2017), http://www.thewrap.com/human-cyborg-shows-future-of-human-machine/

viii. Jess Pitocco, Facebook Explores Neuroscience For Next Typing Revolution (May 1, 2017), http://www.mediafiledc.com/facebook-explores-neuroscience-next-typing-revolution/

ix. Parag G. Patil & Dennis A. Turner, The Development of Brain-Machine Interface Neuroprosthetic Devices, 5 Neurotherapeutics 137, 137-46 (2008).

x. Jens Clausen, Man, Machine and in Between, 457 Nature 1080 (2009)

xi. Eric Chan, The Food and Drug Administration and the Future of the Brain-Computer Interface: Adapting Fda Device Law to the Challenges of Human-Machine Enhancement, 25 J. Marshall J. Computer & Info. L. 117 (2007)

f. Stephen S. Wu & Marc Goodman, Neural Implants and Their Legal Implications, GPSolo, January/February 2013, at 68

8. **Black Box Medicine and Black Box Law**, with special (virtual) guest: Dr. Mason Marks, JD, MD, Yale Law School Information Society Project. Dr. Marks is exploring regulation of machine learning as used in medicine.
    g. Post on TWEN in one of three ways:
        i. Pose a question for Dr. Marks.
        ii. Respond critically to the argument(s) of one of the academic articles below. Discuss one point of agreement, and one point of disagreement, with the author(s).
        iii. "Ripped from the headlines" post
    h. **Read**
        i. W. Nicholson Price II, *Regulating Black-Box Medicine* (2017), https://ssrn.com/abstract=2938391
        ii. And skim as background:
            1. W. Nicholson Price II, Black-Box Medicine, 28 Harvard J. Law & Tech. 419 (2015)
        iii. Jack M. Balkin, *The Three Laws of Robotics in the Age of Big Data* (June 26, 2017 draft)
    i. Additional Resources
        i. Matthew Hutson, Q&A: Should artificial intelligence be legally required to explain itself? (May 31, 2017), http://www.sciencemag.org/news/2017/05/qa-should-artificial-intelligence-be-legally-required-explain-itself
        ii. Christopher Markou, Why using AI to sentence criminals is a dangerous idea (may 16, 2017), http://theconversation.com/why-using-ai-to-sentence-criminals-is-a-dangerous-idea-77734
        iii. Ben Plomion, Does Artificial Intelligence Discriminate? (May 2, 2017), https://www.forbes.com/sites/forbescommunicationscouncil/2017/05/02/does-artificial-intelligence-discriminate/
        iv. Investors Bet That Deep Sentinel's Advanced Artificial Intelligence Can Protect American Homes by Predicting Crime (May 1, 2017), http://www.businesswire.com/news/home/20170501005143/en/Investors-Bet-Deep-Sentinel%E2%80%99s-Advanced-Artificial-Intelligence
        v. Adam Liptak, Sent to Prison by a Software Program's Secret Algorithms (May 1, 2017), https://mobile.nytimes.com/2017/05/01/us/politics/sent-to-prison-by-a-software-programs-secret-algorithms.html
        vi. Sean Martin, China to use technology to predict crimes BEFORE they happen (July 25, 2017), http://www.express.co.uk/news/science/832390/AI-minority-report-POLICE-China-predict-crimes-BEFORE-they-happen
        vii. Yolanda Gil, et al, *Amplify scientific discovery with artificial intelligence*, 346 SCIENCE 171 (2014), http://www.sciencemag.org/content/346/6206/171.summary

9. Automated Attorneys

j. Post on TWEN in one of four ways:
   i. Respond critically to the argument(s) of one of the academic articles below. Discuss one point of agreement, and one point of disagreement, with the author(s).
   ii. Based on the readings below, make (and explain / defend) a prediction about how legal practice will change over the course of your career.
   iii. Based on the readings below, discuss how law schools should modify their legal education in light of these developments.
   iv. "Ripped from the headlines" post

k. **Watch** these short videos
   i. How A.I. Will Excel at Legal Work https://youtu.be/-Qec14tbNVg
   ii. Meet ROSS, Your Brand New Artificially Intelligent Lawyer https://youtu.be/ZF0J_Q0AK0E

l. **Read quickly** these magazine and news stories:
   i. Steve Lohr, A.I. Is Doing Legal Work. But It Won't Replace Lawyers, Yet (March 19, 2017), https://mobile.nytimes.com/2017/03/19/technology/lawyers-artificial-intelligence.html
   ii. Julie Sobowale, How artificial intelligence is transforming the legal profession (April 1, 2016), http://www.abajournal.com/magazine/article/how_artificial_intelligence_is_transforming_the_legal_profession

m. **Read (short)**: Josh Blackman, Robot, Esq. (2012), https://ssrn.com/abstract=2198672

n. **Skim** as background:
   i. Dana Remus & Frank S. Levy, *Can Robots Be Lawyers? Computers, Lawyers, and the Practice of Law* (2015), SSRN: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2701092

o. **Read ONE of the following:**
   i. Cary Coglianese & David Lehr, *Regulating by Robot: Administrative Decision Making in the Machine-Learning Era*, 105 Geo. L.J. 1147 (2017)
   ii. John O. McGinnis & Russell G. Pearce, *The Great Disruption: How Machine Intelligence Will Transform the Role of Lawyers in the Delivery of Legal Services*, 82 Fordham L. Rev. 3041 (2014)
   iii. Andrea Roth, *Machine Testimony*, 126 Yale L.J. 1972 (2017)
   iv. Kathryn D. Betts, Kyle R. Jaep, *The Dawn of Fully Automated Contract Drafting: Machine Learning Breathes New Life into A Decades-Old Promise*, Duke L. & Tech. Rev., March 29 2017, at 216
   v. Andrew Tutt, *An FDA for Algorithms*, 69 Admin. L. Rev. 83 (2017)
   vi. David Allen Larson, *Artificial Intelligence: Robots, Avatars, and the Demise of the Human Mediator*, 25 Ohio St. J. on Disp. Resol. 105 (2010)
   vii. Pamela S. Katz, *Expert Robot: Using Artificial Intelligence to Assist Judges in Admitting Scientific Expert Testimony*, 24 ALB. L.J. SCI. & TECH. 1 (2014)

p. Additional Resources

i. Robert Cadwallader, It's no R2D2, but Knightscope's crime-fighting robots aid police (March 9, 2017), www.star-telegram.com/news/local/community/arlington/article137468938.html
ii. John Sirman, *Artificial Intelligence and the Law*, 66 Tex. B.J. 17 (2003)
iii. Michael Linhort, Could a Robot Be President (July 8, 2017), http://www.politico.com/magazine/story/2017/07/08/robot-president-215342
iv. The world's first AI legal assistant | Andrew Arruda https://youtu.be/wwbr0fombFs
v. Benjamin Alaire, Computational Legal Research and the Advocates of the Future (2017), SSRN: https://ssrn.com/abstract=3015972
vi. Richard Susskind, The Future of the Professions, Vanderbilt Artificial Intelligence and Law conference (2016) https://youtu.be/xs0iQSyBoDE
vii. John Markoff, Armies of Expensive Lawyers, Replaced by Cheaper Software, N.Y. Times (Mar. 4, 2011)
viii. Kevin Ashley & Will Bridewell, Emerging AI & Law Approaches to Automating Analysis and Retrieval of Electronically Stored Information in Discovery Proceedings, 18 Artificial Intelligence & L. 311 (2010).
ix. Stuart Minor Benjamin, *Algorithms and Speech*, 161 U. Pa. L. Rev. 1445 (2013)
x. Elizabeth Kirley, *The Robot as Cub Reporter: Law's Emerging Role in Cognitive Journalism* (2017), SSRN: https://ssrn.com/abstract=2952151
xi. L. Thorne McCarty, *Reflections on Taxman: An Experiment in Artificial Intelligence and Legal Reasoning*, 90 Harv. L. Rev. 837 (1977)
xii. Paige E. Kohn, *How Artificial Intelligence Is Revolutionizing the Legal Practice*, Litigation, Fall 2016, at 12
xiii. Pamela N. Gray, Artificial Legal Intelligence (1997)
xiv. Harry Surden, *Machine Learning and Law*, 89 Wash. L. Rev. 87 (2014)
xv. Olga Mack et. al., *Artificial Intelligence Meets the Mainstream: Ai's Potential Impact on in-House Practice*, ACC Docket, March 2017, at 26, 30
xvi. IBM Watson: How it Works https://youtu.be/_Xcmh1LQB9I
xvii. Andrew Arruda, *An Ethical Obligation to Use Artificial Intelligence? An Examination of the Use of Artificial Intelligence in Law and the Model Rules of Professional Responsibility*, 40 Am. J. Trial Advoc. 443 (2017)
xviii. Daniel Ben-Ari et. al., *"Danger, Will Robinson"? Artificial Intelligence in the Practice of Law: An Analysis and Proof of Concept Experiment*, 23 Rich. J.L. & Tech. 3 (2017)
xix. Nancy B. Talley, *Imagining the Use of Intelligent Agents and Artificial Intelligence in Academic Law Libraries*, 108 Law Libr. J. 383 (2016)
xx. Daniel Martin Katz, *The MIT School of Law? A Perspective on Legal Education in the 21st Century*, 2014 U. Ill. L. Rev. 1431 (2014)

10. **Deep Learning**, with special (in person) guest: Dr. Jed Ellision, PhD, University of Minnesota Institute of Child Development. Dr. Ellison is leading efforts to use deep learning to predict onset of autism.
    q. Post on TWEN in one of two ways:
        i. Pose a question for Dr. Ellison.
        ii. "Ripped from the headlines" post
    r. **Watch**
        i. Jed Ellison 45 second video: https://youtu.be/TXi2vFVumyY
        ii. 60 Minutes coverage of this research: https://youtu.be/EIHLShRpKLM
    s. **Read**
        i. Heather Cody Hazlett, et al, Early Brain Development In Infants At High Risk For Autism Spectrum Disorder, 542 Nature 348 (2017), http://www.nature.com/nature/journal/v542/n7641/full/nature21369.html
        ii. Robert W. Emerson, et al, *Functional Neuroimaging Of High-Risk 6-Month-Old Infants Predicts A Diagnosis Of Autism At 24 Months Of Age*, 9 SCI TRANSL MED.(2017), http://stm.sciencemag.org/content/9/393/eaag2882.full
    t. **Skim**
        i. Pat Walsh, et al, *In Search Of Biomarkers For Autism: Scientific, Social And Ethical Challenges*, 12 NATURE REVIEWS NEUROSCIENCE 603 (2011), http://www.nature.com/nrn/journal/v12/n10/full/nrn3113.html
    u. **Additional Resources**
        i. Joshua Preston, et al, *The Legal Implications of Early Alzheimer's Detection*, 18 AMA JOURNAL OF ETHICS 1207 (2016).
        ii. William D. Graf, *Communicating Concern about Early Signs of Autism to Parents*, 17 AMA JOURNAL OF ETHICS 310 (2015), http://journalofethics.ama-assn.org/2015/04/ecas3-1504.html
        iii. Sam Levin, New AI can guess whether you're gay or straight from a photograph (Sept 7, 2017), https://www.theguardian.com/technology/2017/sep/07/new-artificial-intelligence-can-tell-whether-youre-gay-or-straight-from-a-photograph

11. Virtual Reality

v. Post on TWEN in one of three ways:
   i. Respond critically to the argument(s) of one of the academic articles below. Discuss one point of agreement, and one point of disagreement, with the author(s).
   ii. Identify a virtual reality experience / technology, and discuss (some of) its legal implications.
   iii. "Ripped from the headlines" post

w. **Read ONE of the following**
   i. Marc Jonathan Blitz, *The Freedom of 3d Thought: The First Amendment in Virtual Reality*, 30 CARDOZO L. REV. 1141 (2008)
   ii. Joshua A.T. Fairfield, *Mixed Reality: How the Laws of Virtual Worlds Govern Everyday Life*, 27 BERKELEY TECH. L.J. 55 (2012)
   iii. Jaclyn Seelagy, *Virtual Violence*, 64 UCLA L. Rev. Discourse 412 (2016)
   iv. Andrew Gilden, *Punishing Sexual Fantasy*, 58 WM. & MARY L. REV. 419 (2016)

x. Additional Resources
   i. Miriam A. Cherry, *A Taxonomy of Virtual Work*, 45 Ga. L. Rev. 951 (2011)
   ii. Gilad Yadin, Virtual Reality Intrusion, 53 Willamette L. Rev. (2016), https://ssrn.com/abstract=2983682
   iii. David Fink & Jamie Zagoria, Virtual Reality And The Law: Parts 1 and 2 (Jan 11, 2017): https://www.law360.com/articles/879785/virtual-reality-and-the-law-part-1
   iv. Gregory P. Joseph, *Virtual Reality Evidence*, 2 B.U. J. Sci. & Tech. L. 12 (1996) [UMN Law grad!]
   v. Neal Feigenson, *Too Real? The Future of Virtual Reality Evidence*, 28 LAW & POLICY 271 (2006).
   vi. Carrie Leonetti & Jeremy Bailenson, *High-Tech View: The Use of Immersive Virtual Environments in Jury Trials*, 93 Marq. L. Rev. 1073 (2010)
   vii. Can a defendant be sentenced via virtual reality? See: Federal Rules of Criminal Procedure, Rule 43; *United States v. Lawrence*, 248 F.3d 300 (4th Cir. 2001); United States v. Williams, 641 F.3d 758, 764 (6th Cir. 2011).

12. Autonomous Vehicles

y. Post on TWEN in one of three ways:
   i. Critique an autonomous vehicle statute—or start to design your own.
   ii. Add your view on the ethical and legal dilemmas posed by autonomous vehicles. Make reference to one of today's readings.
   iii. "Ripped from the headlines" post

z. **Find** an Autonomous Vehicle Statute (any state) and read it.

aa. **Skim**
   i. Dorothy J. Glancy, Privacy in Autonomous Vehicles, 52 Santa Clara L. Rev. 1171 (2012)
   ii. Gary E. Marchant & Rachel A. Lindor, *The Coming Collision Between Autonomous Vehicles and the Liability System*, 52 Santa Clara L. Rev. 1321 (2012)

bb. **Read**
   i. John Markoff, *Should Your Driverless Car Hit a Pedestrian to Save Your Life?* (June 23, 2016), http://www.nytimes.com/2016/06/24/technology/should-your-driverless-car-hit-a-pedestrian-to-save-your-life.html
   ii. Jean-François Bonnefon, et al, The social dilemma of autonomous vehicles, 352 Nature 1573 (2016), http://science.sciencemag.org/content/352/6293/1573
   iii. Joshua D. Greene, Our Driverless Dilemma, 352 Nature 1514 (2016), http://science.sciencemag.org/content/352/6293/1514

cc. Additional resources
   i. University of Minnesota Law School Journal of Law, Science, and Technology special symposium on autonomous vehicles: 16 Minn. J. L. Sci. & Tech (2015)
   ii. Tom Vanderbilt, Autonomous Cars Through the Ages, Wired (Feb. 6, 2012), http://www.wired.com/2012/02/autonomous-vehicle-history
   iii. Chris Urmson: How a driverless car sees the road https://youtu.be/tiwVMrTLUWg
   iv. Are we ready for driverless cars? | Lauren Isaac https://youtu.be/kSmTF6KoUb8
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13. Final Class and Student Presentations

No new reading

Student Presentations and concluding discussion