Artificial Intelligence Law: An Overview

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Abstract: The rise of artificially intelligent machines has certainly made many tasks easier, faster, and more efficient. However, it has posed a great challenge to democracy in ways that threaten the rights of the American public. Systems that are supposed to help with patient care have proven unsafe, ineffective, or biased. We need to address not just such health scenarios, but every other sphere in which AI could impact society: education, business, transport, government, manufacturing, medicine, etc. The paper provides an overview of the interplay between law and artificial intelligence. It explores the legal aspects, conflicts, and ethical concerns that can emerge with commercial applications of AI.

Keywords: *Artificial Intelligence, Law, Ai Law*

I. INTRODUCTION

The quest for building an artificial brain developed in the fields of computer science and psychology. From ancient times, humans have been dreaming of creating a machine that can replicate the human brain. Such a machine is known as artificial intelligence (AI).

Artificial intelligence, sometimes called machine intelligence, refers to intelligence demonstrated by machines, while the natural intelligence is the intelligence displayed by humans and animals. AI is an umbrella term John McCarthy, a computer scientist, coined in 1955 and defined as "the science and engineering of intelligent machines." AI is now the latest big game changer. Typically, AI systems demonstrate at least some of the following human behaviors: planning, learning, reasoning, problem solving, knowledge representation, perception, speech recognition, decision-making, language translation, motion, manipulation, intelligence, and creativity. AI is an interdisciplinary and comprehensive field covering numerous areas such as computer science, psychology, linguistics, philosophy, neurosciences, cognitive science, thinking science, information science, system science, and biological science. Today, AI is integrated into our daily lives in several forms, such as personal assistants, automated mass transportation, aviation, computer gaming, facial recognition at passport control, voice recognition on virtual assistants, driverless cars, companion robots, etc.

Although AI is a branch of computer science, there is hardly any field which is unaffected by this technology. Common areas of applications include agriculture, business, law enforcement, oil and gas, banking and finance, education, transportation, healthcare, engineering, automobiles, entertainment, manufacturing, speech and text recognition, facial analysis, telecommunications, and military. Artificial intelligence has endless potential to handle tasks commonly done by humans, including natural language processing, image recognition and data analytics, visual perception, decision-making, speech recognition, business process management, and even the diagnosis of disease, all of which normally require human intelligence [1].

The 10 U.S. Code § 2358 define artificial intelligence as [2]:

1. "Any artificial system that performs tasks under varying and unpredictable circumstances without significant human oversight, or that can learn from experience and improve performance when exposed to data sets.
2. An artificial system developed in computer software, physical hardware, or other context that solves tasks requiring human-like perception, cognition, planning, learning, communication, or physical action.
3. An artificial system designed to think or act like a human, including cognitive architectures and neural networks.
4. A set of techniques, including machine learning, that is designed to approximate a cognitive task.
5. An artificial system designed to act rationally, including an intelligent software agent or embodied robot that achieves goals using perception, planning, reasoning, learning, communicating, decision making, and acting."

Technology is often described as a "double-edged sword" as its effects on society can be both beneficial but also risky. Today, AI is integrated into our daily lives in several forms, such as personal assistants, automated mass transportation, aviation, computer gaming, facial recognition at passport control, voice recognition on virtual assistants, driverless cars, companion robots, etc. AI will push us to rethink the social contract at the heart of our democracies, our education models, labor markets, and the way we conduct warfare. The inherent nature of AI is without doubt a threat to the rule of law. But the blame for the erosion of the rule of law cannot be put squarely at the foot of technology [3].

II. WHAT IS ARTIFICIAL INTELLENCE?

The term "artificial intelligence" (AI) was first used at a Dartmouth College conference in 1952. Artificial intelligence refers to the ability of a computer system to perform human tasks (such as thinking and learning) that usually can only be accomplished using human intelligence [4]. Isaac Asimov provided the Three Laws of Robotics: Robots may not injure a human being, must obey orders (unless they go against the First Law) and must protect themselves (unless to do so conflicts with the First or Second Law).

AI provides tools creating intelligent machines which can behave like humans, think like humans, and make decisions like humans. The main goals of artificial intelligence are [5]:

1. Replicate human intelligence
2. Solve knowledge-intensive tasks
3. Make an intelligent connection of perception and action
4. Build a machine which can perform tasks that requires human intelligence
5. Create some system which can exhibit intelligent behavior, learn new things by itself, demonstrate, explain, and can advise to its user.

AI is not a single technology but a range of computational models and algorithms. The concept of AI is an umbrella term that encompasses many different technologies. AI is not a single technology but a collection of techniques that enables computer systems to perform tasks that would otherwise require human intelligence. The major disciplines in AI include [6]:

- *Expert systems*
- *Fuzzy logic*
- *Neural networks*
- *Machine learning (ML)*
- *Deep learning*
- *Natural Language Processors (NLP)*
- *Robots*

These computer-based tools or technologies have been used to achieve AI's goals. Each AI tool has its own advantages. Using a combination of these models, rather than a single model, is recommended. Figure 1 shows a typical expert system, while Figure 2 illustrates the AI tools. These tools are gaining momentum across every industry. There are plenty of businesses offering AI tools specifically designed for legal professionals. For some lawyers, the task is to not only understand the tools but to defend them in court.
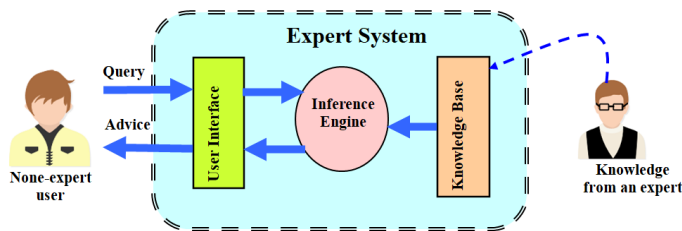

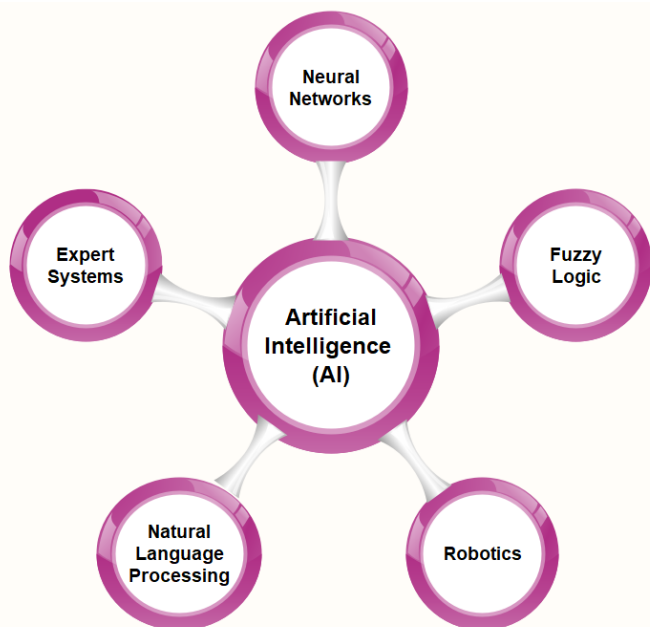Figure 1: A typical expert system.

Figure 2: AI tools.

III. ARTIFICIAL INTELLENCE LAW

High-risk AI uses include critical infrastructure, education and vocational training, employment, essential private and public services (e.g. healthcare, banking), certain systems in law enforcement, migration and border management, justice and democratic processes [7]. You should be protected from unsafe or ineffective systems. Automated systems should be developed with consultation from diverse communities,

stakeholders, and domain experts to identify concerns, risks, and potential impacts of the system. They should be used and designed in an equitable way and avoid algorithmic discrimination. They should not be designed with an intent or reasonably foreseeable possibility of endangering your safety or the safety of your community. They should not contribute to unjustified different treatment or disfavoring people based on their race, color, ethnicity, sex, religion, age, national origin, disability, veteran status, genetic information, or any other classification protected by law. Designers, developers, and deployers of automated systems should seek your permission and respect your decisions regarding collection, use, access, transfer, and deletion of your data in appropriate ways. Continuous surveillance and monitoring should not be used in education, work, housing, or in other contexts where the use of such surveillance technologies is likely to limit rights, opportunities, or access [8].
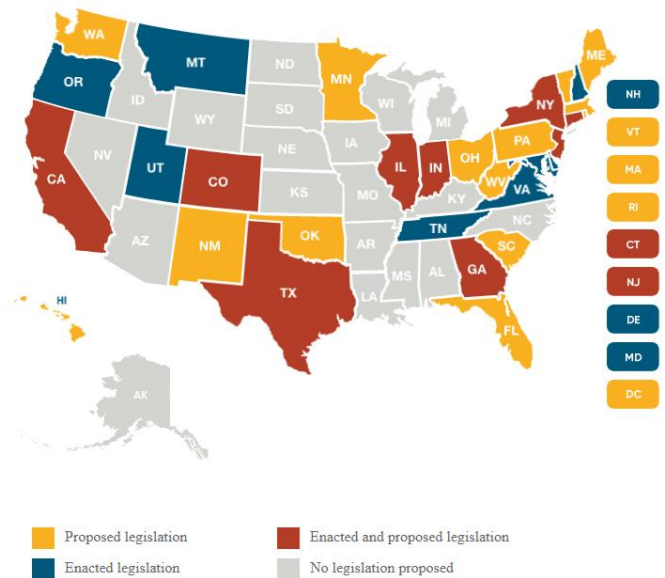

Figure 3: US state-by-state AI legislation [9].

Since 2019, 17 states in the US have enacted 29 bills focused on regulating the design, development, and use of artificial intelligence. These bills primarily address two regulatory concerns: data privacy and accountability. In 2023, Congress held committee hearings and proposed several bills to address the perceived threats and promises of this new technology, but the bills are yet to pass. This leaves the task of establishing regulatory and compliance frameworks for AI systems to the states. The states are to take the lead on regulating AI. Several states have passed laws forbidding law enforcement from using face recognition. Ten states included AI regulations as part of larger consumer privacy laws. In the 2023 legislative session, at least 25 states in US introduced artificial intelligence bills and adopted resolutions or enacted legislation. Figure 3 shows different state laws that have been passed and proposed to regulate the use of AI [9]. Policy governing the design, development, and use of AI should seek to [10]:

- Ensure that the design, development and use of AI is informed by collaborative dialogue with stakeholders from a variety of disciplines.
- Protect individuals from the unintended, yet foreseeable, impacts or uses of an unsafe or ineffective AI system.
- Protect individuals from abusive data practices and ensure that they have agency over how an AI system collects and uses data about them.

- Ensure that individuals know when and how an AI system is being used and provide users with an option to opt out of an AI system in favor of a human alternative.
- Protect individuals from discrimination and ensure that AI systems are designed in an equitable way.
- Ensure that those developing and deploying AI systems are complying with the rules and standards governing AI systems and are being held accountable if they do not meet them.

To ensure accountability, states are incorporating compliance and accountability measures into existing data privacy laws governing AI systems. No existing state legislation matches the ambitious European proposals.

The use of artificial intelligence in the European Union will be regulated by the AI Act, the world's first comprehensive AI law. European Parliament approved the Artificial Intelligence Act in December 2023 that ensures safety and compliance with fundamental rights, while boosting innovation. Europe finally got the world's first binding law (AI Act) on artificial intelligence, to reduce risks, create opportunities, combat discrimination, and bring transparency. It has linked the concept of artificial intelligence to the fundamental values that form the basis of our societies [7]. The regulation indicates that AI systems that can be used in different applications are analyzed and classified according to the risk they pose to users.

IV. LEGAL ISSUES IN ARTIFICIAL INTELLENCE

The potential of AI technology to revolutionize industries and foster innovation is undeniable. AI systems are increasingly used in adjudication and legal practice. With public and academic attention increasingly focused on the role of machine learning in the health information economy, mastering these systems' vulnerabilities becomes more critical.

The legal issues surrounding AI are complex and evolving. Regulations like the General Data Protection Regulation (GDPR) in the European Union and the California Consumer Privacy Act (CCPA) in the United States aim to address privacy concerns by providing guidelines for data collection, processing, and protection. As AI technologies continue to advance and permeate various sectors, it is imperative to engage in open and ongoing discussions and research to ensure that the development and use of AI aligns with societal values and legal principles. As the legal landscape continues to shift, keeping legal counsel informed about the use of generative AI is essential [11].

There is no category of law called "AI law" which we can apply to legal issues created and presented by artificial intelligence. Lawyers, judges, and arbitrators will need to apply classic legal principles to AI.

V. APPLICATIONS

AI has been successfully applied in various sectors such as education, healthcare, finance, manufacturing, and transportation, where it has make significant improvements in efficiency, cost reduction, and the development of innovative products and services. This rapid growth of AI has raised several critical questions related to IP rights, particularly in the areas of patents, copyrights, and trade secrets. AI law is applicable to the following areas [12,13]:

- *Intellectual Property:* This encompasses a broad spectrum of intangible assets, including patents, copyrights, trademarks, and trade secrets. AI has

become a game changer across various sectors, and intellectual property (IP) law is no exception. The convergence of IP and AI presents both unparalleled opportunities and unique challenges for businesses across industries. The legal challenges the new technology presents are formidable, particularly at the intersection of AI and intellectual property. The use of proprietary material in training AI systems and the potential exposure of confidential information pose significant risks.

- *Copyright:* Copyright law protects original works of authorship, such as literary, artistic, and musical works. Copyrights are a form of intellectual property protected by federal law. Owning a copyright gives the owner the exclusive right to reproduce, publish, or sell an original work of authorship, such as a book, a painting, or a song. Although copyright law does not specifically address artificial intelligence, protection under the Copyright Act must meet the following requirements: (1) an original work of authorship; (2) fixed in a tangible medium; (3) that has a minimal amount of creativity. Any work that does not meet the three requirements does not qualify for copyright protection. Since machine-created work may not need the criteria for copyright protection, ownership may not be clearly distinguished. A lawyer advising an AI company will need to develop new law and provide recommendations about how the law will be applied to issues of copyright infringement.

- *AI-generated Art:* Artists using traditional mediums, such as paint, pen, or paper, are considered the authors of the work and generally hold copyright over their work by default. The fundamental question before addressing AI-created art is whether copyright can belong to anyone other than a human being. Figure 4 shows a typical AI-generated art [14]. It is safe to state that artificial intelligence generated art is here to stay. So once an AI-generated masterpiece is created, what stops someone from claiming it as their own and using it commercially or preventing others from using it? On top of existentially threatening the very concept of artists and creatives, AI-generated content raises several new legal issues. Ultimately humans are the ones that make the final decision to use art generated by a machine and AI clearly cannot grant permission for use of the work or hold a copyright.

Figure 4: AI-generated art [14].

- *Patent:* A patent grants its owner the exclusive right to exclude others from making, using, selling, and importing an invention for a limited period, usually 20 years from the filing date. The patent world is discussing whether an AI can be listed as an "inventor" on a patent application. It is not beyond imagination that Artificial General Intelligence may find its way as a "legal person" or may have laws specifically drafted for its regulation and ownership in the near future.

- *Trade Secrets:* These encompass confidential information that provides a competitive advantage to its owner. AI technologies, such as machine learning models, training data, and algorithms, may be considered trade secrets if they meet the necessary requirements of confidentiality, economic value, and reasonable efforts to maintain secrecy.

VI. BENEFITS

Artificial intelligence has the potential to spur innovation and transform society, industry, and government. The new rules ban certain AI applications that threaten citizens' rights. Emotion recognition in the workplace and schools, and AI that manipulates human behavior or exploits people's vulnerabilities will also be forbidden. The use of biometric identification systems (RBI) by law enforcement is prohibited.

VII. CHALLENGES

While AI can make enforcement and adjudication more effective, potentially reduce discrimination, and make the drafting of contracts, briefs, laws, regulations, and court opinions faster and less costly, it also has serious implications for broad societal issues.

Artificially intelligent machines have raised concerns about the impact on the labor market and the potential for job displacement. Although AI has the potential to transform legal practice and improve efficiency, it is unlikely to replace human lawyers.

Although there is presently no legal definition of AI, AI is not exempt from the law already in force. Innovations in AI are raising new questions about how copyright law principles such as authorship, infringement, and fair use will apply to content created or used by AI. Questions remain over who should regulate AI, what must be covered and how the mechanics of global governance will work. Governance is never an easy thing to get right, but while regulators at the local, national and global levels deliberate over the societal ramifications of a world driven by AI.

CONCLUSION

Artificial intelligence refers to any human-like intelligence exhibited by a computer, robot, or other machine. After a long time perception of AI as science fiction, AI is now part of our everyday lives. The rapid advancements in artificial intelligence have significantly impacted various aspects of human life and revolutionized numerous industries. Artificial intelligence has the potential to change everything. AI has attracted attention as a key for growth and development in developed nations such as Europe and the United States and developing nations such as China and India.

AI is everywhere. Each time a new AI technology is introduced, legal and ethical questions arise. As is the case with most new technologies, the establishment of regulatory and compliance frameworks has lagged behind AI's rise. A challenge for the future will be how to reap the benefits of AI

for society while at the same time protecting society from its harms. It is essential for legal professionals to understand limitations of AI and ensure that its use complies with ethical and regulatory standards. More information about AI law can be found in the books in [15-29] and the following related journal:

- *Artificial Intelligence and Law*
- *Journal of Digital Technologies and Law*

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