INDIAN JOURNAL OF LEGAL REVIEW [IJLR – IF SCORE – 7.58]

VOLUME 6 AND ISSUE 7 OF 2026

APIS – 3920 - 0001 *(and)* ISSN - 2583-2344

Published by

Institute of Legal Education

https://iledu.in

CRITICAL ANALYSIS OF REGULATING ARTIFICIAL INTELLIGENCE: ETHICAL, LEGAL, AND CONSTITUTIONAL CHALLENGES

AUTHOR - MANO B* & Mrs. JISHA J. S**

* STUDENT AT SCHOOL OF LAW, VELS INSTITUTE OF SCIENCE, TECHNOLOGY AND ADVANCED STUDIES (VISTAS)

** ASSISTANT PROFESSOR AT SCHOOL OF LAW, VELS INSTITUTE OF SCIENCE, TECHNOLOGY AND ADVANCED STUDIES (VISTAS)

BEST CITATION – MANO B & Mrs. JISHA J. S**,** CRITICAL ANALYSIS OF REGULATING ARTIFICIAL INTELLIGENCE: ETHICAL, LEGAL, AND CONSTITUTIONAL CHALLENGES, *INDIAN JOURNAL OF LEGAL REVIEW (IJLR),* 6 (7) OF 2026, PG. 157-163, APIS – 3920 – 0001 & ISSN - 2583-2344.

ABSTRACT

Artificial intelligence (AI) has been evolving from being a science fiction phenomenon to becoming one of the key factors in our daily lives. With the help of voice assistants, recommender systems, and many other more complicated applications in healthcare, banking, or legislation, AI became an integral element of the social fabric. Speaking generally, AI can be described as the capability of machinery to execute actions that traditionally are performed by humans: learning, reasoning, problem-solving, etc. The term "Artificial Intelligence" was coined by John McCarthy in 1956. This paper provides an analysis on AI in general and the evolution process of the technology in particular through an elaborate and concise discussion. It begins with an introduction into the concept itself, then analyzes how AI technology developed since its theoretical emergence to become one of the most advanced forms like machine learning and deep learning today. On the other hand, the paper recognizes the obstacles that come with AI, which include ethics, privacy of data, and accountability. The more AI develops, the greater the need for balancing between regulation and innovation. In summary, this paper recognizes that although AI brings a lot of opportunities, there is the need for a human-centered approach to developing it.

Keywords: artificial intelligence**,** deep learning, AI evolution, legal implications, technology law

INTRODUCTION

AI technology has brought about a great transformation in the interface of man-machine interaction. AI technology has moved beyond theoretical discussion to become very much a part of our daily existence and influence industries like healthcare, education, finance, government, and law. The term 'artificial intelligence' was coined by none other than John McCarthy, who led the renowned Dartmouth conference that marked the origin of AI research paradigm. Thereafter, AI technology has gone through several stages, including euphoria, AI winter, and renaissance. As the use of AI technology in decision-making becomes increasingly widespread, questions have been raised on issues of accountability and ethics. Therefore, knowledge on AI is not only critical from a technological point of view but also a legal one. With the advent of technology in the current millennium, people have seen great change in how they conduct their lives, how they go about working, and how they interact with the environment. One of the technologies that has made a lot of influence during this time is Artificial Intelligence. Artificial Intelligence is known by its abbreviated form as AI. It is a type

INDIAN JOURNAL OF LEGAL REVIEW [IJLR – IF SCORE – 7.58]
VOLUME 6 AND ISSUE 7 OF 2026
APIS – 3920 - 0001 *(and)* ISSN - 2583-2344
Published by
Institute of Legal Education
https://iledu.in

of machine capability in which machines and computer programs can execute activities that usually require human cognitive power to complete, including learning, thinking, problem solving, and decision making. The genesis of the discipline of artificial intelligence can be attributed to the year 1956, which saw the coining of the term by John McCarthy at the famous Dartmouth Conference. It was from this time that efforts began in earnest to explore the feasibility of building devices that could exhibit human-like thinking capabilities. The origins of AI go far back than this, especially as regards its theoretical underpinnings, and the seminal contribution made in this regard must be attributed to Alan Turing, who postulated that machines could be built that could think and developed the Turing Test as a measure of machine intelligence[199]. AI has evolved considerably in the past decades. To begin with, it was dependent on rule-based systems that were controlled by a set of instructions. However, these systems had limitations in terms of their flexibility in coping with changes. Over the years, the power of computers coupled with large volumes of data made the technology advance towards learning systems, especially ML and DL, which enable machines to develop skills through practice. Consequently, the capabilities of AI have tremendously improved making possible the execution of activities such as recognizing speech and images, and predicting outcomes. In the current times, AI has become an essential tool for many industries, such as medicine, banking, teaching, government, and law. As a matter of fact, in the field of law, for example, AI is utilized not only to conduct research but also predict court verdicts. On one hand, this represents progress and a new level of innovation, and, on the other hand, it poses certain ethical issues and considerations related to accountability, transparency, and privacy. It is important to know what Artificial Intelligence is all about in this regard. Not only does it help one understand the development process of AI, but it would also enable them to analyze its effects on society. This paper intends to discuss the meaning and development process of AI. At the same time, it will also cover some of the issues related to it[200].

DEFINITION

AI can be defined as the capacity of machines to perform actions that normally need human intelligence such as learning from previous experiences, language processing, understanding patterns, solving problems, and making decisions. There have been many definitions of AI that have been put forth. One of the most commonly accepted definitions was that put forth by John McCarthy when he defined AI as "the science and engineering of making intelligent machines". According to this definition, it is apparent that artificial intelligence is not only an abstract notion, but also a science whose aim is to develop intelligent machines. Technically, artificial intelligence encompasses the creation of programs that are capable of simulating cognitive abilities of humans. The next crucial approach to AI is that of Alan Turing, who believes that the intelligence of a machine can be proven if the responses of the machine become indistinguishable from those of a human being during the course of a test known as the Turing Test. To put it simply, Artificial Intelligence involves making machines behave in ways that human beings behave, and in certain instances, do things better than human beings[201].

3. Conceptual Framework of Artificial Intelligence

3.1 MEANING AND SCOPE

The definition of artificial intelligence is the capability of a machine to mimic human intellect. These include processes such as learning, reasoning, problem solving, perception, and understanding of language.

[199] John McCarthy et al., *A Proposal for the Dartmouth Summer Research Project on Artificial Intelligence* (1955).

[200] Alan Turing, *Computing Machinery and Intelligence*, 59 Mind 433 (1950).

[201] John McCarthy, *The Science and Engineering of Making Intelligent Machines* (1956 Dartmouth Conference proposal)

INDIAN JOURNAL OF LEGAL REVIEW [IJLR – IF SCORE – 7.58]

VOLUME 6 AND ISSUE 7 OF 2026

APIS – 3920 - 0001 *(and)* ISSN - 2583-2344

Published by

Institute of Legal Education

https://iledu.in

Different from ordinary software programs, AI programs have adaptive capacities which enable them to learn and become better. Artificial Intelligence involves the application of mathematics, computer science, neurobiology, and linguistics. The goal of AI is to develop programs that operate independently without much involvement of humans.

3.2 Basic Building Blocks of AI

AI relies on basic building blocks, which include:

Data: The most critical resource for driving AI systems

Algorithms: Mathematical algorithms for manipulating data

Computing Capacity: The computing power of hardware devices

Learning Algorithms: Mechanisms for learning and improvement Combining these building blocks helps create AI systems that mimic intelligent actions[202].

3.3. Artificial Intelligence Types

(a) Narrow AI

Also known as "weak AI," its purpose is the execution of specific tasks such as voice assistants, face recognition software, and recommender systems.

b) General AI

This is an envisioned type of artificial intelligence that can undertake any cognitive function executed by humans.

c) super intelligent

AI represents a sophisticated level whereby AI possesses superior capabilities to those of humans in all spheres.

4 AI Evolution

4.1 Pre-1950s

Beginnings: Philosophical and mathematical thought gave rise to AI. The notion of machines mimicking human thinking was suggested by great minds such as Alan Turing. Turing's celebrated Turing Test forms the basis of artificial intelligence evaluation. Artificial Intelligence (AI) may be regarded as one of the most advanced technologies developed by man, but that is not true as far as its development is concerned. This technology has come about after much speculation and research over many years, during which time mankind has attempted to mimic the workings of the human mind. The concept of intelligent machines has roots dating back to myths, where man had created the image of mechanical creatures resembling humans in many respects. Nevertheless, the history of AI has its true origins in the 20th century. The term 'artificial intelligence' first appeared in 1956 when the Dartmouth Conference took place. Back then, scientists thought that there existed an exact formulation of human thinking that could be implemented in machines. Thus, the first stage of artificial intelligence started – symbolic AI – when machines received the ability to find solutions based on predetermined rules. During the 1970s and 1980s, AI faced many challenges called the "AI winters," because there was insufficient computing power available and overly optimistic expectations regarding the technology. However, the research did not cease among the researchers.On the contrary, they improved algorithms and found novel means to enhance machine learning. Among other developments, expert systems emerged as systems capable of making human decisions in a particular domain such as medicine and engineering. The true breakthrough in AI took place in the 1990s and early 2000s when machine learning became widely popular. The fundamental change was that instead of encoding rules, computers learned from data on their own. One of the remarkable events occurred in 1997 when IBM's Deep Blue beat the world chess champion, Garry Kasparov. The actual revolution happened in the nineties and early two thousands due to the emergence of machine learning when a computer learned to analyze the data. That was an enormous intellectual

[202] Alan Turing, *Computing Machinery and Intelligence*, 59 Mind 433 (1950).

INDIAN JOURNAL OF LEGAL REVIEW [IJLR – IF SCORE – 7.58]

VOLUME 6 AND ISSUE 7 OF 2026

APIS – 3920 - 0001 *(and)* ISSN - 2583-2344

Published by

Institute of Legal Education

https://iledu.in

step as compared to a previous paradigm when people programmed every aspect of a software application. The most outstanding breakthrough in this period occurred in 1997 when IBM's Deep Blue beat world chess champion Garry Kasparov. The modern era of AI technology is marked by an unprecedented speed and progress brought about by massive amounts of data, computing power, and efficient algorithms[203]. Deep Learning, one of the branches of machine learning, mimicking human brains in many aspects, gave computers capabilities of recognizing visual objects, analyzing language, translating texts, and even creating something. AI can be encountered today in smartphones, social networks, medicine, education, transportation, and entertainment sectors. The distinguishing feature of modern artificial intelligence is constant improvement based on experience. This means that unlike in previous periods, AI learns continuously, which makes it comparable to human beings' skills. An example here is recommendations on YouTube or Netflix that adapt based on user preferences.

4.2 The Origins of Artificial Intelligence (1950s-1960s)

In the Dartmouth conference of 1956, AI was born. The research community initiated efforts to develop computer programs that could solve mathematical equations and play games. The scientific community had high expectations about the development of human-level artificial intelligence. The roots of Artificial Intelligence (AI) trace back to the time frame between the 1950s and 1960s, when for the first time attempts were made to create devices that would mimic humans' thinking and behavior. This timeframe became the basis of AI research from which all further investigations originated. The Dartmouth Conference became the starting point in the development of AI studies as a special science. Among other important contributors to early AI investigations there were Marvin Minsky, Allen Newell, Herbert A. Simon, and John McCarthy.

4.3 The AI Winters (1970s–1980s)

AI advancement was hampered by the limited computational capacity and unrealistic goals. Funding reduced, causing what came to be known as an "AI Winter." But research on specialized applications like expert systems persisted[204].

3.4 Revival and Machine Learning (1990s–2000s)

The recovery of AI was marked by progresses in computing capabilities and data accessibility. Machine learning became an important feature that allowed algorithms to learn from data, instead of depending on rules. A significant event in this period was the victory of IBM's Deep Blue over world chess champion Garry Kasparov in 1997[205]. The decade from the 1990s to the 2000s constitutes another milestone in the history of Artificial Intelligence (AI). After what is referred to as an AI winter, when several challenges arose for the AI sector during the late 1970s and through the whole 1980s, there was a spectacular revival of AI.The reason behind such an impressive surge in the development of AI was technological progress in computers, increased data and better algorithms. Consequently, AI became data-centered, particularly machine learning-based. In this era, AI applications began to emerge in day-to-day uses as well. Machine learning became part of email spam filtering services, recommendation engines like those on Amazon, and speech recognition. In the healthcare industry, machine learning was useful for predicting diseases and analyzing medical images. Machine learning was employed in finance to detect fraudulent activities and assess risks. However, AI applications in this era were not without their constraints. Machines needed huge amounts of structured data and significant computing capacity, which were often lacking. But constant research and

[203] Bruce G. Buchanan, "A (Very) Brief History of Artificial Intelligence," Stanford University.

[204] Alan Turing, *Computing Machinery and Intelligence*, 59 Mind 433 (1950).

[205] IBM Research, *Deep Blue Defeats Garry Kasparov in Chess Match* (1997).

advancements addressed these constraints. The rebirth period in the 1990s-2000s was characterized by the shift of focus of artificial intelligence from purely scientific studies to the development of technological applications based on data analysis. The concept of machine learning laid the groundwork for subsequent advances in deep learning.

3.5 Modern Era of Artificial Intelligence

This era features deep learning, big data, and neural networks. AI today can: Speak recognition process images Automated driving legal analysis Some of the technologies that have transformed AI applications include machine learning and deep learning[206]. The age of Artificial Intelligence (AI) started in the late years of the first decade of this millennium, and has been evolving since then at an impressive rate. This era is marked by the development of computing technologies, big data, and sophisticated algorithms that enable machines to learn and reason better than they have ever been able to. Unlike previous eras of AI, where computer programs operated under a fixed set of programming instructions, in this era, the emphasis is on machine and deep learning. Among the most significant achievements of this age is deep learning technology, which is modeled on how the human brain works. In deep learning technology, artificial neural networks having several layers are used to process complicated information in the form of pictures, sounds, and texts. This development has led to remarkable innovations in areas like facial recognition technology, digital assistant services, translation machines, and even in medical diagnosis. Other characteristics of this period include the presence of large-scale data sets. Data sets collected through social media, internet purchasing, health care, and sensors are applied to teach AI algorithms. The larger the scale of the information fed to an AI system, the higher its accuracy and efficiency will be. As a result, AI has become very valuable in sectors including finance, health care, education, transport, and entertainment. Another example of an area in which artificial intelligence has made itself relevant to modern society is through its implementation in daily life. It ranges from self-driving vehicles, recommendation engines for video and movie streaming platforms such as YouTube and Netflix, all the way to voice-activated assistants in homes. In the medical sector, AI could aid in disease diagnosis and treatment. In the corporate environment, AI aids in understanding consumer behavior. On the other hand, there are many challenges associated with AI in the modern world. The challenges that have been talked about include issues like job loss due to automation, privacy and security of data, decision-making, and biased results because of data used to train AI. From the above discussion, it can be argued that the present era of Artificial Intelligence can be seen as a technological revolution. This technology has changed the lives of people and their interaction with technology. Even though it is very beneficial, there should also be an emphasis on the ethical use of AI technology.

4. RECOMMENDATION

Apart from the benefits it provides, the fast development of Artificial Intelligence (AI) faces some challenges in several fields of society. Despite all the benefits that come from the use of Artificial Intelligence, which include improved precision and efficiency and better decision-making processes, there are some limitations that should be taken into account when talking about ethical considerations, security concerns, dependence on development, and accountability. Thus, it is vital to develop a balanced approach during AI creation.Firstly, governments need to work on the development of strict legislation regarding the use of AI. Specifically, there is a need for legislative measures to control and prevent any kind of abuse of AI in industries such as policing, healthcare, and financial industry.Furthermore, governments should introduce legal recognition of responsibility to minimize potential issues

[206] Yann LeCun et al., *Deep Learning*, 521 Nature 436 (2015).

with liability. The second recommendation is concerned with ethical aspects of using AI technology. Developers of AI should take into consideration ethical standards to make sure that AI applications are unbiased. AI uses a training set which may cause biased results if it is not carefully chosen. Other recommendations include ensuring that there is proper protection of data privacy. This is because AI technology greatly depends on the users' data; hence, strict enforcement of data protection policies is required in order to keep personal data secure. Data usage, storage, and collection should be at the discretion of the individual concerned. Furthermore, human supervision is important throughout this process. AI can only be utilized as an assistive tool but not as a substitute in decision making. Education and awareness are also essential elements here. It would be necessary to introduce literacy programs related to artificial intelligence in order to make all parties familiar with the principles, applications, and limits of this phenomenon. As a result, proper use of AI is expected, while the fears associated with it might become less pronounced or even vanish. Lastly, research and innovation are to be promoted. By working together, government organizations, businesses, and universities could contribute to developing technologies based on AI that would be reliable, understandable, and effective.

CONCLUSION

In summary, artificial intelligence should be approached using the principles of responsibility and regulation in order to serve humanity well. The notion of artificial intelligence (AI) has evolved from a mere concept into the most formidable technological force that is currently affecting our lives around the world. From the early stages of AI based on philosophy up until now, where AI runs by machine learning and deep learning, it can be easily noticed that technology has made tremendous progress within the last couple of decades. In today's reality, AI is no longer confined within the walls of science laboratories; it has become ubiquitous in everyday life spheres. AI technology is characterized by an ongoing endeavor of humans to develop machines with thinking abilities. With the efforts made by Alan Turing and the actual creation of artificial intelligence, followed by numerous AI winters and other phases of progress, modern times are marked by the use of deep learning, which makes processing huge amounts of information possible and leads to accurate conclusions being drawn instantly. Though having multiple positive aspects, artificial intelligence poses various issues related to ethical and legal questions. Problems associated with the lack of transparency, the problem of data privacy, issues concerning biases in algorithms, and accountability are just some of the major problems that arise in connection with artificial intelligence. Given the increasing level of autonomy of AI, the necessity to regulate the field and control processes takes place. However, concerning the legal system, AI can be regarded as enabling technology, as well as disruptive technology. In the first place, it assists in increasing the efficiency of doing the research, as well as analyzing cases.At the same time, AI can generate some problems regarding the question of objectivity and the impact of the human factor. In other words, it should be considered as an instrument that facilitates the process of decision-making. Overall, it should be noted that AI is two-faced technology. There is a possibility of numerous opportunities, but it is vital to think about their responsible use. After all, the future of AI depends on people themselves. This period was notable as the time when AI evolved from philosophy into a science. The Dartmouth Conference of 1956, for instance, is one milestone event in history in defining AI and uniting experts who believed that machine simulation of intelligence is possible. However, there were also some drawbacks during this era. There was an exceptionally low computing capacity in the 1950s and 1960s in comparison to today's standards, and there was limited storage for data. Consequently, AI technology

could solve only elementary problems but failed to address complex ones. This disparity pointed to the difficulties of reproducing human-like intelligence on machines. However, even with these weaknesses, the importance of this period can hardly be overestimated. The theories, approaches, and ideas created in this period are still highly relevant today as far as the contemporary artificial intelligence is concerned. Moreover, it introduced the fundamental idea that intelligence can indeed be investigated, modeled, and, finally, replicated via computational means. In other words, the 1950s-1960s should be regarded as the "infancy" of artificial intelligence, which has laid the foundation for all further developments in this sphere. Without it, the fast development of current AI technologies would never become possible.