Transdisciplinary research as a way forward in AI & Law

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Abstract

The field of Artificial Intelligence & Law is a community of law and computer science scholars, with a focus on AI applications for the law and law enforcement. Such applications, however, have become the subject of much debate lately. On one side of the debate, the techno-pessimists focus mainly on the bad effects of AI and big data, seeking to regulate and restrict them. On the other side of the debate stand the techno-optimists, who argue that the ethical and social problems that AI might bring can be solved by technical innovations. What is the role of the (largely techno-optimistic) AI & Law community in this debate, how can we investigate AI for the law without getting caught up in the drama? I will argue for a way forward, consisting of three points. First, we need to combine research on data-driven systems, such as generative AI, with research on knowledge-based AI: use new deep learning techniques without forgetting about good old-fashioned AI. Second, we must put AI into (legal) practice, working together with courts, the police, law firms, but most importantly citizens. Finally, we need to work together across disciplines: bring together those who think about how to build AI and those who think about how to govern and regulate it, and going beyond AI and Law, reaching out to other disciplines such as public administration, philosophy and media studies.

1 Introduction

We live in exciting times for AI & Law: deep learning, and particularly generative language models, can finally deliver on AI's promises, with GPT-4 passing the US bar exam.[1] Many academic papers on legal language processing and its applications are being published.[2] Governments are investing in legal NLP to make the law more efficient, consistent and accessible.[3] The Legal Tech sector is on the rise, with companies developing a wide array of (NLP/ GPT) products for legal services.[4] Another perspective, however, paints a more negative picture. The openness[5] of and trustworthiness[6] of models like GPT is being questioned. The hype surrounding "robot judges" has led to debate on the nature and ethics of such automated legal decision-making.[7] More generally, many prominent researchers and opinion makers are warning about the dangers of generative AI systems.[8]

All this positive and negative excitement has drawn us further into Ziewitz' "algorithmic drama", where AI algorithms determine a large part of our lives and societies, algorithms that are complex, opaque and outside of our control.[9] The AI & Law research community should analyse and investigate AI for the law and how AI influences the law without getting caught up in this drama, steering clear of both excessive techno-optimism or techno-pessimism. But how can we do that? I will argue that three points[10] are important for a way forward in AI & Law:

(1) combining knowledge & data in AI;

(2) evaluating how AI & Law is used in practice; and

(3) combining different disciplines: law, AI and beyond.

In this position paper,[11] I will discuss the three points in the context of the field of AI & Law, showing where it is ahead, and where it is behind. I will further give two example cases of research I have been involved with where we have tackled these points head-on.

2 Artificial Intelligence and Law's role in the algorithmic drama

The field of AI & Law is a largely "techno-optimistic" community of law and computer science scholars, with a focus on AI applications for the law and legal reasoning, and the AI techniques underlying these applications. AI & Law's main technical focus – *AI for Law* - sets it apart from the

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[1] Katz et al. (2023).
[2] Zhong et al. (2020); Gan et al. (2021); Jing & Yang (2023); Zhou et al. (2023).
[3] "China wants legal sector to be AI-powered by 2025", ZDnet, 12 December 2022 (https://www.zdnet.com/article/china-wants-legal-sector-to-be-ai-powered-by-2025/).
[4] The total number of companies in the CodeX Techindex has risen from just over 700 in 2017 to almost 2200 in 2023 (https://techindex.law.stanford.edu/).
[5] "OpenAI's GPT-4 Is Closed Source and Shrouded in Secrecy", Vice.com, 16 March 2023 (https://www.vice.com/en/article/ak3w5a/openais-gpt-4-is-closed-source-and-shrouded-in-secrecy).
[6] "ChatGPT: US lawyer admits using AI for case research", BBC News, 27 May 2023 (https://www.bbc.com/news/world-us-canada-65735769).
[7] Babic et al. (2021); Bex and Prakken (2020); Pasquale and Cashwell 2018.
[8] "Pause Giant AI Experiments: An Open Letter", Future of Life Institute, 22 March 2023 (https://futureoflife.org/open-letter/pause-giant-ai-experiments/).
[9] Ziewitz (2016).
[10] Not coincidentally, these points overlap with the Ethos of CRCL23, the CRCL journal and the related COHUBICOL ERC-project (https://www.cohubicol.com/).
[11] This paper is based on my Presidential Address at ICAIL 2023, which is published in Artificial Intelligence and Law journal as Bex (2023). The current paper goes into more depth regarding the three different points in Section 2 and discusses a new case study in Section 3.2.

Law & Technology community, which has a legal focus – *Law for AI*. That said, there is historically a natural overlap between the two communities,[12] and the AI & Law community also increasingly addresses, for example, the legal implications of the use of AI applications in the law.

A large part of the international community is centred around International Association for AI and Law[13], the biennial International Conference on Artificial Intelligence and Law (ICAIL)[14] and the journal Artificial Intelligence and Law[15]. There is also the annual Jurix conference on Legal Knowledge and Information Systems[16], the Jurisin series of workshops on Juris-informatics [17], and a number of related communities, workshops and journals.[18]

In this section, I will give a brief and non-exhaustive overview of how the core AI & Law community has been engaging with the above-mentioned three points.

2.1 Combining Knowledge-based and Data-driven AI

In Artificial Intelligence there are two dominant approaches. The first is symbolic, knowledge-based AI, where algorithms reason based on pre-programmed knowledge codified into, for example, rules. The second is machine learning, data-driven AI that learns to recognize (complex) patterns given large amounts of data.[19]

AI & Law has for most of its history been dominated by the first approach, looking mainly at knowledge-based, logical models of legal reasoning like argumentation[20] and case-based reasoning[21]. Early on, legal expert systems based on these logical models could count on much interest[22], but in the 1990s the interest diminished as they could not live up to the hype.[23] It is difficult and time-consuming to include all the relevant (legal) expert knowledge in a system[24], and symbolic, knowledge-based systems are notoriously bad at handling noisy or ambiguous input such as natural language or open-textured legal concepts. However, knowledge-based approaches make sense in bounded domains, where the law is relatively simple, static and known and rule-based systems have become commonplace, with everything from basic HR policies to tax law being encoded in "business rules" that are used to infer, calculate and decide on legal conclusions. Furthermore, systems with

[12] At the first ICAIL conference in 1987, the number of first authors from law schools and computer science departments was roughly 50-50, and the early Bileta conferences (one of the oldest Law & Technology conferences) included technical articles on, e.g., legal expert systems.
[13] http://iaail.org/.
[14] See http://iaail.org/?q=page/past-icails. For a historical overviews of the ICAIL conferences up to 2011, see Bench Capon et al. (2012).
[15] See https://www.springer.com/journal/10506. For a historical overview of the AI & Law journal, see the special issue on *Thirty Years of Artificial Intelligence and Law* (Bench Capon, 2022).
[16] See http://jurix.nl/.
[17] See https://research.nii.ac.jp/~ksatoh/jurisin2023/.
[18] For example, the Codex FutureLaw conference (https://conferences.law.stanford.edu/futurelaw/), workshops like NLLP (https://nllpw.org/), and of course in the CRCL journal and conference series.
[19] Surden (2019) speaks of *Machine Learning* and *Rules, Logic and Knowledge Representation*, and Hildrebrandt et al. distinguish between *data-driven law* and *code-driven law*, cf. e.g. (https://www.cohubicol.com/).
[20] Prakken & Sartor (2015).
[21] Rissland et al. (2005).
[22] For example, McCarthy's TAXMAN system (McCarthy 1977). See also more generally Susskind (1986) on legal expert systems.
[23] Lieth (2010).
[24] The so-called "knowledge acquisition bottleneck", see e.g., Cullen & Bryman (1988).

explicit rules are more readily interpretable than the complex neural networks that are used in modern machine learning.

Since 2015, data-driven (deep) machine learning has become the dominant approach in AI & Law. Advances in Natural Language Processing (NLP) spurned new talk of "robo-judges" that can predict outcomes of legal cases[25], and countries such as China are encouraging and deploying such systems in court[26]. NLP has also been used for applications such as finding similar cases[27], legal search[28] and legal text summarization[29]. The core problem with these data-driven approaches is that they do not perform, or understand, *legal reasoning*, but instead work with correlations between pieces of text (words, sentences) in the training data. Furthermore, machine learning models are often hard to interpret, and they cannot provide explanations for their behaviour in terms of, for example, legal rules in the way that knowledge-based systems can.[30]

In the search for transparent and scalable AI that can both perform legal reasoning and handle noisy and open-textured concepts, it has been argued that data and knowledge – or learning and reasoning - should be combined in a single "neuro-symbolic" system.[31] The most common example of such a type of hybrid learning/reasoning system in AI & Law is when data-driven machine learning techniques are used to extract legal knowledge – rules, arguments, cases – from unstructured data such as text, and knowledge-based reasoning techniques are then used to reason with this information.[32] Another type of hybrid system that has been proposed in AI & Law is one where knowledge-based techniques are used to explain the outcomes of data-driven machine learning.[33] In these hybrid systems, the reasoning is still done by the knowledge-based part. In other approaches to integrating learning and reasoning, which we do not see much in AI & Law yet, the system is a pure machine learning system, but it is used to solve typical knowledge-based problems, like argumentation or case-based reasoning.[34] The advantage of such "neural solvers" is that they can output not just a conclusion, but also the reasoning that led to that decision. Other authors also train a pure machine learning system but use knowledge to constrain what the system can learn so that, for example, it will follow legal rules or base its predictions on legally relevant pieces of text.[35]

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[25] The discussion started with the seminal work by Aletras et al. (2016). See, e.g., Babic et al. (2020) and Katz (2020) for a positive assessment of legal prediction, Pasquale and Cashwell (2018) for a critique on legal prediction, and Bex and Prakken (2021) for a discussion on the relevance of such predictive algorithms.
[26] See Stern et al. (2020) for descriptions of AI projects in Chinese courts and references to the original Chinese sources.
[27] Mandal et al. (2021); Dan et al. (2023).
[28] Custis et al. (2019), Dadgostari (2021).
[29] Zhong et al. (2019); Schraagen et al. (2022); Deroy et al. (2023).
[30] There is work on language models like GPT performing legal reasoning and explaining themselves, see, e.g., Katz and Bommarito (2023); Savelka et al. (2023); Guha et al. (2023). However, whether these models can reason is debatable – for example, they are not (yet) very good at applying legal rules or statutes (Guha et al. 2023; Blair-Stanek et al. 2023). Furthermore, language models have problems with their consistency and correctness, being prone to so-called "hallucinations", where (linguistically) plausible but (legally, factually) incorrect text is being generated.
[31] Marcus & Davis. Note that the data-driven components of such a system need to be based on neural networks per se – they can also use more traditional (non-neural) machine learning algorithms. See Sarker et al. (2021).
[32] See, e.g., Brüninghaus & Ashley (2005); Ashley and Walker (2013); Schraagen et al. (2018); Odekerken et al. (2022); Mumford et al. (2023).
[33] See, e.g. Cyras et al. (2019); Grabmair (2017); Prakken and Ratsma (2022); Peters et al. (2023).
[34] Craandijk & Bex (2020, 2022); Otero et al. (2023); Li et al. (2018).
[35] Gan et al. (2021); Santosh et al. (2022); Zhou et al. (2023).

So, while the data-driven approach has very much become the dominant approach in AI & Law, we see that the knowledge-based approach still is – and should be - influential. Especially in the law, it is important that decisions are based on more than just correlations, and that decisions are made in a way that is transparent, contestable and in line with the law.

2.2 Evaluating AI & Law in practice

In a multi-faceted field such as AI & Law there are many types of research with at least as many types of evaluation. For research into, for example, logical models of legal reasoning we have evaluation by means of mathematical theorems and their formal proofs, but also evaluation in terms of how well such models "fit" with the (legal) reality.[36] While for the latter one can make a philosophical "argument from intuition"[37], it is also possible to more empirically test different types of model by performing larger case studies.[38] Then there is empirical evaluation of data-driven models by, for example, making (statistical) comparisons between different models, and between model outputs and some gold standard dataset. And lately there has also been work that by itself is more evaluative in nature, where a specific AI technology is subjected to a legal evaluation[39], or the impact of AI technology on legal reasoning is evaluated empirically.[40]

In addition to research into computational models of the law, AI & Law also has a focus on innovative AI applications for the legal domain. Much of the research on the more data-driven systems is already application-oriented in the sense that it presents a solution for a certain legal task, such as legal document summarization or legal search. As mentioned above, the evaluation of such systems is mainly performed by means of various (often quantitative/statistical) comparisons to other systems or gold standard datasets, with human users or experts only being considered in some studies.[41] Researchers in AI & law have also been working on (prototype) applications for legal practice. There are various ways to evaluate such systems. For any kind of real application, it is important to perform usability tests, but also to evaluate the (kind of) impact it has on legal decision making. Furthermore, a broader evaluation on the legal, organisational and societal implications of using an AI application in the legal field is also desirable. In 2015, Conrad and Zeleznikow performed a structured analysis on the types of evaluation included in articles about some sort of application in the AI & Law journal.[42] They found that an operational-usability evaluation was only presented in 7% of all articles. An informal analysis of journal articles from 2023 shows that this has improved significantly: at least 30% of the articles presenting some sort of application have a form of (expert) user evaluation or involvement, with some even evaluating their application in practical setting, with actual users.[43]

So, the evaluation of AI & Law systems with users has been steadily increasing. However, the number of AI & Law applications that have made it into practical applications is still relatively small.[44] While

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[36] For example, case-based reasoning models the type of reasoning often seen in common law, and argumentation based on rules models the reasoning with laws and statutes that is more common in continental law.
[37] See "Intuition" in the Stanford Encyclopedia of Philosophy (https://plato.stanford.edu/entries/intuition/).
[38] See e.g. Prakken, Bex & Mackor (2020), in which multiple (formal) models for reasoning with proof are compared by modelling the same murder case in all the different models.
[39] Guo & Kennedy (2023).
[40] Barysė et al. (2023).
[41] See, e.g., Habernal et al. (2023).
[42] Conrad and Zeleznikow (2015).
[43] Bakhshayesh & Abbasianjahromi (2023); Marković & Gostojić (2023); Lettieri et al. (2023).
[44] Examples of such applications are Odekerken et al. (2022), which has been implemented at the Dutch police (see Section 3.1), and Al-Abdulkarim et al. (2019), which has been used at law firms in the UK. Further

this is partly to be expected - it is not our goal as researchers to build tools for industry or the legal field – working and evaluating with stakeholders from practice is necessary if we really want to find out the impact of AI & Law on legal decision making, organisations and society.

2.3 Working with different disciplines

AI & Law is a technically focused community mainly made up out of computer science and tech-savvy law scholars, with connections to the broader legal field. Over the years, the interest of the legal community for AI & Law has waxed and waned together with the general societal interest for and use of AI. After the "fall of the expert system" in the 1990s[45], many legal practitioners and scholars lost interest in AI, switching over to the legal study of other kinds of technology such as the internet. With the renewed interest in data (protection) and AI after 2015, we also see the interest of the legal community for AI & Law return.[46] This has led to an increasing number of more legally focused articles at AI & law conferences and in the journal: on "law-by-design" – how legal concepts can be directly implemented in AI systems[47]– on legal aspects of AI for the legal sector[48], and on the effects of AI on the legal process.[49] Furthermore, there has also been an increase in research on empirical legal studies using NLP[50], and the use of AI techniques such as agent-based simulations[51] and machine learning[52] to study how the law and law enforcement works.

With AI becoming commonplace in today's society, however, the application of AI to the law is no longer just of interest to lawyers and computer scientists. This is also evident when looking at the traditional AI & Law venues: in the past few years alone, we have seen publications by researchers from diverse fields such as social studies,[53] management,[54] business[55] and administrative sciences[56], criminology[57], economics[58], information management[59] and psychology[60]. Looking at the broader picture, we also see researchers from, for example, philosophy,[61] ethics,[62] public administration,[63] and communication studies[64] discussing AI and the law. Each of these disciplines brings their own insights. People from management or information sciences allow us to zoom out and see the bigger socio-technical systems surrounding the technology, and researchers from psychology and public

examples are Cohen et al. (2023) and Westermann & Benyekhlef (2023), who have started openly accessible platforms or websites for their services.

[45] Leith (2010).

[46] At ICAIL 2021, the number of first authors from law schools and computer science departments was roughly 30-70. There were quite a few articles which were co-authored by researchers from law and computer science, as well as authors that work at both law schools and computer science departments.

[47] Almada (2019).

[48] Guo & Kennedy 2023; Unver (2023).

[49] Nielsen et al. (2023).

[50] Chandler et al. (2023); Habba et al. (2023); Picollo et al. (2023); Riera et al. (2023); Schirmer et al. (2023).

[51] Van Leeuwen et al. (2023).

[52] Fratrič et al. (2023).

[53] Witt et al. (2023).

[54] Cohen et al. (2023); Yalcin et al. (2023).

[55] Braun (2023); Yalcin et al. (2023).

[56] Saragih et al. 2023.

[57] Simmler et al. (2023).

[58] Di Porto (2023).

[59] McLachlan et al. (2023); Lawrence et al. (2023).

[60] Barysė & Sarel (2023).

[61] Allo (2023).

[62] Pruss (2023).

[63] Nieuwenhuizen et al. (2023); Soares et al. (2023).

[64] Araujo et al. (2020).

administration look at our technology through an empirical lens. More critical humanities, such as philosophy, ethics, but also communication and media studies question some of the core behaviours and ways of communicating that the AI & Law community takes for granted.

So, while the core AI & Law community is still largely composed of more technical, computer science minded researchers, Artificial Intelligence and Law in the broader sense is steadily gaining interest of more academic disciplines.

3 Putting the three points into action: examples of two projects

We see that the AI & law community has changed quite a bit since its inception in the 1980s: there is more focus more on data-driven and hybrid systems, and more innovative applications are developed and evaluated from different disciplinary perspectives.

I will now provide two examples of projects that I believe are exemplary for the changing field of AI & Law, in which we aimed to tackle the three points head on.

3.1 AI for citizen complaint intake at the Dutch police

The first project was done in the context of the National Police Lab AI,[65] and concerns an AI system for the intake of citizen complaints about online trade fraud.[66] The police receive more than 60,000 complaint reports of alleged fraud each year, but not all of these are actual criminal fraud – someone might have, for example, accidentally received the wrong product. To save the police from having to manually check all the reports, we developed a recommender system that, given a complaint form, determines whether a case is possibly fraud, and then only recommends filing an official report if it is. This system was implemented at the police in 2018, and is still in use in 2023.

For the intake system, we combined knowledge- and data-driven AI. The system has a legal model of the domain that captures the relevant part of the Dutch Criminal Code and police policy rules in a rule-based argumentation model.[67] Because the complaint reporting form also contains a free text field where the citizen can tell their story, the system also includes natural language processing techniques to extract the basic observations from this free text.[68] Using the basic observations and the legal rule model the system then tries to infer whether the complaint is possibly a case of fraud or not. If it turns out there are still missing observations, the system can ask the complainant questions according to which observations can still change the conclusion.[69] Once all relevant questions have been asked the system will present the recommendation whether to file an official complaint or not to the user, together with an explanation for its recommendation in terms of the

[65] National Police lab AI is a collaboration between multiple universities and the Netherlands National Police, where many of the PhDs also work for or at the Police, combining research and development of AI (https://www.uu.nl/onderzoek/ai-labs/nationaal-politielab-ai).

[66] For example, false web shops or malicious traders on Ebay not delivering products to people.

[67] Examples of rules are "**if** the product was paid for but not sent **and** deception was used, **then** it is possibly fraud" and "if the supposed seller used a false location **or** a false website **then** deception was used". See Odekerken et al. 2022; Borg & Bex 2021.

[68] Basic observations can be directly observed by the citizen and are hence often found in the text field, for example, "I paid but did not receive anything". We experimented with various machine learning NLP approaches to extract entities and (event) relations from the text (Schraagen et al. 2017, Schraagen & Bex 2019). While results were acceptable, the final implementation depends on regular expressions to extract observations.

[69] Determining whether the conclusion can still change, and which observations are still relevant for such a change, is computationally quite expensive, meaning that it takes a standard algorithm several minutes to do this. Because we do not the citizen to have to wait this long, we developed and algorithm that can do it almost instantaneously (Odekerken et al. 2022).

(legal) rules and observations it used to infer the conclusion. If the user decides to file an official complaint, the input thus far is transferred to a secure environment where the citizen can electronically sign the complaint and send it to the police.

The intake system has been evaluated internally at the police on various aspects, such as accuracy, user satisfaction, efficiency, and effectiveness.[70] We further performed two more scientific evaluations of the system. The first of these concerned the system's effect on human trust: would citizens mind that they received recommendations from a computer? And would it matter if they received an explanation for the recommendation or not? We performed a controlled experiment with more than 1700 participants, together with colleagues from public management studies[71]. In the experiment, the system told the participants it was probably *not* criminal fraud in their case, and therefore recommended not to file an official report. We then measured the participants' trusting behaviour: did they still file an official report? The control group received no explanation – "it is probably not criminal fraud, so the system recommends you don't file a report". 40-60% still filed a report. Of the group that did receive an explanation, however, only 20-35% still filed a report, so significantly more people followed the recommendation if it was accompanied by an explanation. From this we concluded that citizen trust increases with explanations[72].

The second type of evaluation concerned an ethnographic case study at the department of the Dutch Police that processes the incoming citizen reports on (alleged) online trade fraud[73]. Before the intake system was implemented, human case workers had to manually get the observations from the free text of the intake form, and email with the complainant to ask any further questions to complete the file. These manual tasks were taken over by the system, and the system thus provides the case workers with more complete and structured information. Furthermore, the system also provided the case workers with the recommendation it had given the citizen (i.e., possibly fraud – submit a report; or probably not fraud – do not submit a report), although it did not prove an explanation for this[74]. Note that it was still up to the case worker to decide on a case-by-case basis whether it would be entered into the police systems as a fraud report. What we observed was that the system helped the case workers by providing structured data, hence allowing them to focus more on assessing cases that need a nuanced judgement. However, the recommendation of the system (fraud or no fraud) was simply ignored by the case workers – one of the key reasons for this was that the system did not provide an explanation or rationale for its recommendations.

This shows is how AI can be designed and evaluated in practice from different perspectives, using different methods: computational, experimental, ethnographic. We see that explanations are important for citizen trust,[75] and only a knowledge-based system based that includes explicit (legal)

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[70] The system turned out to be accurate (between 80-90%) when measured against what police case workers would recommend (submit or do not submit report), and the efficiency of the reporting process was increased significantly.

[71] Nieuwenhuizen et al. (2023).

[72] Internal evaluations at the police showed that (with an explanation) about 60% still filed the report even though they were recommended not to. There was some evidence that for actual complaints the lower trusting behaviour was caused by the fact that people were angrier and more frustrated because they had lost actual money, and they wanted the police's help in getting it back even if they were told their case was clearly not one of criminal fraud.

[73] Soares et al. (2023).

[74] Note that because the intake system was originally not designed for the case workers, this explanation could only be given in the citizen interface and not in the interface the case workers worked with.

[75] And possibly also for police case worker trust since they ignored the recommendations without an explanation.

rules can give such explanations. On the other hand, more data-driven natural language processing is also needed to allow the citizen to interact with the system in a natural way. Furthermore, screen-level bureaucrats like police case workers were happy to use the system as an assistant because their professional discretion was not threatened by it.

3.2 AI for supporting paralegals with traffic fine appeals cases at a Dutch court

In the second project, we performed a critical case study of the development and use of an AI decision support system for processing traffic violation appeals at a Dutch court.[76] For minor traffic fines such as speeding or parking violations, the public prosecutor in the Netherlands hands out an administrative fine. If the person concerned does not agree with this fine, an appeal can be made first with the public prosecution and then with the court – the latter we examined in our case study. There are more than 50 such appeal cases per week at a single court, and paralegals spend on average 20 minutes preparing a case, so aiding the paralegals in this administrative decision-making process could alleviate the workload significantly.

As there were no AI applications in the courts when we started our research, we worked together with the court[77] to develop a system to help paralegals preparing appeals cases for court hearings. The paralegals can upload a PDF file of the appeal case to the system, which first uses basic language processing to extract a structured case overview – case number, type of offence, brief description, height of the fine, and various deadlines such as those for payment of the fine and lodging of the appeal. It then automatically checks whether the deadlines have been met, showing this to the paralegal. The system then, based on the appellant's and prosecution's arguments, identifies similar cases using more advanced NLP techniques such as document vectorization and comparison. It presents these similar case documents as a list of search results that can be clicked on to get the similar case. Finally, the system suggests the most likely outcome in the case – affirmed, rejected, inadmissible, or modify the decision of the prosecution (e.g., a lower fine) – using legal text classification.[78] Because the system does not arrive at the recommendation by following legal rules like in the fraud intake system, the system cannot provide an explanation or rationale why it recommends an outcome.

We developed and tested the system extensively with three paralegals of a Dutch court and made some interesting findings. First, the paralegals indicated that the automatic extraction, overview and checking of information from the free text of the case document was very useful, as it saved them from having to look this up in the original document. Second, the similar-case matching was also useful, as it allowed paralegals to search in all the previous cases that were in the database. When questioned about whether the similar-case-matching algorithm could lead to biased results, the paralegals indicated that in their current process each paralegal only has access to previous cases they themselves have handled, so they are already biased towards their own previous cases. Finally, the suggestion of the most likely outcome was deemed useless without an explanation – the paralegals went and read the various arguments in the appeal themselves for a professional verdict.

This project, like the one with the police, demonstrates the value of actively working with practice in building and evaluating systems. For example, it becomes possible to study the actual use of algorithmic systems in organisations that are not normally known to use such systems, such as courts. Interestingly, our findings at the court largely coincide with what we found for the other screen-level bureaucrats, the police case workers: relatively basic systems that structure and gather information

[76] Kolkman et al. (2023).
[77] Thus, our case study had a strong action research and participatory component, cf. Davison et al. (2004).
[78] That is, a machine learned legal case prediction algorithm similar to Aletras et al. (2016).

are seen as a positive thing, as long as these systems don't impinge on the bureaucrats' professional discretion as decision makers. Furthermore, recommendations or predictions which are not backed up by an explanation or rationale are ignored.

4 Conclusion

Artificial Intelligence and Law is an interdisciplinary, techno-optimistic community with a long history going back at least as far as the legal expert systems in the 1980s. Like any community interested in computational law, advancements in modern AI require the AI & Law community to think about its future and where it wants to position itself in today's "algorithmic drama". I have argued that three points are important when thinking about a way forward in AI & Law: (1) combining knowledge & data in AI; (2) evaluating how AI & Law is used in practice; and (3) combining different disciplines.

When looking at where AI & Law is now regarding point (1), we see that there is a steadily increasing amount of work into hybrid systems that combine separate data-driven learning modules and knowledge-based reasoning modules, but less integration into true "neuro-symbolic" systems where modern machine learning techniques are used for reasoning. With respect to point (2), more AI applications are being researched and developed for the legal field, and evaluations with (real) users are also being increasingly performed, but actual practical applications that are being used on a day-to-day basis in the legal field are still quite scarce. Finally (point 3), even though the core field is still made up out of more technically minded researchers, other scholars from a wide variety of academic disciplines are becoming interested in AI & Law.

Looking at two recent projects, we can see that they are exemplary for the way the field of AI & Law, in my view, should be taking on the three points. The online trade fraud complaint intake system from Section 3.1 demonstrates the combination of knowledge and data, and the advantages that brings with respect to transparency. Whereas both systems – the intake system at the police and the support system at the court – use data-driven natural language processing to extract information from text, only the intake system models the actual legal domain rules. So only the intake system can provide meaningful explanations for its recommendations in terms of such legal rules. With respect to evaluation in practice, we see in both cases that screen-level bureaucrats like police case workers or paralegals want to remain in control, and do not follow recommendations blindly without an explanation. This runs contrary to the perceived usefulness and dangers of AI systems that predict or recommend an outcome in a case. Finally, the two cases show how AI can be designed and evaluated in practice from different disciplinary perspectives, using different methods: computational, experimental, ethnographic, participatory. We have worked with researchers from computer and data science, law, public management and media studies, without whom we would not have been able to design, build and evaluate the systems in the manner that we did.

Today's AI & Law community includes many disciplines and stakeholders, and studies different types of AI for Law and Law for AI in a broad societal framework. Even though data-driven machine learning has led to impressive advances in AI recently, we should not consider it to be the only kind of AI - guiding and explaining the next generation of large language models to take the law into account will require insights and techniques from knowledge-based approaches. These hybrid data/knowledge systems should be evaluated with stakeholders from practice - we cannot rightly claim we develop AI for the legal field, if ultimately only very few in that field can or will use our systems and techniques, or at least derivatives of them. And finally, a mature AI & Law field should look beyond just (legally informed) Computer Science to other disciplines, taking into account the bigger socio-technical systems surrounding the technology, and questioning the core concepts the AI

& Law community takes for granted. Only with a diverse palette of researchers and methods can we responsibly design and analyse the future AI for the law.

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