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Advancements in Artificial Intelligence and cyber security

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Abstract

Artificial intelligence's extensive use and integration into many parts of society and the economy have increased productivity and brought about positive changes. Concurrently, technology will unavoidably cause ethical dilemmas and shake up the current social order. Problems with privacy breaches, prejudice, joblessness, and security threats are just a few of the ethical concerns that have arisen as a result of AI systems. Consequently, the study of AI ethics-a subfield of artificial intelligence research-has grown in importance as a matter of widespread interest for people, businesses, governments, and organizations worldwide. Summarizing and assessing the ethical hazards and concerns brought up by AI, as well as the ethical guidelines and principles provided by various organizations, methodologies for evaluating the ethics of AI, and ways to tackling these difficulties will provide a complete overview of this topic. Furthermore, difficulties in incorporating AI ethics and potential future directions are highlighted. Questions of law, society, and business that have arisen as a result of AI development are the primary focus of this research.

Keywords: Artificial Intelligence, networks, Smart Cyber Security methods

Introduction

New technologies, such as artificial intelligence (AI), are energizing human thought. In this way, computers are able to learn, think, and create. Assuming it relies on human intellect, a computer program is considered an application. People should handle the pros and cons of AI and use only the positive aspects of this most significant technological advancement for the sake of future generations and the planet. There is widespread agreement that the misuse of artificial intelligence would have a devastating effect on human progress. Whatever the situation may be, no evil intent exists in the use of AI. The integration of AI into the legal system will undoubtedly have an impact on legal systems worldwide. The IBM Watson-controlled robot 'ROSS' was the first major player to try using AI for legal purposes; it used a novel approach to answering research inquiries by mining data and discovering patterns and instances in the law. Surprisingly, the back-end work for the case and mediation objectives, such as examination, information capacity and usage, etc., will be the most affected area, rather than the suit cycle or assertion concerns. The Indian legislation and their interpretations are always evolving and expanding due to the large number of instances and diverse nature of the key event.

Numerous approaches may be taken to address this subject; however, considering the common problems that AI is used to address is a good starting point. Similarly, artificial intelligence (AI) might be defined as the use of technology to automate tasks that normally require human intellect. In this definition of AI, the focus is on how the technology is used to automate jobs that are traditionally thought to need intelligence from humans. To further understand this AI model, we will rely on a few instances. Using AI, scientists have successfully mechanized a number of hitherto labor-intensive processes, including language translation and interpretation, chess playing, and driving. Playing chess requires humans to engage a wide range of cognitive abilities, including thinking, planning, strategizing, and decision-making. Finally, during driving, many brain systems are engaged, including those associated with vision, space perception, knowledge of one's surroundings, movement, awareness of one's own consciousness, and judgment.

Artificial Intelligence (AI) has come a long way. More and

more areas of our society and academic fields are embracing artificial intelligence (AI) technologies including computer vision, natural language processing, and machine learning (ML). Artificial intelligence (AI) is rapidly replacing humans in many contexts, including decision-making. Numerous fields have made extensive use of it, including commerce, supply chain management, transportation, healthcare, academia, government, etc.

Economic growth, social progress, and human well-being have all benefited from the efficiency improvements and cost reductions brought about by the deployment of AI. One way in which AI chatbots are helping businesses is by responding instantly to consumer questions. This not only makes customers happier but also boosts revenues. With the use of AI, telemedicine services can reach patients even when they are in faraway places. Our everyday lives, humanity, and society are already being impacted by the fast development and widespread use of AI.

Literature Review

Blessing, *et al*. (2024) [1]. Ethical and Legal Issues with AI for Medical Decision-Making Support. With the advent of AI, new opportunities have arisen for research, patient care, treatment planning, and diagnostics in the healthcare industry. Machine learning and deep learning-based AI systems in particular have shown remarkable proficiency in handling complex medical data. Because of this, new avenues for personalized treatment, early disease detection, and health outcome prediction have opened up. The broad application of AI in healthcare, however, raises serious moral and legal concerns, particularly around issues of accountability and accountability in AI-assisted decision-making.

Sharma, DR. (2024) [2]. Countless areas of contemporary life are being transformed by artificial intelligence (AI), including healthcare, finance, transportation, and education. Despite AI's great potential for efficiency and innovation, its widespread adoption is fraught with legal complications and challenges. The legal landscape of artificial intelligence (AI) is examined in this study, with a focus on privacy, liability, intellectual property (IP), and employment law. Another big concern about AI is the possibility of privacy violation as a result of collecting, storing, and analyzing enormous amounts of data.

Bartneck *et al*. (2021) [3] In this chapter, we will discuss who is responsible if an accident involving an AI system or robot causes injury. Assigning blame is a challenging undertaking due to the complexity of the situation and the system. We describe in detail two real-life incidents-one involving an autonomous vehicle and another involving a mistargeting by an autonomous weapon-to show how the various actors and technologies involved interact with one another.

Babikian *et al*. (2024) [4]. This study delves into the moral quandaries, policy conundrums, and responsibility problems that have surfaced due to the fast adoption of AI systems. A careful balancing act between encouraging innovation and reducing possible hazards is emphasized in the abstract, which examines instances across sectors and governments. The article argues that in order to ensure that AI research and deployment are transparent, fair, and accountable, proactive legal frameworks are necessary to maintain ethical norms.

AI and Cyber Security

Machine learning (ML) and artificial intelligence (AI) are becoming more important in information security because of their ability to rapidly sift through massive amounts of data in search of malicious code or suspicious behavior that might indicate a phishing attempt. For businesses to thrive in today's digital economy, AI cybersecurity is the way to go. Security experts need strong backing from smart machines and innovative technology like artificial intelligence (AI) to successfully defend their enterprises against threats.

The following are some benefits

AI Gains Knowledge Over Time

Just like its name suggests, AI technology is smart, and it uses this intelligence to progressively strengthen network security. Through the application of deep learning and machine learning, it progressively understands how a corporate network operates. Patterns discovered on the network are grouped by it. Then, it takes the necessary steps after checking for security incidents or abnormalities.

Artificial Mind Recognizes Unknown Dangers

Hackers launch hundreds of millions of attacks every year for a variety of reasons. Unknown threats can wreak havoc on a network. The damage they can do before you find, recognize, and stop them is even worse. It's important to use modern solutions to stop attackers as they experiment with new strategies, like malware attacks and sophisticated social engineering. Artificial intelligence (AI) is one of the best technologies for mapping and preventing unknown threats from wreaking havoc on a company.

AI Has a Large Data Set to Handle

Lots of things happen on a company's network. Even a medium-sized business has a lot of traffic, which means a lot of data is sent and received every day between the company and its customers. This data needs to be protected from bad actors, but cybersecurity experts can't possibly check every packet for threats.

Enhanced Management of Vulnerabilities

Maintaining a secure network for a business relies heavily on vulnerability management. It has already been said that the average business encounters a great deal of danger on a daily basis. Recognizing, locating, and stopping them are necessary for safety. Analyzing and evaluating the present security measures may be aided by employing AI research to vulnerability management.

Nation of AI and problems with it

The author has determined, after research into many sources, that the word "artificial intelligence" does not have a universally accepted definition, and that current definitions are often at odds with one another. To paraphrase its creator, John McCarthy, "the science and engineering of making intelligent machines" is how "AI" was best described. According to him, "the computational part of the ability to achieve goals in the world" is what really constitutes intelligent behavior. But keep in mind that these definitions didn't appear until almost fifty years ago. After being written off as science fiction during what was

dubbed the "AI winter," the concept was revived after the commercial success of agents and expert systems. The capacity to mimic certain brain activities expanded as science progressed, new technologies emerged, and new ways to use them. All of these things came together to make scientists realize that there was no single term that could capture all of the happenings in the relevant field of knowledge; the terms "weak" and "strong" AI then emerged, adding to the growing confusion rather than clearing things up. The term "weak" artificial intelligence now refers to systems that can only do a single job. Any technological system (software, hardware, etc.) that can mimic or even surpass human intelligence and adapt its skills to any given job is said to have "strong" artificial intelligence.

Simultaneously, the field of robotics was expanding, which led to still another misunderstanding: people started using the words "robots" and "artificial intelligence" interchangeably, as if they meant the same thing. In the author's view, it is important to remember that the merging of robotics and artificial intelligence is not always caused by the fact that both subjects are typically studied simultaneously by the same academics. The word "robot" is defined in a number of sources, including state statutes, UNESCO papers, and ISO standards. They all boil down to the same idea: a robot is just a machine with some kind of mechanism, an apparatus that can operate itself and do certain tasks. Most parties concerned believe that artificial intelligence (AI) refers to software, a program, or a mix of algorithms, despite the fact that the word "AI" is sometimes used interchangeably. This clarifies that just because a robot has access to some AI features doesn't guarantee they are identical.

Intelligent software – The solution for legal regulation

Because neither its meaning nor its substance can include all of the characteristics often associated with it, the phrase "artificial intelligence" is unsuitable for use as a category. Additionally, we conclude that it is important to comprehend AI as an independent entity, rather than to give the term a lot of different meanings or to classify it, by adhering to the principles of both general logic and legal technique.

The author concludes that classifying programs as "intelligent software" is a reasonable and accurate approach based on this reasoning. An information processing system is defined by the author as a collection of interrelated programs, methods, rules, and pertinent documentation that enable the system to process and analyze data autonomously and make decisions based on the results.

This definition incorporates intelligent behavior aspects into the word "software" first described in the international organization for standardization's standard ISO/IEC 2382:2015. The latter are the end product of a meta-analysis of many scientific disciplines' hypotheses on the nature and capabilities of computer programs.

There are parts of this phrase that can only be understood in a certain way; however, it is precise and conveys the intended meaning of the proposed category well. It is easy to determine the collection of ideas that make up such a category. Furthermore, the phrasing is intentionally vague so that other real-world objects may be added to the list if they are invented, developed, or fall into the specified category. This strategy seems to be ideal when considering the advancement of technical sciences and technology generally.

This grouping also has the added benefit of making it easy to distinguish between adjacent products of technological progress, such as software, hardware complexes, and approaches to programming and other similar topics.

Using AI and technology in the legal field during Covid-19

Many people's life have been affected by the COVID-19 epidemic. It has undoubtedly aided legal professionals in realizing the value of technology and the need of using AI and ML tools to do their job. Due to the social isolation that has resulted in a lockdown, the Supreme Court has ruled that the courts only handle urgent matters by video conference and electronic submission of court papers (see here). In the case of Swapnil Tripathi v. Supreme Court of India (see here), the Indian Supreme Court acknowledged the concept of live broadcasting of proceedings, with the exception of certain situations such as marital and rape cases. The administration of justice must continue unabated notwithstanding the lockdown, as rightly pointed out by Judge Sikhi. Essential services include the provision of justice, and technology has played a major role in COVID-19, facilitating electronic filing and payment of court expenses. Going the extra mile, the Delhi High Court has set up "e-rooms," or digital courtrooms, where anybody may access case information via a web site. Considering the circumstances in which we all find ourselves, technology is the one companion who will remain by our side for an extremely long period. To that end, we must embrace technology advancements such as artificial intelligence and press forward.

Benefits of AI to the legal profession: An analysis

In most commercial sectors, advancements in information technology (IT) have proven a game-changer. The focus is on enhancing customer service and using data for more advanced decision-making on a global scale. The Indian government's digital India initiative is also contributing to the transformation of Indian companies. Although it is still in its early stages of digital growth, India's legal business has not been immune to its effects. The influence of legal innovation is swiftly altering their method of operation as legal departments and corporations become more cognizant of the cost savings provided by IT. Court support staff's lack of digital literacy is a significant challenge, notwithstanding the rapid digitization of the Indian judicial system.

Because of the crucial role that court support departments play in realizing the benefits of virtual or online courts, it is imperative that these departments get digital education. In order to compete on a global scale, attract and retain talent, grow profits, and modernize, the legal services business must digitize. Younger professionals are becoming partners in law firms at a rate never seen before. Working more efficiently and in the current day is essential for this new generation of specialists. A better solution would be to automate globally recognized processes; this would unquestionably raise the bar for CEOs and lead to even greater competence.

Conclusion

For all your AI-related legal and societal woes, the phrase "intelligent software" has you covered. It has the potential to serve as a legal category for the further categorization of smart programs, which, in turn, will provide the suitable foundation when taking into account the unique characteristics and variations in their regulatory framework. Smart software regulation may be built in a consistent and methodical fashion by dividing it up according to autonomy and independence levels. At its most advanced stage, artificial intelligence will have its own set of regulations-and, according to the author, maybe even an e-personality.

The word "artificial intelligence" is often linked by the general public to fantastical notions and tales of robots taking over the world, but this misconception is slowly dispelling as new technologies become more widely accepted. Changing to a different idea (particularly if it's more suitable) may increase the likelihood that people will accept the ubiquitous smart software and, upon its eventual invention, actual artificial intelligence.

Artificial intelligence and legal concepts are dissected. Artificial intelligence (AI) lacks both magical abilities and the intellect that is presently understood by humans. To do intelligent tasks that would normally need human intellect, modern AI makes use of heuristic proxies, patterns, and rules to make judgments that are applicable in narrow, specialized circumstances. Existing AI technology, however, has its limitations. It struggles the most with managing completely unstructured or open-ended activities, comprehending meaning, applying knowledge across tasks, and dealing with abstractions. On the contrary, the vast majority of AI-powered successes-including chess, credit card fraud detection, and tumor diagnosis-occur in very structured domains with clear-cut correct and incorrect responses as well as strong, algorithm-detectable patterns. One must be cognizant of the strengths and weaknesses of current AI technology in order to comprehend AI with respect to the law. It helps provide a realistic image of the ways in which AI will affect the legal system and its administration, as well as the ways in which it will have the opposite effect.

It is evident from our analysis of AI ethics as well as the many difficulties and obstacles highlighted in this article that trying to solve AI's ethical problems and create AI systems that can act ethically is a difficult and intricate undertaking. But the success of ethical AI systems will determine whether AI can play a more significant role in our future civilization. Everyone from AI researchers and engineers to philosophers and users-not to mention lawmakers-needs to work together on the field of AI ethics. The article summarizes and analyzes the ethical concerns and risks brought up by AI, as well as the ethical principles and guidelines put out by various groups, ways to deal with these issues or implement these principles, and ways to assess the morality or ethics of AI.

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