

Artificial Intelligence and Law Intersections

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Abstract - The article gives a succinct summary of how artificial intelligence and law interact. It finds important subjects, arranges them logically, and provides a generic description of them, generally ignoring the particulars of different jurisdictions, based on the examination of legal resources. The article explains how artificial intelligence is used in the legal system, how laws govern it, and what theoretical legal issues have been brought up in light of AI advancements.

Keywords: artificial intelligence, algorithmic decision-making, legal reasoning, liability, intellectual property, human-computer interface, machine learning, privacy, robots, and society.

I. INTRODUCTION

The term "artificial intelligence" was first used in a research project proposal by John McCarthy, Marvin L. Minsky, Nathaniel Rochester, and Claude Shannon in August of 1955, as is widely accepted in the field of computer science. The identical phrase was first used in legal science in 1848 by an unidentified source in a critique of the jury system's inefficiencies. [1] The term "artificial intelligence" in this essay, however, alluded to the false intelligence of some jurors, which should be avoided while making a decision, rather than the intelligence and capacity for problem-solving of computers. In legal science, artificial intelligence (AI) has been studied since the 1960s, when computer science first coined the phrase. In order to improve information processing, the first documents anticipate using AI for a number of tasks, such as analysing statutes, processing case law and supporting documentation, processing client data provided to an attorney to determine the likelihood of winning a case, estimating the likely amount of damages if awarded, and converting trial transcripts into a computer-readable format. [2] Artificial intelligence (AI) has garnered significant attention in legal science during the 1980s, 2000s, and 2010s, according to search results in the legal research database HeinOnline.org.

Numerous studies on a variety of issues have been conducted thus far on the relationship between artificial intelligence and law. Law and AI, however, are fields with a fragmented body of knowledge covered in a variety of articles, books, reports, notes, opinions, and so on. Generally, only specific issues or facets are being addressed. There isn't an overview that gives readers a more comprehensive understanding of the field in a brief text.

Numerous studies on a variety of issues have been conducted thus far on the relationship between artificial intelligence and law. But the corpus of knowledge in the disciplines of law and artificial intelligence is dispersed, with several papers, books, reports, notes, views, and so on covering the subject. Only particular problems or aspects are often being addressed. No synopsis that provides readers with a more thorough grasp of the topic in a condensed form exists.

Since the document doesn't incorporate materials from outside the database, certain issues that have previously been brought up elsewhere could go unmentioned. Subjects are explained broadly and fundamentally, without respect to the particulars of individual countries. The article uses several laws as examples in a few different places. Only English-language materials are compatible with the document. As a result, the study does not clarify how various national perspectives on the various themes change from one nation to the next. Only broad concepts and issues are identified as recommendations for more research in accordance with national regulations.

The article explains the use of artificial intelligence in law, the ways in which artificial intelligence is regulated by law, and some theoretical legal issues that have been brought up in relation to advances in artificial intelligence.

II. ARTIFICIAL INTELLIGENCE IN LAW

Law and legal science can greatly benefit from artificial intelligence. The goal of this section is to provide an overview of a subfield within artificial intelligence. The topic known as "artificial intelligence and law" seeks to use AI expertise to resolve legal issues, or at the very least, to make them easier to resolve. [3] Simultaneously, AI in general makes use of tools and approaches created to address particular legal challenges.

AI has been recognized as useful in legal studies, especially in legal reasoning. The act of constructing and presenting a compelling argument in answer to a particular legal question, such as whether or not an individual must pay a certain amount of tax or what decision should be rendered at the conclusion of a trial, is referred to

as "legal reasoning." AI tools can help with legal reasoning by, among other things, sifting through databases of legal texts to find cases that are pertinent to the current judicial processes. Due to its ability to weed out irrelevant material, this technology greatly simplifies legal research. Moreover, certain algorithms are capable of independent thought and precise response. These programs are frequently referred to as knowledge-based or expert systems. Susskind identifies five categories of legal expert systems: planning systems recommend the best course of action to follow in order to accomplish a goal; targeted solution-focused diagnostic systems; procedural guides that help with complicated legal process adherence; smart checklists that help determine if a document complies with legal requirements; and document modeling systems that, at the user's command, generate documents automatically from present templates. "Document assembly systems" are a common term for document modeling systems. Procedural and expert systems are the two categories of document assembly systems, though. Procedural systems do not fulfil the requirements to be classified as AI applications since they operate according to a predetermined, guided manner with restricted potential outputs. Expert systems, on the other hand, look for rules in their knowledge bases and apply them in a way that generates their own decision tree to get the answers they need. As a result, these systems can respond in normal language to a variety of unexpected questions. Legal reasoning and the evaluation of legal knowledge are closely intertwined. Unfortunately, there is enough evidence in the legal sector that this is quite difficult. The law is neither a closed system nor a static scientific field with immutable laws. It has relative values and requires balanced interests. Furthermore, specific tools need to be developed to address the challenge of managing ambiguities included in natural language. In addition to representing human psychology (emotions, goals, intentions, etc.) and interpersonal relationships, scientists also had to determine how to represent time (events and intervals) and evaluate how it influences other variables, as well as causality in relation to the legal concepts of "proximate cause" and "remote cause." [5] Notwithstanding the numerous difficulties it faces while handling legal concerns, artificial intelligence (AI) has applications in a wide range of industries. For example, legal reasoning is used to formulate laws or model precedents in order to identify ambiguities in the text and aid in their growth. Many technologies assist lawyers with their profession, for example, by identifying problematic terms in contracts or creating a compelling argument in intellectual property cases.

Artificial intelligence (AI) has already been used to automatically resolve online disputes between parties that have engaged into contracts, such as those that occur on eBay. It is expected that algorithmic decision-making will support judges in the future and, in some circumstances, even take their position. However, as algorithms function covertly and obstruct public scrutiny, this calls into question the openness of these procedures. For example, using test cases to examine the algorithms, dynamically developing algorithms might be examined for potential biases. Contrary to popular belief, algorithms may be utilized to increase openness in society by facilitating better data analysis, despite their inherent lack of transparency. Forensics, for instance, uses artificial intelligence's capacity to evaluate massive volumes of data. In addition to assessing enormous amounts of evidence data to reduce their number or uncover minor linkages among them, AI may also be used to generate predictions, such as "which [crime] scenes will offer the best opportunity of recovering a forensic sample". Furthermore, it's anticipated that AI will aid law enforcement by fostering the creation of autonomous robots, which may someday be used by police departments.

III. LEGAL CONTROL OF ARTIFICIAL INTELLIGENCE

Artificial intelligence's inherent characteristics make it difficult to regulate or establish specific legal guidelines. There are several definitions of artificial intelligence, but none of them is both globally applicable and completely clear. This is mostly because it's difficult to define intelligence itself. An artificial intelligence system typically consists of both software and hardware components. As a result, it may apply to any combination of components that house an artificial intelligence (AI), including robots, single-computer programs, programs executed on networks of computers, and more.

When it comes to legal protection, artificial intelligence (AI) is typically viewed as a product of creative endeavour's and is thus covered by intellectual property laws under copyright. It may also be covered by a software patent under specific circumstances. The degree of protection afforded by AI software patents is, nonetheless, debatable. Because they are always evolving and may be influenced by users, they may be violated in certain ways.

Software-based artificial intelligence systems and cyber physical systems—AI systems that are seamlessly integrated with physical objects like robots—are classified as goods. [6] Generally speaking, all products ought to satisfy the realistic expectations of a typical consumer in addition to specific safety and quality requirements. A product's maker may be held accountable if it is faulty, such as malfunctioning or causing harm. A person who has been hurt may file a lawsuit alleging carelessness, malpractice, product liability, or service liability. Each case's outcome is influenced by a variety of circumstances. In order to prevent errors and injury, AI system users as well as producers must use reasonable caution. Determining the responsible party may get complex when specialized AI systems integrate manufacturer knowledge with customer needs. Moreover, particulars of

product accountability may be found in a number of application domains, such as autonomous driving. It is suggested that systems that are "intended for use in a hazardous activity and/or [are] mass-marketed" be subject to strict liability rules. Strict responsibility rules force a person to comply with the law whether or not she is at fault.

There are explicit guidelines about who is responsible for the activities of an AI system under the strict liability standard. This is particularly important when it comes to weapons systems that operate somewhat freely on their own. It is their intention for their activities to be lethal. "Human control is always present at a significant level" is the recommendation for these systems. Even when these systems function independently, commanding officers are supposed to be held responsible. Applying the actor-tool method led to this result, which is exclusive to the military context. However, when autonomy grows, AI systems transcend beyond their current role as tools and instead take on the role of agents. The current legal framework can use the idea of product responsibility to establish who is liable for damages, provided that these agents act on behalf of actual or imaginary persons. Contracts that intelligent software agents sign on behalf of their users must also be legitimate and enforceable.

Despite having some autonomy, the software agents in this instance are viewed as merely communication tools. However, the law will have to alter when an AI system begins acting ostensibly on its own behalf and on behalf of no one at all.

The potential of giving artificial intelligence (AI) a distinct legal status was first investigated by legal theory far earlier than the aforementioned result. [7] Solum examined two possibilities: the constitutional personhood status and the trustee position. AI should only be granted the trustee status—that is, the authority to administer specific affairs—after demonstrating that it possesses the necessary capability and accountability. On the other hand, additional ideas like awareness, intentionality, or emotion should determine the standing of a constitutional personhood (equality of AI with a human). This state takes into account the arrival of generic artificial intelligence with human-like capabilities. At the moment, the law is attempting to strike a balance when it comes to imposing accountability on individuals who interact with self-governing AI systems. Rules for self-driving cars have been proposed in quite depth. These regulations distribute responsibility primarily between a manufacturer and a driver, accounting for different driving styles. [7]

However, the concept of special personhood for AI has not vanished and is presently being examined as a feasible alternative in the European Union. A study published in January 2017 by the European Parliament suggests designating highly advanced and autonomous robots as "electronic people". This status's nature is still unknown and is expected to be established later. In the United States, there are also suggestions to establish personhood for AI as an alternative to corporate personhood. There are still a lot of unanswered concerns about whether or not this strategy would interfere with society's capacity to operate and how much it may be used by different parties to shield themselves from responsibility.

There are a number of ways that the law may be altered in this regard, such stating that non-human entities can also be authors and giving copyright to the person who created the entity, or redefining "employee" to include AI systems. An individual in charge of the AI system would be regarded as an employer and be in possession of copyright. In patent law, a comparable issue arises. AI is capable of more than just scientific breakthroughs. Additionally, these systems have the ability to generate inventions, some of which have already received patents. However, people own the rights to these patents. It is assumed that as computer inventions increase, patent law will need to adapt and deal with issues like consumer protection, ownership, and replacing human inventors.

In reference to protection, it is imperative that individuals have effective privacy protection. Threats from AI arise from both autonomous decision-making and monitoring. AI's capabilities allow for hitherto unheard-of levels of monitoring. For example, AI can monitor hundreds of phone calls at once with the use of speech recognition, when in the past, a human was required for each call. Such a technique might "underpin ubiquitous surveillance" when combined with pattern recognition skills, which, for example, enable the identification of behavioural changes and warn authorities. The rising prevalence of social robots and apps further strengthens this threat.

These programs have the ability to interact with users in real time (maybe even without the user realizing they are speaking to a robot), record and save conversations along with any associated information, and examine user behaviour. Furthermore, these programs have the ability to extract additional information from the gathered data. [9] This is particularly valid when handling large amounts of data. Additionally, the legal interests of those impacted by an automated decision must be protected, and processing of personal data that results in that decision must be done transparently. Predictive algorithm use without these safeguards may result in stigmatization, discrimination, and unfair social stratification. The fields of criminal offense prevention, investigation, detection, and prosecution ensure the rights of European persons with regard to automated individual decision-making.

In addition to the broad standards pertaining to duty, agency, intellectual property, and privacy, there are particular restrictions that are applicable to specific uses of AI systems. International law governing autonomous

weaponry, the automobile and transportation industries, telecommunications, cybersecurity, information society services, crime, stock trading, finance and investment, healthcare, and so forth are some examples of specific regulations that may be applied to AI.

IV. LEGAL THEORETIC CONCERNING ARTIFICIAL INTELLIGENCE

Artificial Intelligence raises several theoretical problems that might eventually come to pass and impact the legal system. [10] The degree of intelligence and natural language communication capabilities of AI are closely related to the first issue. AI eventually begins creating unique stuff on its own. The preceding section covered the topics surrounding the protection of intellectual property for these kinds of works. The subject of whether AI expressions are covered by the free speech theory is still interesting, but artificial subjects the right to free speech feels a bit strange because it's a fundamental human right, and there could be extra hazards involved. According to records, certain speech products have already led to harm due to things like "deception, manipulation, coercion, inaccuracy, and discrimination". If AI were allowed the right to free speech, it may also have an advantage over human speakers when it comes to offensive speech since it would be more difficult to demonstrate that the offensive speech was intended. However, if AI were to be denied the right to free expression, the public may be denied access to important information. Therefore, it is imperative to re-evaluate the existing strategy and take into account potential regulatory regimes that would guarantee the public would receive important information while also being shielded from offensive speech.

The freedom of mind and, correspondingly, the freedom of belief lead to the freedom of expression or speech. This thought prompts yet another thought-provoking query: Should AI be allowed to freely practice and believe in religion? The social AI will need to comprehend religion as it is picking up knowledge from human interactions. It may begin to display symptoms of a believer in order to satisfy certain users. There will reportedly be a lot of public discussions when this occurs, though it's unclear what will come of them right now. There is only one thing for sure: these discussions will compel us to identify the ideals that society must uphold. Freedom of expression, freedom of thinking, and freedom of religion will all be impacted by people's tendency to anthropomorphize artificial intelligence. [11] When artificial intelligence (AI) is integrated into a robotic body that mimics a human body, people are more likely to accept, like, and trust AI. Humans and robots are already developing close and lasting friendships, and a growing number of people are getting interested in the increasingly plausible and actual potential of human-robot romance. Additionally, people assign cerebral, emotional, and social traits to these robots. Academics started to question whether it would be suitable in the future for a human to wed a robot. They assume that robots may potentially get married if they had the legal capacity to sign contracts. According to professor Gary Marchant, this option should instead be interpreted as "the right of a human to choose to marry a robot", not as a right of a robot. Marriage might also be completed given the availability of sex robots. But this begs the question of whether a robot may be misused. It's unlikely that a marriage involving a robot could be seen as the union of two equal humans because that would entail equality with other people as well. Certain scholars contend that since robots should always be under control, they should be viewed as slaves—ideally unconscious ones—rather than as human beings. Therefore, it is debatable whether viewing robots as slaves in a marriage may not result in a change in how certain people view human marriage and how they approach their interpersonal interactions.

The theoretical issues that have all been raised highlight uncertainties regarding the social and legal standing of artificial intelligence. [12] They are all connected to potential liberties and privileges that AI may receive in the future. However, assigning someone a right necessitates also placing them under obligation. Criminal culpability is its most extreme form. Similar to the debate over free speech, there are concerns over the intentionality of AI activities. Nevertheless, criminal culpability imposed on businesses demonstrated the viability of assigning criminal accountability to AI. But it's still unclear how to design suitable penalties for AI.

V. CONCLUSION

Law and artificial intelligence interact on a number of levels. Artificial Intelligence (AI) has an impact on the law itself as well as legal practice by improving the productivity of attorneys and automating some legal services. Traditional legal conceptions are being challenged by AI, hence the law must change. This adaption must go on and keep up with emerging AI technologies. Concurrently, by establishing new norms, regulations, and restrictions on advancements in many AI application fields, the law will also be influencing advancements in AI. The societal effects of integrating AI and robotics into our daily lives will need a thorough investigation of the law. For example, it will soon be necessary to determine whether AI and cyber physical systems should be governed differently and to analyse how the law should respond in the event that AI results in widespread unemployment.

VI. RECOMMENDATIONS

The development of artificial intelligence is a worldwide phenomenon with global social and economic implications, necessitating the implementation of new international regulations. The distinct ways that different national authorities manage the intersection of the law and artificial intelligence must be taken into account while developing these regulations. In order to identify the universal values that ought to be protected by the law and the many national strategies that may accomplish so, more comparative legal research has to be done.

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