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Teaching Law and Artificial Intelligence

Brendan Johnson* & Francis X. Shen**

ABSTRACT

In this Essay we present the first detailed analysis of how U.S. law schools are beginning to offer more courses in Law and Artificial Intelligence. Based on a review of 197 law school course catalogs available online, we find that 26% of law schools offer at least one course with significant coverage of Law & AI, and that 13% of schools offer more than one such course. Analysis of the data suggests that Law & AI courses are more likely to be offered at higher ranked law schools.

Based on this analysis, and in light of the growing importance of AI in legal domains, we offer four recommendations. First, for those schools that do not currently offer a course, we advocate for creation of at least one introductory course that directly engages AI issues. For those schools that already have an introductory course, we suggest that AI issues be more broadly engaged throughout the curriculum. Third, to facilitate these two goals, we argue that law schools must continue to improve interdisciplinary partnerships with other university departments and local institutions that can provide expertise in AI and machine learning. Finally, to catalyze law school investment in this area,

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we suggest that U.S. News and World Report create a new rank-
ing category: Best Law & AI Programs.

The Essay is organized in five parts. After a brief introduc-
tion in Part I, we proceed in Part II to introduce our new database
of current U.S. law school course offerings in Law & AI. We de-
scribe the methods we used to search and code courses, and make
available for readers a google sheet database providing key de-
tails on each course such as instructor, credit hours, and course
description. We identify 115 courses for inclusion in the database.
Part III discusses the findings gleaned from the database and of-
fers our core recommendations. In Part IV, we present a User's
Guide to Teaching Law & AI, with insights from both professor
and student perspectives on what strategies can be used to de-
velop an effective Law & AI course. Part V concludes.

I.   INTRODUCTION

It is now well recognized that artificial intelligence (AI) and machine learning (ML) will have significant implications for legal theory and practice.[1] Sectors as diverse as patent law,[2] criminal law,[3] torts,[4] human rights,[5] climate change,[6] healthcare,[7] finance,[8] and transportation[9] all face imminent and abrupt changes in light of rapid advances in AI and ML technology.

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1.   *See generally* Harry Surden, *Artificial Intelligence and Law: An Overview*, 35 GA. ST. U. L. REV. 1305, 1306 (2019) (noting that "[m]uch has been written recently about artificial intelligence (AI) and law"); RYAN ABBOTT, THE REASONABLE ROBOT: ARTIFICIAL INTELLIGENCE AND THE LAW (2020) (discussing proposals for how the law should approach AI); REGULATING ARTIFICIAL INTELLIGENCE (Thomas Wischmeyer & Timo Rademacher, eds., 2020) (discussing how the legal system regulates AI); Ray Worthy Campbell, *Artificial Intelligence in the Courtroom: The Delivery of Justice in the Age of Machine Learning*, 18 COLO. TECH. L.J. 323, 323 (2020) (suggesting that "AI will play an increasingly important role in judicial chambers").

2.   *See generally* Emna Chikhaoui & Saghir Mehar, *Artificial Intelligence (AI) Collides with Patent Law*, 23 J. LEGAL, ETHICAL & REG. ISSUES 1 (2020) (discussing implications of AI for patent law); Tabrez Y. Ebrahim, *Artificial Intelligence Inventions & Patent Disclosure*, 125 PENN ST. L. REV. 147, 165 (2020) (arguing that "greater disclosure of AI-based tools and AI-generated output is essential for growth of AI innovation and explains how maximizing AI disclosure would promote aggregate welfare").

3.   *See generally* Alberto De Diego Carreras, *The Moral (Un)intelligence Problem of Artificial Intelligence in Criminal Justice: A Comparative Analysis Under Different Theories of Punishment*, UCLA J.L. & TECH., Fall 2020, at Part I (discussing the implications of morality for the use of AI in criminal justice); William S. Isaac, *Hope, Hype, and Fear: The Promise and Potential Pitfalls of Artificial Intelligence in Criminal Justice*, 15 OHIO ST. J. CRIM. L. 543 (2018) (discussing success and failures for the use of AI in criminal justice).

4.   *See generally* Megan Sword, *To Err Is Both Human and Non-Human*, 88 UMKC L. REV. 211, 212 (2019) (warning of the need for development of a theory of comprehensive AI liability, or that "medical, decision-makers . . . take full legal responsibility for AI error"); Sarah Kamensky, *Artificial Intelligence and Technology in Health Care: Overview and Possible Legal Implications*, DEPAUL J. HEALTH CARE L., Spring 2020, at 1 (arguing that traditional tort liability standards may be applicable to "error involving artificial intelligence in medical settings").

5.   *See generally* Kristian P. Humble & Dilara Altun, *Artificial Intelligence and the Threat to Human Rights*, 24 J. INTERNET L. 1, 13 (2020) (arguing that use of AI has increased discrimination in "employee retention, the criminal justice system, police enforcement" and "on racial, gender, and religious grounds").

6.   *See generally* Amy L. Stein, *Artificial Intelligence and Climate Change*, 37 YALE J. ON REG. 890, 938 (2020) (discussing how climate-related AI will have "environmental, privacy, investment, and accountability implications").

7.   *See generally* Julia Powles & Hal Hodson, *Google DeepMind and Healthcare in an Age of Algorithms*, 7 HEALTH & TECH. 351, 351 (2017) (explor-

As scholarship and policy analysis is beginning to explore, a broad range of questions remain unanswered at the intersection of law and AI. When is it ethical to employ AI in warfare?[10] Are we unknowingly ingraining racial biases into our algorithms?[11] Who holds the copyright to art created by AI?[12] Who bears liability for torts committed by AI-controlled robots?[13] AI experts cannot even agree on foundational definitions of what AI is—let

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ing the ethics of Google DeepMind's "transfer of identifiable patient records . . . without explicit consent, for the purpose of developing a clinical alert app for kidney injury").

8.   *See generally* Tom C.W. Lin, *Artificial Intelligence, Finance, and the Law*, 88 FORDHAM L. REV. 531, 531 (2019) (examining the myriad ways that "artificial intelligence and misunderstandings of it can harm and hinder law, finance, and society" and arguing for more financial tasks to be performed by humans); William Magnuson, *Artificial Financial Intelligence*, 10 HARV. BUS. L. REV. 337 (2020) (describing the current state of AI's application to the financial industry and pointing out its risks).

9.   *See generally* NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION, PREPARING FOR THE FUTURE OF TRANSPORTATION: AUTOMATED VEHICLES 3.0 (Oct. 2018), https://www.transportation.gov/sites/dot.gov/files/docs/policy-initiatives/automated-vehicles/320711/preparing-future-transportation-automated-vehicle-30.pdf (defining the goals of the U.S. Department of Transportation for automated vehicles); John W. Terwilleger, *Navigating the Road Ahead: Florida's Autonomous Vehicle Statute and Its Effect on Liability*, FLA. B.J., July–Aug. 2015 (summarizing the effects of and blind spots in Florida's autonomous vehicle statute).

10.   *See* Elizabeth Fuzaylova, *War Torts, Autonomous Weapon Systems, and Liability: Why A Limited Strict Liability Tort Regime Should Be Implemented*, 40 CARDOZO L. REV. 1327, 1331 (2019) (proposing "a limited strict liability tort regime standard for regulating autonomous and semi-autonomous weapons"); *see also* Rebecca Crootof, *War Torts: Accountability for Autonomous Weapons*, 164 U. PA. L. REV. 1347, 1348 (2016) ("[A]utonomous weapon systems highlight the need for 'war torts': serious violations of international humanitarian law that give rise to state responsibility.").

11.   *See* Aziz Z. Huq, *Racial Equity in Algorithmic Criminal Justice*, 68 DUKE L.J. 1043, 1047–52 (2018) (discussing examples where the use of algorithmic tools for criminal justice has troubling results); *see also* Vivian D. Wesson, *Why Facial Recognition Technology Is Flawed*, N.Y. ST. B.J., August 2020, at 20 (discussing instances where facial recognition technology led to false arrests of people of color).

12.   *See* Shlomit Yanisky-Ravid, *Generating Rembrandt: Artificial Intelligence, Copyright, and Accountability in the 3A Era—The Human-like Authors Are Already Here—A New Model*, 2017 MICH. ST. L. REV. 659, 707–18 (2017) (discussing whether AI created works should be eligible for copyright protection).

13.   *See* Gary E. Marchant & Rachel A. Lindor, *The Coming Collision Between Autonomous Vehicles and the Liability System*, 52 SANTA CLARA L. REV. 1321, 1326–39 (2012) (discussing how liability for car accidents involving autonomous vehicles may operate in practice).

alone what we should do about it[14]—a reality that belies the complexity of the problems accompanying AI's adoption.

Fortunately, these issues have not gone unnoticed. Across the globe, many initiatives are underway to examine, and indeed shape, future ethical guidance for and regulation of AI. Prominent efforts include Responsible AI,[15] the IEEE Global Initiative for Ethical Considerations in Artificial Intelligence and Autonomous Systems,[16] The Future of Life Institute,[17] Future Advocacy,[18] and OpenAI.[19] In 2019, the American Bar Association adopted a resolution at its annual meeting urging "courts and lawyers to address the emerging ethical and legal issues related to the usage of AI in the practice of law."[20]

In light of these important developments, we address the question: how can rapid developments in AI, law, and ethics be most effectively taught in U.S. law schools?

We offer a unique perspective on this question, as one co-author (Shen) introduced the first Law and Artificial Intelligence seminar at the University of Minnesota Law School, and the other co-author (Johnson) experienced the seminar as a stu-

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14. *See* Seth Baum et al., *Modeling and Interpreting Expert Disagreement About Artificial Superintelligence*, 41 INFORMATICA 419, 419 (2017) (reviewing expert disagreements on if Artificial Superintelligence "will be built, when it would be built, what designs it would use, and what its likely impacts would be").

15. *See Global Perspectives on Responsible AI*, RESPONSIBLE AI, https://responsible-ai.org/global-perspectives-on-responsible-ai/ (last visited Aug. 14, 2020) (presenting a research symposium on Responsible AI).

16. *See IEEE Global Initiative for Ethical Considerations in Artificial Intelligence (AI) and Autonomous Systems (AS) Drives, Together with IEEE Societies, New Standards Projects; Releases New Report on Prioritizing Human Well-Being*, IEEE STANDARDS ASSOCIATION (Jul. 19, 2017), https://standards.ieee.org/news/2017/ieee_p7004.html (announcing work on AI standards).

17. *See The Future of Life Institute Team Members*, FUTURE OF LIFE INSTITUTE, https://futureoflife.org/team/?cn-reloaded=1 (last visited Aug. 14, 2020) (discussing the mission of the Future of Life Institute).

18. *See Future Advocacy AI Think Tank*, FUTURE ADVOCACY, https://futureadvocacy.com/ai-think-tank/ (last visited Aug. 14, 2020) (discussing the mission of the Future Advocacy think tank).

19. *See About*, OPENAI, https://openai.com/about/ (last visited Mar. 19, 2021) (discussing the mission of OpenAI).

20. Nicolas Economou, *Artificial Intelligence and the Law: The ABA's Important and Timely Contribution*, AM. BAR ASS'N (Aug. 26, 2019), https://www.americanbar.org/groups/business_law/publications/committee_newsletters/legal_analytics/2019/201908/ai_law/.

dent. To offer additional comparative perspective, we constructed the first database of Law & AI courses offered in U.S. law schools. Analysis using this database suggests that while Law & AI courses appear to be on the rise, there is great variation across law schools in the depth, frequency, and variety of Law & AI course offerings.

Based on this analysis, and on our own experiences as a professor and student in the Law and Artificial Intelligence seminar, we make four recommendations. First, and most immediately, law schools that do not offer a course in Law and AI should do so. To facilitate course development, the online Appendix provides a listing of key information from each course in the database. Second, for those schools that already have an introductory course, we suggest that AI issues be more broadly engaged throughout the curriculum through dedicated courses and by revising current course offerings. Third, to facilitate these two goals, we argue that law schools must continue to improve interdisciplinary partnerships with other university departments, local firms, and institutions that can provide expertise in AI and ML. Finally, just as U.S. News and World Report offers rankings in sub-fields such as "Best Health Law" programs, we argue that it (or some other institution) should begin a new ranking category on "Best Law and Artificial Intelligence Programs." Such rankings would catalyze investments in this area of teaching and research.

The Essay is organized in five parts. After a brief introduction in Part I, we proceed in Part II to introduce the new database of current U.S. law school course offerings in Law & AI. We describe the methods we used to search and code courses, and we make available for readers a google sheet database providing key details on each course, such as instructor, credit hours, and course description. Based on this review of all published Law & AI course offerings in ABA approved law schools in the United States, we find that, through the 2019–20 academic year, 26% of the approximately top 200 ranked U.S. law schools offer (or recently offered) a Law & AI course. But only 13% of schools appear to offer more than one Law & AI course. In Part III, we further discuss the empirical findings, highlight emerging trends, and recommend strategies to improve law school pedagogy in response the challenges posed by AI. In Part IV, we present a User's Guide to Teaching Law & AI, with insights from both professor and student perspectives. We stress that, although there are many reasonable design choices, there are three

core themes that every Law & AI course should include: (1) conceptual clarification, (2) exposure to AI expertise, and (3) anticipatory governance / future planning amidst rapid change. Part V concludes.

II. LANDSCAPE OF CURRENT AND RECENT LAW & AI COURSE OFFERINGS IN U.S. LAW SCHOOLS

In this Part we present our analysis of current and recent law school course offerings in Law & AI. Before digging into our review, however, it is important to recognize that there were efforts in earlier decades to offer courses on the intersection of artificial intelligence and law. In this Essay we do not trace the history of Law & AI courses in law schools, but one of the earliest classes that we are aware of was taught at Harvard Law School by Dr. Edwina Rissland in the period 1985 to 1996.[21] Dr. Rissland's courses and research sought to conceptualize legal reasoning into forms employable by AI programs.[22] Relatedly, the first International Conference on AI and law took place in Boston in 1987.[23] Future scholarship might endeavor to connect this earlier era of courses with contemporary offerings.

A. BUILDING A LAW & AI COURSE DATABASE: METHODS AND LIMITATIONS

1. Methods

To identify current and recent law school courses focused on Law & AI, we operationalized "recent" to include any courses offered in the past five years, i.e., since the Spring 2016 Semester. We defined a course as "focused on Law & AI" as any course in which at least one third of the course was devoted to issues at the intersection of law & AI. We made determinations of course

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21. *Biosketch for Edwina Rissland*, U. MASS., https://people.cs.umass.edu/~rissland/ (last visited Aug. 14, 2020).

22. *See, e.g.*, Edwina Rissland, *Artificial Intelligence and Law: Stepping Stones to a Model of Legal Reasoning*, 99 YALE L.J. 1957, 1980 (1990) (showing "how AI and law researchers are pursuing their twin goals of analytic and practical advances, and how past and ongoing research can be viewed as a coherent attempt to model legal reasoning, particularly argumentation").

23. Trevor Bench-Capon et al., *A History of AI and Law in 50 Papers: 25 Years of the International Conference on AI and Law*, 20 A.I. & L. 215, 215 (2012), https://www.researchgate.net/publication/257449742_A_history_of_AI_and_Law_in_50_papers_25_years_of_the_international_conference_on_AI_and_Law.

content based primarily on course descriptions and, where available, on course syllabi.[24]

With these search criteria, we examined the web sites for each of 197 law schools listed in the U.S. News and World Report rankings list with publicly available course catalogs.[25] We systematically reviewed the available course listings, which most often took the form of compiled course catalogs or searchable online course databases. We then searched those catalogs and databases separately for the terms "artificial," "AI," "A.I.", "robot" and "technology." We reviewed all returned hits and identified courses that met our criteria listed above.

To further improve the accuracy of our database, we sent an email to each of the seventy-five professors in our database whose email was publicly available on their law school's website. In these emails, we asked the professors to confirm the accuracy of our information regarding the course(s) they teach. We received a response rate of 47%, and the responses facilitated a more accurate database by clarifying that some courses should not be included and also identifying additional courses for inclusion.

We compiled the relevant results in a google sheet database, listing the course name, professor, number of credits, course URL, year first offered, and any texts listed for use in the course.[26] We then categorized each course into one of seven categories (see below under "Results") based on a review of the titles and descriptions of the courses.

We recognize that our approach likely undercounts the actual number of Law & AI courses, though by how much we do not know. Several limitations deserve note. First, our data are

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24.   For example, the "Inequality, Labor, and Human Rights: The Future of Work in the Age of Pandemic" course at the University of Texas School of Law was included because the course description suggested that AI displacement of labor force would be a prevalent theme for at least a third of the course. Conversely, University of Pennsylvania Law's course "Law and Ethics of Biotechnology" was omitted because AI was just one of over ten foci listed in the course description. Insofar as course listings were ambiguous in their scope or unclear as to how great the focus on AI-related topics was, the data may be imperfect. Nonetheless, to the authors' knowledge, this remains the best available data set on this topic.

25.   Schools that were either on probation or not ABA accredited at the time of the survey were excluded from the results.

26.   https://docs.google.com/spreadsheets/d/1B_Gf7-eBL2wseGsAbJvJOXdjS_21P7NcYpxT6se49h8/edit?usp=sharing

based only on publicly available information on law school web sites. If a law school's course offerings were not updated, or were presented to students only in a password protected portion of the site, then our data set will be missing courses.

Additionally, while the search terms were designed to discover as many relevant courses as possible, our searches would not reveal courses that lacked these terms (in either their titles or course descriptions) but featured relevant course content. For instance, if a professor in an Evidence class decided to devote a large portion of the class to how the Rules of Evidence should handle deep fake images and machine-generated evidence, that class would not have been captured in our database. Moreover, because our searches solely referenced offerings listed in law school catalogs, relevant courses offered in other schools within universities are not included. For instance, courses for undergraduates taught in a particular college and courses taught for graduate students in engineering would not be included in our database because of our exclusive focus on law school course offerings.

Although these are important methodological limitations, it remains the most robust picture of the state of Law & AI education in U.S. law schools.

2. Results

Our data set reveals several trends in course offerings. First, of the 197 schools we examined, only fifty-one (or 26%) offered a course in Law & AI. Of the schools that offer such courses, only twenty-six offer multiple courses. Harvard Law leads the way with nine, and Stanford Law and Georgetown Law are close behind with eight courses each. This trend also reflects, of course, overall faculty size. A larger faculty allows for a larger number of course offerings and a broader range of course topics.

AI & Law courses tend to cluster at higher ranked law schools. Over half (sixty-eight) of all AI law courses are taught in the top thirty law schools, while only twelve of such courses exist in the bottom one hundred schools.

Figure 1: Law and AI Course Offerings, by U.S. News and World Report Law School Rank

Groups of Law Schools, by US News & World Report Ranking
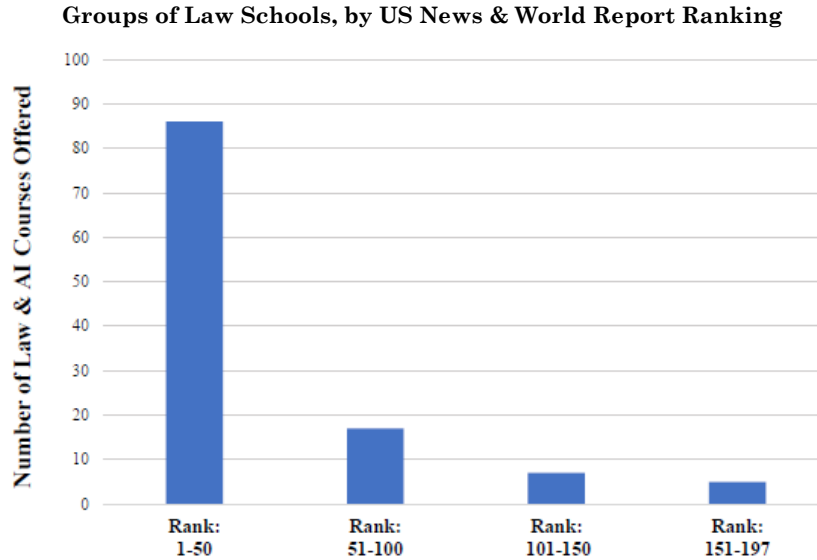
That several top schools are leading the way in Law & AI courses is consistent with these schools' efforts in Law & AI scholarship. For instance, Stanford Law School collaborated with the Administrative Conference of the United States and NYU School of Law to produce the February 2020 report, Government by Algorithm: Artificial Intelligence in Federal Administrative Agencies.[27] In 2019, Stanford Law similarly produced the report, Administering by Algorithm: Artificial Intelligence in the Regulatory State.[28] At Harvard Law School, the Petrie-Flom Center for Health Law Policy, Biotechnology, and Bioethics launched a project on Precision Medicine, Artificial Intelligence,

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27.   Todd Rubin, *ACUS, Stanford Law School, and NYU School of Law Announce Report on Artificial Intelligence in Federal Agencies*, ADMIN. CONF. U.S., (Feb. 18, 2020, 9:09 AM), https://www.acus.gov/newsroom/news/acus-stanford-law-school-and-nyu-school-law-announce-report-artificial-intelligence.

28.   Erin I. Garcia de Jesus, *Stanford Policy Lab Explores Government Use of Artificial Intelligence*, STAN. L. SCH. (March 17, 2019), https://law.stanford.edu/press/stanford-policy-lab-explores-government-use-of-artificial-intelligence-2/.

and the Law.[29] At Duke Law School, the Center for Innovation Policy has hosted multiple events concerning AI, including a conference on AI in the Administrative State: Applications, Innovations, Transparency, Adaptivity.[30]

Looking at course content, "overview" courses (i.e., surveys of AI-related legal issues) dominate the class offerings by volume, and they do so by a wide margin. Table 1 summarizes findings on Law & AI course type frequency and total.

Table 1: Number of Law and AI Courses, by Subject Matter Coverage[31]

Course Category	Number of Courses
Overview Courses	60
AI and Legal Practice	31
AI and War/National Security	5
Autonomous Vehicles	6
International Perspective on AI	3
AI and Human Rights	4
AI and Healthcare	3
AI and Cybersecurity	4

At this stage in the development of the field of Law & AI, it is understandable that overview courses are most prominent. Addressing many topics in a survey course allows a professor to guide students in identifying overarching principles and through-lines in the field. Second, given the recency of the explosion of many AI legal applications, it is unclear which topics will become most important in the near and more distant future. Narrow specialization of a course risks focusing on a set of issues or technologies that may quickly become obsolete.

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29. *The Project on Precision Medicine, Artificial Intelligence, and the Law (PMAIL)*, THE PETRIE-FLOM CTR., https://petrieflom.law.harvard.edu/research/precision-medicine-artificial-intelligence-and-law.

30. *AI in the Administrative State*, DUKE L., https://law.duke.edu/events/ai-administrative-state-applications-innovations-transparency-adaptivity/.

31. Courses with three or more topics of distinct focus were counted as overview courses for the purposes of this Essay, while courses with two or fewer specialized topics were categorized according to the topic that appeared to dominate the course. Accordingly, some courses will touch on topics outside their categorization in this Essay. No courses were counted in more than one category.

With regard to course content, we found that few classes assign textbooks to students. This suggests either a lack suitable texts, or, more likely, a professorial preference for synthesizing individual sources. For those that would welcome a single text, a number of options are now available.[32]

The number of credits offered per class varied more than the type of class offered. Figure 2 summarizes Law & AI courses, by the number of course credits. Most courses are two credit courses, and most of the overview courses are offered for two credits.[33]

Figure 2: Number of Courses, by Credit Load[34]

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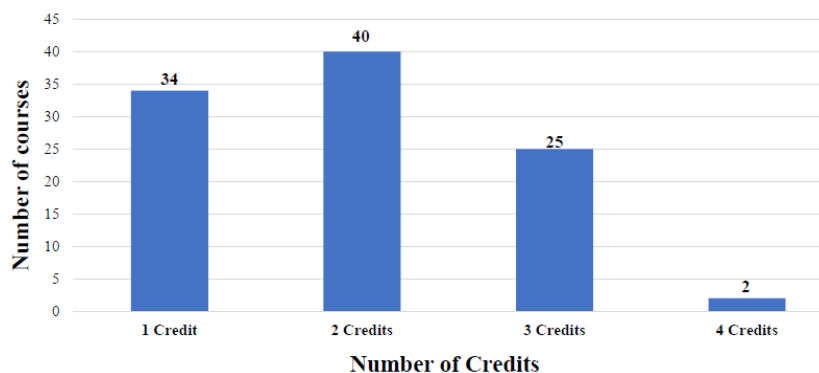
32. *See, e.g.*, WOODROW BARFIELD & UGO PAGALLO, ADVANCED INTRODUCTION TO LAW AND ARTIFICIAL INTELLIGENCE (2020); SAMIR CHOPRA & LAURENCE F. WHITE, A LEGAL THEORY FOR AUTONOMOUS ARTIFICIAL AGENTS (2011); JERRY KAPLAN, HUMANS NEED NOT APPLY (2015); PATRICK LIN ET AL., ROBOT ETHICS: THE ETHICAL AND SOCIAL IMPLICATIONS OF ROBOTICS (2014); PATRICK LIN ET AL., ROBOT ETHICS 2.0: FROM AUTONOMOUS CARS TO ARTIFICIAL INTELLIGENCE (2019); UGO PAGALLO, THE LAW OF ROBOTS: CRIMES, CONTRACTS & TORTS (2013 ed.); WENDELL WALLACH & COLIN ALLEN, MORAL MACHINES (2010).

33. For classes that offered variable credits (e.g., able to be taken for 2 credits or able to be taken for 3 credits), we counted the class for the highest available credit load only. We rounded all credit offerings to the nearest whole credit (e.g., some schools offered classes listed for 1.5 credits). We did not include in this chart the thirteen courses that did not list their credit load, or the one course listed as offered for zero credits, though all of these courses appear in the google sheet housing the data set.

34. Thirteen course descriptions failed to divulge their credit load, and one course was offered for zero credits. None of these courses are included in Figure 2.

III. DISCUSSION AND RECOMMENDATIONS

The analysis in Part II established that only 26% of U.S. law schools offer a course in Law & AI. In this Part, we argue that this is problematic because AI has so many potential implications across a range of practice specialties. Law students should be equipped to handle AI-related questions.

Law professors are already recognizing that AI is worthy of deep consideration. In Figure 3, we graph the number of law review articles published per year since 1969 that refer to artificial intelligence or machine learning.[35] As seen in Figure 3, the number of law review articles considering AI took a jump in the early 1990s with the advent of the internet, and then expanded exponentially starting around 2012. This increase in scholarly literature demonstrates that a growing number of law professors are recognizing that legal theory and practice may be affected by AI in novel and interesting ways.

Figure 3. Law Review Articles Referencing Artificial Intelligence, by Publication Year, 1969–2020

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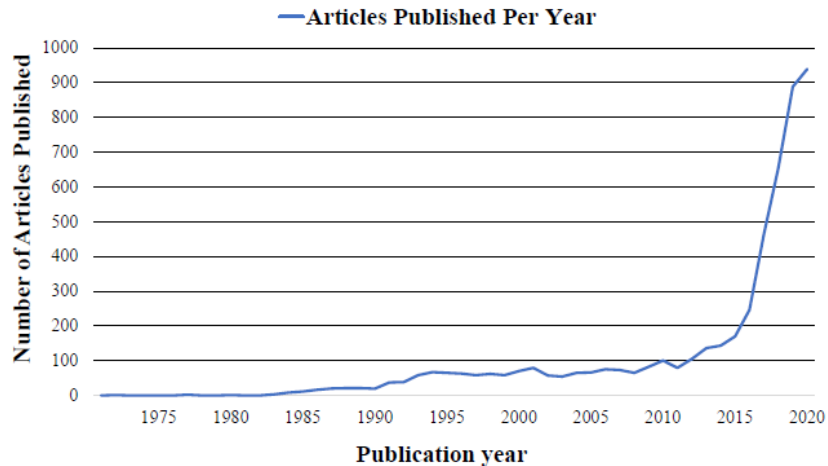
35. We derived these numbers using the advanced search feature in Westlaw's "Law Reviews & Journals" database to search in each year since 1969 for all law review articles containing the phrase "artificial intelligence."

But it's not just theory. In legal practice too, law firms and professional organizations are increasingly recognizing the importance of AI. For example, attorney Robert Kantner, a member of Jones Day's Autonomous Vehicles Artificial Intelligence Robotics (AVAIR) Team, embraces the uptick in interest for Law & AI, predicting that "the subject will begin to be woven into traditional classes, such as product liability classes and regulatory classes, administrative classes and the like."[36] Kantner notes that AI applications are increasingly used in document review, a necessary yet monotonous task throughout the profession.[37] Still other commentators agree that "lawyers, law firms, and businesses that do not get on the AI bandwagon will increasingly be left behind, and eventually displaced."[38]

Recommendation #1: Introduce a Law & AI Course in Every Law School. Given the recognition that AI and ML matter for legal theory and legal practice, we believe that it is essential for law schools to offer courses in Law & AI. We think the most straightforward solution is to begin by offering a survey course in Law & AI. But other (not mutually exclusive) options abound. For instance, schools could integrate AI into the 1L curriculum, or into large courses such as Evidence. For a law student to graduate without exposure to AI will be increasingly problematic as legal practice quickly shifts.

Recommendation #2: More Specialized Courses. Survey courses in Law & AI offer numerous benefits and are foundational to training law students. But more specific topic-focused courses—courses that approach a narrower topic instead of surveying the potential effects of AI across the board—will allow students a much deeper look at how an area of law can be affected by AI in multiple ways. To illustrate, consider a course that just focused on AI and tort liability. In such a course, the students might consider questions such as: How should products liability law treat design defects cases in autonomous vehicles—with the risk-utility test or the consumer expectations test? Do

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36. Jared Council, *Top Law Schools Add AI Courses*, WALL ST. J. (Apr. 22, 2019, 5:30 AM), https://www.wsj.com/articles/top-law-schools-add-ai-courses-11555925401?ns=prod/accounts-wsj.

37. *Id.*

38. Gary E. Marchant, *Artificial Intelligence and the Future of Legal Practice*, 14 SCITECH L. 20, 21 (2017).

the policies underlying these concepts touch autonomous vehicles in a different way than, for example, a poorly located gas tank on a Ford Pinto? Who is liable for a misdiagnosis in a medical malpractice case where an algorithm failed to identify a tumor in a magnetic resonance imaging (MRI) scan? Will or should hospitals be seen to have breached their duty to patients when they do not employ AI that routinely outperforms radiologists in reading MRI scans? Where does *res ipsa loquitor* fit into circumstances in which a product itself is making informed choices on courses of action after leaving the manufacturer or user's direct control? This small sampling of torts questions demonstrates ample room for development and new thought in just one area, let alone the many other distinct topics that might be introduced in an AI overview course.

Recommendation #3: More Interdisciplinary Collaboration. Expanding Law & AI course offerings, both overview and specialty courses, will require law schools to broaden their interdisciplinary collaborations. For law schools placed within a larger university system, the natural partnerships to build are those with departments such as engineering and computer science. For independent law schools, partnerships may be found with industry and with other local institutions of higher education. In the classroom, students will benefit from guest speakers who can offer expertise on challenging technical material.

Recommendation #4: New U.S. News Specialty Ranking. Our final recommendation is that U.S. News and World Report create a new ranking category: Best Law & AI Programs. This new category should measure each law school's adherence to the recommendations above. Rankings should take into account whether a Law & AI course is offered at all, the number of courses offered, the number of specialized single-topic courses, interdisciplinary collaboration between departments and outside experts, scholarly output, and any other efforts to emphasize the importance of Law & AI or advance scholarship in this crucial discipline, like hosting conferences.

IV. USER'S GUIDE TO TEACHING LAW & AI

The data trends and discussion in previous parts make clear that there is much room for law schools to offer more, and more robust, course offerings in Law & AI. In this Part, we offer recommendations based on our personal experiences as professor

and student, respectively, for developing engaging and effective law and AI courses.

A. PROFESSOR PERSPECTIVE (SHEN)

Preparing a course in Law and Artificial Intelligence may at first seem daunting because we law professors are not typically trained in AI.[39] The challenge, however, is much more manageable when one recognizes that at bottom this is a course about the law and not about the technology. As discussed below, utilization of guest speakers and a willingness to admit to students when you do not know the answer are essential.

To be sure, preparing a course in Law & AI requires extensive additional preparation that would not be necessary if you were teaching an advanced seminar on a topic you already know well. I spent many hours reading, watching, listening, and talking about these technologies before (and during and after) teaching my first Law & AI seminar. It was a humbling, but rewarding, experience.

As with any course prep, one needs to consider at the outset the type of course (bigger lecture or smaller seminar) and how much technical detail you want to cover. As our database makes clear, there are multiple successful ways to present the material. As you think about what you feel most comfortable with, and what your students will most desire, here are some important issues to consider.

1. Syllabus design

A foundational choice at the syllabus design stage is to determine the extent to which the course will be oriented to the legal regulation of AI, AI to improve legal practice, and/or big picture AI questions. There is more than enough to offer a course on any of these themes. For instance, you could spend the bulk of the semester talking about AI applications that are already being used by law firms.[40] Or you could spend the entire course

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39. While as a general matter it is true that most law professors are not trained extensively in AI, this is not true for all. Those professors with relevant backgrounds should of course leverage that additional expertise in course design and execution.

40. With regard to legal practice, in 2019 Ross Intelligence announced that it was making its AI-driven legal research system available to students. *See ROSS Intelligence Launches Law School Program*, ROSS INTELLIGENCE (Nov.

talking about AI that is not yet developed, such as "hard AI" with consciousness—and the legal implications that would follow. I chose to split the difference in my survey course, some weeks drilling down into questions of legal practice with AI tools, and other weeks zooming out to ask: What happens if robots become sentient?

2. Reading materials and coding / machine learning exercises

There are an increasing number of resources with which professors can teach a Law & AI course. This includes short, readable practice guides,[41] as well as longer treatises,[42] high-level overviews,[43] and more and more law review articles on specialized topics.[44] There are also many freely available videos on virtually every relevant topic. Assigning these videos as pre-class viewing was engaging and effective for conveying complex information in digestible formats. I also spent one week teaching about two thought-provoking movies: Her (2013)[45] and Ex Machina (2014).[46]

Each week I offered discussion questions to guide student review of the material. For instance, when assigned the two movies, students were prompted to consider the following:

⬚   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.

⬚   Given that script writers have potentially unlimited discretion in shaping the circumstances, actions, and characterizations in a work of

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27, 2019), https://blog.rossintelligence.com/post/ross-intelligence-launches-law-school-program.

41.   Lauri Donahue, *A Primer on Using Artificial Intelligence in the Legal Profession*, JOLT DIG. (Jan. 3, 2018), https://jolt.law.harvard.edu/digest/a-primer-on-using-artificial-intelligence-in-the-legal-profession.

42.   LAW OF ARTIFICIAL INTELLIGENCE AND SMART MACHINES: UNDERSTANDING A.I. AND THE LEGAL IMPACT (Theodore Franklin Claypoole ed., 2019); *see also supra* note 32 (collecting Law & AI texts and treatises).

43.   Harry Surden, *Artificial Intelligence and Law: An Overview*, 35 GA. ST. L. REV. 1305 (2019).

44.   *See, e.g.*, Zack Naqvi, *Artificial Intelligence, Copyright, and Copyright Infringement*, 24 MARQ. INTELL. PROP. L. REV. 15 (2020) (examining focused issues in copyright law when AI creates or infringes on protected works); Yavar Bathaee, *The Artificial Intelligence Black Box and the Failure of Intent and Causation*, 31 HARV. J.L. & TECH. 889 (2018) (arguing that current notions of causation and intent break down in the context of AI black box medicine).

45.   HER (Annapurna Pictures 2013).

46.   EX MACHINA (Film4, DNA Films 2014).

fiction, what limits might we encounter when trying to draw lessons from fiction?

3. Engaging with equity, diversity, bias, and racial justice issues

A course in Law & AI is an excellent opportunity to engage students in questions around equity, diversity, bias, and racial justice. Increasingly scholars and advocates are exploring issues such as the potential for: AI in the criminal justice system to produce a new "Jim Code"[47] and mass e-carceration;[48] AI to produce racially biased hiring practices;[49] and AI in society to exacerbate already existing digital divides.[50]

4. Guest speakers

A key to the success of the seminar was the integration of guest speakers. Speakers were able to bring technological expertise, and also real-world practice perspectives. I worked with the speakers to ensure that their presentations met with the flow and style of the course, and students posted questions for speakers before class. This format was highly effective.

B. STUDENT PERSPECTIVE (JOHNSON)

We have posited here that Law & AI course offerings should be expanded. But will students enroll, and what might make them hesitant to do so? In this section we offer thoughts on the student perspective—both about choosing to take the course and about what methods of teaching might be most effective.

1. Why take Law & AI?

To start with, Law & AI is one of the most philosophically interesting courses a student will take in law school. Whether students enroll in an overview course or a specialized course,

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47.   RUHA BENJAMIN, RACE AFTER TECHNOLOGY (2019) (exploring how discrimination in technology runs much deeper than "biased bots").

48.   Chaz Arnett, *From Decarceration to E-Carceration*, 41 CARDOZO L. REV. 641 (2019) (arguing that electronic surveillance, in lieu of incarceration, exacerbates social marginalization).

49.   Gideon Mann & Cathy O'Neil, *Hiring Algorithms Are Not Neutral,* HARV. BUS. REV. (Dec. 9, 2016), https://hbr.org/2016/12/hiring-algorithms-are-not-neutral.

50.   Peter K. Yu, *The Algorithmic Divide and Equality in the Age of Artificial Intelligence*, 72 FLA. L. REV. 331 (2020).

students will encounter novel and troubling implications that build on and hone understanding of bedrock legal principles—from the difficulty of applying existing theories of tort liability mentioned above, to trolley problems,[51] and issues of AI alignment,[52] to name a few. Even defining the term "AI" can be elusive, and any statutory or administrative attempt to regulate the use of AI must wrestle with this issue. When taught from a policy perspective, this course can be one of the most creative and mentally stimulating exercises encountered in law school.

One restraint to student enrollment in Law & AI courses is the subject's perception as impractical and bordering on science fiction. This is an image problem to be sure, but it is unwarranted. Law & AI issues are expanding to touch nearly every part of society. Even if one does not intend to make AI a part of one's practice, future practice may demand it if a client's issue intersects with AI. This seems likely as, from E-discovery to smart contracts to internet regulation, AI promises to be integral to many legal issues.

2.   What if I do not have a science / tech background?

A science or tech background is not necessary to take a Law & AI course. Interactions between students with different backgrounds, and varying degrees of familiarity with AI, generate excellent class discussion. For instance, a law student who majored in history may be able to spot historical precedents that an engineering major may not. Similarly, students with background in critical race studies may be able to spot unstated and overlooked assumptions in algorithm development.

3.   Preparing yourself for the course

While it is unlikely that an AI-related course would have any prerequisites beyond the standard first-year law school classes, there are ways to prime oneself for a Law & AI course. I looked to celebrated authors to give me an introduction on the issue through books and podcasts. I read most of Superintelligence by futuristic philosopher and thinker Nick Bostrom as well as Life 3.0 by Max Tegmark, the astrophysicist and machine

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51.   *See* Warren Moïse, *Rules of the Road, or the Lack Thereof: A Heads Up on Driverless Vehicles*, 29 S.C. L. 16, 17 (2017).

52.   Peter Vamplew et al., *Human-Aligned Artificial Intelligence Is a Multi-objective Problem*, 20 ETHICS INFO. TECH. 27 (2018) (analyzing the complexity of ensuring advanced AI maintains goals compatible with human wellbeing).

learning researcher. I listened to podcast interviews with AI experts like Eliezer Yudkowsky and tech-focused historians like Yuval Noah Harari. This was not the norm, however. Most of my classmates came to Law & AI with nothing more than the standard 1L classes and a healthy curiosity about the subject. At minimum, I recommend acquainting oneself with some commonly discussed conundrums in the AI community, such as the alignment problem and algorithmic bias—it is easy to get swept away by fixating on worst-case scenarios with AI, of which there are many.

V. CONCLUSION

The legal implications of developments in AI will be both broad and deep. To prepare students for this new legal reality, it is incumbent upon law schools to update their curricular offerings to include both survey and specialty courses in Law & AI. In this Essay we have shown that thus far, less than a third of law schools are meeting this challenge. There is thus an urgent need for law school curricular leadership to innovate, to form stronger interdisciplinary collaborations with AI expertise, and to create new courses that address key issues at the intersection of law and AI. This Essay has provided a first step toward such innovations, by creating a searchable public database on Law & AI course offerings, and suggesting effective approaches to creating and running a new Law & AI course. If U.S. News and World Report begins ranking schools by the Law & AI specialty, schools will surely respond. But they should not wait until that happens. Now is the moment for law schools to improve Law & AI course options for their students. By doing so, they will better position students for legal practice in a world rapidly being transformed by AI.