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Artificial Intelligence: A Practical Analysis of its Applicability, Challenges, and New Vision in the Digital Era

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Abstract:- Humankind scientifically called Homo Sapiens, together with a collection of finite minds has created various tools of infinite ability termed as Artificial Intelligence. AI replicates human-like intelligence in machines, programmed to think and act like humans while continuously self-improving. AI is rapidly advancing in various aspects of society, providing valuable assistance in the digital age. Its adaptability and applicability have grown significantly from 2018 (1.9) to 2022 (3.8), according to a McKinsey Global Survey.

In this paper, we will discuss the novel applications of Artificial Intelligence in diverse fields impacting humankind and how this highly complex field is paving its way into our lives and surroundings and will observe its transformative impact on our society and how there has to be legal, political and regulatory implications if an AI is at fault and will also emphasize the need to critically assess AI's features and its pre-vs-post induction applications in areas like IoT, automotive, and healthcare

The research paper aims to clarify AI features and approaches, focusing on its inception, attributes, applicability, and assessing current AI laws and regulations while presenting an opinion on them, secondly to investigate and draw a contrast between the present and the future aspects of Artificial Intelligence, the inherent risks involved with Artificial Intelligence and how its benefits may undermine them and lastly, a brief comment and personal overview would also be brought up in the paper in a manner conclude the topic.

Keywords:- *Artificial Intelligence, Humankind, Applicability, Regulations.*

I. INTRODUCTION

➢ *History: Artificial Intelligence and its Seasons of Growth*

Artificial Intelligence hails back to the 1940s when the famous story of "*Runaround"*[1] was published, it summarised itself by explaining three quintessential laws of robotics. Roughly, a decade later another success story of Artificial Intelligence was known when an article "Computing Machinery and Intelligence"[2] discussed the importance of machines and what test is necessary to understand whether AI is intelligent. It is also believed that it all started with the first conference that is Dartmouth Summer Research Project on Artificial Intelligence hosted by John McCarthy and Marvin Minsky in 1956[3], though the conference did not please all, as people disagreed on the practical aspects of implementing it, it gained an achievable success as it catalysed sentiments of people for further growth in AI. Unfortunately, there came an era too where there was strong criticism by the U.S. Congress on the money spent on Artificial Intelligence as well as whether it is worth having a positive outlook or approach if further used in allied fields and at greater stages. People also focused on how and what A.I lacked as a tool for the future and it was discovered that the expert systems of A.I. if not properly formulated and formalized might not be able to depict the smallest of differences between two things and that led to a higher search of relativity neuron networks and Artificial Intelligence.

Formalization is one of the most important features an Artificial Intelligence should exhibit otherwise expert systems of Artificial Intelligence would work poorly, on the same grounds the Depp Blue program gained success through a technique called tree search[4] that helps in the better and more efficient functioning of Artificial Intelligence. Deep Learning[5] and neural networks are the most common application basis of any artificial intelligence tools, and Alpha Go in 2015 achieved remarkable success through this application when its artificial intelligence tool beat the world champion of the game Go now Artificial Intelligence is also capable of not only recognizing images but also generating one. However, there stands a very mandatory test for any artificial intelligence to be recognized as being capable enough to think and work like

[1] Michael Haenlein1 and Andreas Kaplan, *A Brief History of Artificial Intelligence: On the Past, Present, and Future of Artificial Intelligence*, [2009] 61(4), SAGE.

[2] A. M. Turing Mind, *Computing Machinery and Intelligence*, [1950] 59 New Series 433.

[3] William F. Clocksin, *Artificial Intelligence and the Future,* [2003] 361, IKT 1721.

[4] Murray Campbell, A. Joseph Hoane Jr., and Feng-Hsiung Hsu, *"Deep Blue," Artificial Intelligence*, [2001] 134(1/2), Elsevier 57.

[5] David Silver and others, *Mastering the Game of Go with Deep Neural Networks and Tree Search, Nature*, [2016] 529 484.

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humans. The Turing test popularly called Imitation Game deals with an interrogator who interacts with an entity that can be a machine or a human being, wherein the interrogator fails to recognize whom is it interacting with a machine or a human, and fails to rectify the same the Artificial Intelligence machine wins over the process and is said to pass the Turing test[6].

Tracing the history of Artificial Intelligence from when an electronic computer was recognized to slowly Artificial Intelligence seemingly feels everywhere from upending education to redefining medical facilities for better healthcare. Artificial Intelligence has taken a crucial phase of evolution where machines and technology have taken upon industries and humans. Moreover, the history itself establishes how Artificial Intelligence has outsourced humans from machine reading[7] to driverless cars, Siri on iPhones, to language models like ChatGPT and it is still starving for greater transformational technology growth it is right now[8].

➢ *Applications and Attributes of Artificial Intelligence*

Artificial Intelligence is a wide-ranging tool that is not only helping but enabling the public to grow in allied sectors of work models in the world. Artificial Intelligence is altering the old techniques of learning, healthcare, financial institutions, and various others to a more formulated and transformed into highly technological advancement. "In its broadest sense, AI has been described as "the study of the computations that make it possible to perceive, reason, and act" or "the automation of intelligent behavior", which is driven by a general "study of intelligent agents" both biological and artificial"[9]. Another definition for artificial intelligence states "the ability of a digital computer or computer controlled-robot to perform tasks commonly associated with intelligent beings"[10]. The attributes of intelligent beings referred to in the above definition include learning, vision, speech recognition, perception, experience learning, evolving, natural language processing, and many other things, the same attributes when performed by a digital computer become the attributes of an artificial intelligence system.

➢ *Attributes of an Artificial Intelligence System*

There are various facets and attributes of Artificial Intelligence but in totality, there exists four major attributes that Artificial Intelligence entails and they are mentioned as follows:

- *Machine Learning*

Similar to learning from inducing new methods and from past experiences in human beings, machine learning can be defined as computational ways in which new information is provided to a system and the usage of computational methods helps the system to learn from past experiences to either introduce a new set of solutions or improve the previous ones vis-à-vis learning[11]. Machine learning in AI systems is organized into the following types i) Supervised learning, ii) unsupervised learning, iii) and reinforcement learning[12]. To explain these briefly

Supervised learning is labeled training data which provides a correspondence between the input and output data. Eg image recognition, speed recognition, etc. Unsupervised learning uses learning as an algorithm to find the similarities between systems without classification and provides new data. Eg- image differentiation, analysis of fraud, etc. Reinforcement learning uses punishment and reward mechanisms, it uses an exploration phase to learn and then an exploitative phase to use what has been learned. Eg video games, self-driving cars, automated vacuums, etc.[13]

- *Natural Language Processing:*

It refers to a branch of Artificial intelligence that falls under a sub-branch of computer sciences, it is concerned with giving instructions and the ability of a digital computerized system to understand spoken words and text in a way similar to those of humans[14]. Humans have ears that catch vibrations which are then converted into signals that our brain perceives and makes us understand what is being said, similarly, NLP instructs computer applications to translate texts from certain language to another such as voice-operated GPS models or mobile voice assistants such as Siri and google, the system is also used in businesses like Watson natural language understanding developed by IBM

[6] Peter Hawke, '*The Turing Test: Then and Now*',(Stanford University, 16 Oct 2012) <http://www-logic.stanford.edu/seminar/1213/Hawke_TuringTest.pdf>), accessed 3 May 2023.

[7] Oren Etzioni, Michele Banko, Michael J. Cafarella, 'Machine Reading' (2006) University of Washington and AAAI Conference on Artificial Intelligence 16 / 2006, 7 <https://studylib.net/doc/13788537/machine-reading-oren-etzioni--michele-banko--michael-j.-c....> accessed 3 May 2023.

[8] Ainl, '*Artificial Intelligence'*, (Ainl) <https://www.ai.nl> accessed 3 May 2023

[9] McKinsey & Company, '*What are Industry 4.0: The Fourth Industrial Revolution, and 4IR?', (Mckinsey, 17 Aug 2022)*<https://www.mckinsey.com/featured-insights/mckinsey-explainers/what-are-industry-4-0-the-fourth-industrial-revolution-and-4ir>, accessed 3 May 2023.

[10] James Manyika, '*Getting AI Right: Introductory Notes on AI & Society*, (2022) 151 Daedalus 5.

[11] Beloslava Damyanova, '*Quality Attributes in AI – ML – Based Systems: Differences and Challenges*' (University of Stuttgart 2020).

[12] Ibid 11.

[13] Stuart C. Shapiro, *Knowledge Representation and Reasoning Logics for Artificial Intelligence*, (Stuart C. Shapiro 2008).

[14]International Business Machines, '*What is Natural Language Processing?*',(IBM)<*https://www.ibm.com/topics/natural-language processing#:~:text=Natural%20language%20processing%20(NLP)%20refers,same%20way%20human%20beings%20can*> accessed 3 May 2023.

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to assist analyze data in all formats and help in functions such as classification, summarization, etc.[15]

- *Computer Vision and Perception:*

It refers to another field of Artificial intelligence that enables a computer system to see, analyse, percept, and classify data through huge chunks of data that are fed into the systems, similar to the way our eyes think which then allows our brain to act on the information received the computer vision enables the digital system to see through camera, lenses, etc. and enables the computer to think and either act on the data received or provide recommendations for the same. Certain applications of computer vision coupled with artificial intelligence are image classification and recognition[16], object classification, and automated cars as they see the way ahead and analyse data and images over and over and signal the central intelligence system to perform actions in accordance with the data received.

- *Knowledge Representation:*

It is a subarea of Artificial intelligence that encompasses itself with understanding, designing, and executing ways of data fed to the computer intelligence so that the applications/programs can utilize this information for i) to plan future activities, ii) to converse if required, iii) to derive information implied by it, iv) to apply the information to solve problems like a human[17], using derived knowledge that is inferred by knowledge is known as reasoning and without reasoning the information fed is useless, similar to the human act of seeing, knowing and interpreting knowledge and then acting upon the same when machines perform such act it is known as knowledge representation and reasoning(KRR)[18]. Intelligence and knowledge go hand in hand, as when the AI agent shall have the knowledge of a certain input only then can the agent accurately act intelligently upon it.

The term artificial intelligence has a very wider scope and has marked an important place for itself in the field of science[19]. This field of computer science has proven to be of immense help recently and has shown vast potential of what it can achieve, catering to such potential it has attracted heavy investment from all walks of life and also has multifold applications in various fields such as healthcare, finance, transportation, manufacturing, customer service (can be changed later), etc.

II. APPLICATIONS OF ARTIFICIAL INTELLIGENCE

➢ *Healthcare*

Artificial intelligence in healthcare is taking significant steps, its emergence in healthcare can be termed as groundbreaking, reshaping, the way patients are diagnosed and treated, and also monitored[20], Starting with IBMs Watson and closely followed by Google's DeepMind these tools are being used to investigate diabetes management and deep mind is also being looked at for applications which include mobile assistants[21]. "It is generally believed that AI tools will facilitate and enhance human work and not replace the work of physicians and other healthcare staff"[22]. Precision medicine opens up the chances of providing tailored medical intervention catering to a certain person's profile which may include factors such as "age, gender, geography, race, family history, immune profile, metabolic profile, microbiome, and environmental vulnerability,"[23] etc. A healthcare application ADA[24] uses customer data acquired by asking questions which are then compiled and searched through the available digital medical library to help the patient understand his condition better and also provide recommendations regarding the best treatments and medicines. Computer vision has been another attribute that has been making advancements in healthcare, the smart tissue autonomous robot (STAR) from Johns Hopkins University has demonstrated that it can perform surgeries like bowel anastomosis in animals which includes connecting ends of the intestine without human interference[25]. "A fully autonomous robotic surgeon remains a concept for the not-so-near future but augmenting different aspects of surgery using AI is of interest to researchers"[26].

➢ *Transportation*

Transportation system is becoming an essential walk of human life, it is estimated that an average of 40% of the entire population spends at least an hour on the road daily[27],

[15] InterviewBit, '*Top 10 Characteristics Of Artificial Intelligence*', (Interview Bit, 2023) <www.interviewbit.com/blog/characteristics-of-artificial-intelligence/> accessed 3 May 2023.
[16] International Business Machines (n 14) *2*.
[17] *Supra* note 13.
[18] Java T point, 'Tutorials List - Javatpoint', (Java T point 2011) <Tutorials List - Javatpoint> accessed on May 3, 2023.
[19] Abhishek Kumar and others, *Artificial Intelligence: Law and Policy Implications* (Eastern Book Company 2020).

[20] Dr. Wade Brosius, 'Where Insight Meets Opportunity' (*ForeSee Medical* 2023) < Where Insight Meets Opportunity® | ForeSee Medical> (accessed on May 3, 2023).
[21] Adam Bohr and others, *ARTIFICIAL INTELLIGENCE IN HEALTHCARE*, 25, (Adam Bohr, Kaveh Memarzade 2020).
[22] Ibid 20.
[23] Abhishek Kumar and others, *Artificial Intelligence: Law and Policy Implications* (n 19) 4.
[24]Monomita Chakraborty, '*10 Best AI-Based Healthcare Apps You Can Try in 202*1', (Analytics Insight 2021) <https://www.analyticsinsight.net/10-best-ai-based-healthcare-apps-you-can-try-in-2021/> accessed 3rd May 2023.
[25] Catherine Graham, '*Robot Performs First Laparoscopic Surgery Without Human Help'*, (John Hopkins University, 2022) https://hub.jhu.edu/2022/01/26/star-robot-performs-intestinal-surgery/ accessed 3 May 2023
[26] Adam Bohr and others (n 21) 34
[27]Mirialys Machin and others, *On the use of Artificial Intelligence techniques in Intelligent Transportation Systems*, (2nd SCI-HUB 2018).

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with the advancements of technology and induction of intelligent systems, its utility has also found its space in transport industry known as the intelligent transport systems(ITS)[28], these are those systems which use advanced technologies and wireless communication innovations to provide apt solutions to transport and traffic management. From the initial setup of a robocop in the city of Indore to direct traffic via controlling lights and arms signals[29] to the installation of Integrated Security and traffic management systems managed by AI went online in the city of Noida to catch and fine the violators of traffic laws[30]. Self-driving cars are no longer a dream for the future, automated cars like Tesla use various sensors such as radar and lidar, and the car is able to sense happenings around its environment by using a pi camera and an ultrasonic sensor the data from both shall be then collected and shared with the server using " raspberry pi to the server on which we will run the neural network that will process the images to detect the lane marking, also Haar cascade classifier will be used to detect stop sign and traffic signal and sensor data will be processed to avoid front collision by braking the car at detection of obstacle at a certain distance. The car will drive according to the lane marking autonomously taking the navigational decisions on its own once it's trained. The same algorithm and techniques can be used in actual vehicles to implement automation"[31]. Autonomous cars reap various benefits such as less traffic congestion, less pollution, low frequency of accidents, and low cost of transportation, and shall augment the mobility of the elderly significantly.

- *Financial Sector*

Through the explosion of digital data, the market of the banking industry has been flooded with a lot of expectations from its customers. The banking industry is using all and every tool of artificial intelligence to connect with its customers at par with a 360-degree view. However, this vast dealing of unstructured data also needs advanced availability of technology which involves fast computers, software, cloud, and hardware. The regulatory system has always been parallel with the working of any bank and through Artificial Intelligence the solutions driven through it are achieved speedily but there is a need for stronger and longstanding regulations for a global and dynamic shift of artificial intelligence in the banking sector[32].

There have also occurred technological advancements like Chatbots which maintain an all-time online conversation with clients of the bank that gives an additional and brighter outlook to their related doubts and problems. Further, Artificial Intelligence applying a proactive approach is also being used to track all the undetected transactional patterns through which their clients have suffered data anomalies and data breaches or losses. Moreover, it is helping in better predictive analysis of the exponential increase in data of customers through which risk management for customers is being performed[33].

The benefits of Artificial Intelligence in the Finance sector are numerous, now banks can hail huge benefits from task automation to fraud detection and can also personally recommend their customers. It has also been observed that 78% of young consumers are preferring digital banking channels and that they don't want to go back to those traditional settings of a bank.[34]

- *Manufacturing Industry*

Artificial Intelligence is a broad term and its application in the manufacturing industry will be a great boost to the industry and will deliver the most efficient results most accurately. Artificial Intelligence in the manufacturing industry is helping to predict if there exists any equipment failure or damage to any machinery. Artificial Intelligence helps in the manufacturing industry by providing a quality check on the equipment internally and externally. Artificial Intelligence also helps prepare for any mechanical failure that could be faced. Through high technological analysis, Artificial Intelligence predicts machine failure hence it also accordingly maintains the machines reducing the costs of any extra maintenance cost. Moreover, Artificial Intelligence helps visualize the infrastructure of the product and virtually test and design the equipment.[35]

The most effective quality of Artificial Intelligence in the manufacturing industry is that it is providing an effective way of supply chain management[36] which is to say that it is establishing effective communication channels among departments, helps develop an autonomous source of logistics, optimizes warehouses, and most importantly a

[28] *Artificial Intelligence: Law and Policy Implications (n 19) 34*

[29] India Today, '*Indore becomes first Indian city to install a 'Robocop' for traffic management'*, (India Today 2017) <https://www.indiatoday.in/education-today/gk-current-affairs/story/indore-robocop-984176-2017-06-22> accessed 3 May 2023.

[30] Times Of India, '*Obey Traffic Rules, Over 1k Cams Powered By AI Are Watching You*', (Times Of India 2022) <https://timesofindia.indiatimes.com/city/noida/obey-traffic-rules-over-1000-cameras-powered-by-ai-are-watching-you-in-noida/articleshow/94608922.cms>.

[31] Hiral Thadeshwar and others, *Artificial Intelligence based Self-Driving Car, (*SCI-HUB 2022).

[32] Jania Okwechime, '*How Artificial Intelligence is Transforming the Financial Services Industry'*,(Deloitte) < https://www.deloitte.com/content/dam/assets-zone1/ng/en/docs/services/risk-advisory/2023/ng-how-artificial-Intelligence-is-Transforming-the-Financial-Services-Industry.pdf> accessed 4 May 2023.

[33] Insider intelligence, '*Artificial Intelligence in Financial Services: Applications and benefits of AI in Finance'*, (Insider Intelligence 2023) <https://www.insiderintelligence.com/insights/ai-in-finance/> accessed 4 May 2023.

[34] McKinsey & Company (n 9).

[35] A K Jha, '*Artificial Intelligence (AI) in Manufacturing'*, [2001] 9(3) IJIRMPS 155.

[36] Lauren Xiaoyuan Lu Jayashankar M. Swaminathan, '*Supply Chain Managemen't*, *INTERNATIONAL ENCYCLOPAEDIA OF SOCIAL AND BEHAVIORAL SCIENCES* (2015) Edn 2 709.

conducive environment and novel opportunities for safer growth of humans. All the above-stated qualities of Artificial Intelligence are based on three important languages which are utilized in the manufacturing industry i.e., Machine learning[37], Neural Networks, and deep learning. However, natural language processing tools are also an important feature of Artificial Intelligence and help requests better for efficient solutions.

The trend of emerging Artificial Intelligence in the manufacturing industry has been predicted very highly, through Artificial Intelligence a worker can rationalize the information and can acquire material with direct stock transactions automatically created. Currently, according to AspenTech Industrial AI Research, it's stated that only 205 of the industry has brought the use of Artificial Intelligence and the remaining 83% only believe that Artificial Intelligence will yield superior quality results[38]. It has also been predicted that by the year 2035, Artificial Intelligence will rise by an impeding growth of 40% in the production sector, and through this, there will be an economic boost to its growth that will account for 1.7% across the industry by 2035[39].

Further, there stands Industrial Revolution 4.0[40] which is making various features of Artificial Intelligence known for better production operations, and the language used in this revolution is Machine learning which is helping industries process massive amounts of data with greater visibility and productivity. Artificial Intelligence is becoming a great proponent in the manufacturing industry and has become a solver for many unanticipated changes.

- *Synopsis of Laws/Policies and Regulatory Framework of Artificial Intelligence*

India has continuously thrived to have good governance[41] with the newer technologies coming into our system. There has been sustained growth in the recent past to accelerate the use of Artificial Intelligence properly with well-organized governance. A pivotal change in the approach to the usage of Artificial Intelligence has been seen and now it has also getting recognized legally with government authorities recognizing and making reports for further implementation of Artificial Intelligence in the systems[42].

The government of India has begun initiatives to optimize the use of Artificial Intelligence, there have been nearly twenty-five governmental initiatives and six are being taken care of separately by State Government. Such initiatives include not only reports, and Niti Aayog Papers of discussions but also have brought the funding initiatives like the National Artificial Intelligence Mission (N-AIM)[43]. The other initiative taken by the Government are committees such as Digital India and Make in India that is citizen-centric and aims at socio-economic growth through Artificial Intelligence. The use of Artificial Intelligence has also been supported by police departments of Delhi, Telangana, and Mumbai where they are deploying Artificial Intelligence for the use of safety and better policing[44].

Artificial Intelligence has also emerged in sectors of Agriculture wherein Microsoft has tried to collaborate with International Crops Research Institute to develop Artificial Intelligence sowing through techniques including Machine Learning and Power BI[45]. Moreover, the Government of Karnataka has tried using Artificial Intelligence to forecast the commodity rating. Swatch Bharat Abhiyan is also using artificial intelligence to assess the conditions of toilets[46]. However, now Artificial Intelligence has also been recognized legally as a person and now it has become less of a fiction and more of a subject that is getting implemented[47]. Now Artificial Intelligence has paved its way in the legal industry where paralegals and law scholars are using the tools of AI[48].

NITI Aayog has published a lot of papers on the subject of Responsible Artificial Intelligence for all. But there exists no law in particular to guide these Artificial Intelligence tools. However, outside India like in Saudi Arabia citizenship has been granted to Sophia a robot though through numerous accidents of Artificial Intelligence like self-driving cars AI's legal existence has come into question. In India, there is the Ministry of Electronics and IT that has been working on a project (AIRAWAT) that will provide a common platform for Artificial Intelligence tools and their assimilation[49].

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[37] Liubov Zatolokina, '*Machine learning in Manufacturing: Industrial Use Cases'*,(Mobidev 2022) <https://mobidev.biz/blog/machine-learning-application-use-cases-manufacturing-industry> accessed 4 May 2023.

[38] Damyanova (n 11) 157

[39] Ibid 38 154

[40] McKinsey & Company (n 9)

[41] Harvard University, '*Innovations in American Government Awards'*, (Harvard Kennedy School) <https://ash.harvard.edu/innovations-american-government-awards/?utm_source=os&utm_campaign=redirect_analysis> accessed 4 May 2023.

[42] Arindrajit Basu, Elonnai Hickok, ' *Artificial Intelligence in the Governance Sector in India'*, (The Centre for Internet and Society) < https://cis-india.org/internet-governance/ai-and-governance-case-study-pdf> accessed 4 May 2023.

[43] Niti Aayog, '*National Strategy for Artificial Intelligence'*, (NITI Aayog Jun 2018) < https://punjab.gov.in/wp-content/uploads/2023/07/NationalStrategy-for-AI.pdf>, accessed 3 May 2023.

[44] Arindrajit Basu, Elonnai Hickok (n 42) *3.*

[45] *Artificial Intelligence: Law and Policy Implications* (n 19) 10

[46] Arindrajit Basu, Elonnai Hickok (n 42) *6*

[47] David Silver and others (n 5) *486.*

[48] Eliezer Yudkowsky, '*The Legal and regulatory Impact Of AI'*, (Deccan Chronicle 2018) <https://www.deccanchronicle.com/technology/in-other-news/220618/artificial-intelligence-and-its-legal-and-regulatory-impact.html> accessed 3 May 2023.

[49] Priya Singh, ' *No Regulations for Artificial Intelligence in India: IT Minister Ashwini Vaishnav'*,(Business Today 2023) <https://www.businesstoday.in/technology/news/story/no-

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➢ *Present Scenario and Challenges Ahead*

Artificial intelligence has become a regular part of our life, it has not only impacted our personal and social lives but has also made an impact on how firms make decisions and interact with the external shareholders (employees, customers, etc.) of the company while implementing the model into their business plan. In a study conducted on 1208 American firms by 2016-17, AI applications had diffused broadly with only 15% of the firms not having any immediate plans to implement AI[50], in the same survey it was found that the majority of fields where AI was deployed were smart services, office automation, management support, smart products and automated customer interface, wherein the impact in major firms was seen to moderate to high with an average impact score of 3.7-3.8 on a scale of 5[51]. The challenges faced at the same time were attributed to a lack of skilled staff and knowledge in AI techniques, internal resistance, cybersecurity risk, unavailability of technology partners, unstable technology, etc. [52]Artificial intelligence is becoming highly instrumental in how we lead our everyday lives, the algorithms of machine learning and natural language processes combined with artificial neural network is more than we know, using of voice assistants such as Siri, personalized marketing, automated cars, automated intelligent traffic lights, and the list goes on. It must be accepted that AI has become a part of our life and is here to stay.

However it also faces certain challenges and complexities in its acceptance and authorisation and the first hurdle seems to be criminal liability which makes us wonder whether AI operators are acting in the feeling of criminal law, it additionally also urges us to consider various methods of acting concerning human specialists, for instance, an independent automated vehicle runs over someone and murders him, such murder should be credited to someone, but the question here arises onto whom? The individual in the background who neglected to recover control or maybe the AI operator or the planner whose calculation mistake allowed this development, [53] corporations that are made liable have no body or soul and works through their alter ego i.e employees and directors[54] "same instance can be applied on AI as well as they do not have any body or soul of its own, thus there lies no substantive legal difference between the idea criminal liability imposed on corporations and on AI entities. It would be outrageous not to subordinate them to human laws, as corporations have been"[55]. It is also essential to consider AI's difficulties for criminal hypothesis and legal practice. Additional concerns regarding the same the skeptical nature towards acceptance of technology, and concerns for data breaches held by AI systems with every passing day there is news of certain security breaches held at a place and data of stakeholders was compromised, in such present scenarios it is imperative for the developers and issuing authorities to assure the stakeholder of their various measures and security measures taken to secure data of the customers[56,] for example, health data stored on health applications can be valued at billions.

The fields of challenges such as liabilities, acceptance, data theft, algorithmic fairness, transparency, and privacy, etc. are all key challenges that should be addressed to create an effective AI-driven ecosystem for the betterment and easement of our lives, "In this regard, we not only need to rethink current regulatory frameworks and update them to the new technological developments. But it is also important to have public and political discussions centered on the ethics of AI-driven healthcare such as its implications on the human workforce and the society as a whole."[57]

III. CONCLUSION

Artificial Intelligence has come a long way since its inception in the 1940s, it has evolved to become a ubiquitous presence in the daily walk of life, applying its various attributes such as machine learning, natural language processing, computer vision, and perception, etc. and contributing towards various applications ranging from unlocking phones with face IDs to voice assistants and from automated cars to intelligent traffic lights systems. As Artificial intelligence continues to grow and become more advanced several implications need attention such as issues of privacy, liability, and ethical concerns. Unknown to how the potential benefit of AI will pan out in the coming decades, policymakers should consider confronting a series of interconnected talks among the public to spread awareness and encourage acceptance. Apart from the above-mentioned suggestion, governments should be proactive in handling the challenges AI presents in terms of policymaking and laws and should set up committees that not only prepare reports and provides suggestion for the future growth of AI but also serves their best for practically implementing them. Devising the best practices of AI with legal and regulatory framework will boost all sectors of work in the world and such guidance will also boost the general public with data literacy and accessibility to AI information in their day-to-day life.

regulations-for-artificial-intelligence-in-india-it-minister-ashwini-vaishnaw-376298-2023-04-06> accessed 7 May 2023.

[50] Hiral Thadeshwar and others (n 31)

[51] Ibid 4.

[52] Ibid 4.

[53] *Artificial Intelligence: Law and Policy Implications* (n 19) 11.

[54] *HL Bolton (Engineering) Co Ltd v TJ Graham and Sons,* [1957] 1 QB [1957] 159.

[55] Hallevy, Gabriel, '*The Criminal Liability of Artificial Intelligence Entities - from Science Fiction to Legal Social Control'* [2016] IV, Akron Intellectual Property, 199.

[56] Clifford G. Lau, Brian A. Haugh, '*Megatrend Issues in Artificial Intelligence and Autonomous Systems'* [2018] 9.

[57] Sara Gerke, Timo Minssen, Glenn Cohen, *Artificial Intelligence in Healthcare* (1st edn, Elsevier, 2020) 295-336.

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Despite the challenges faced and potential threats posed by Artificial Intelligence, it cannot be denied that AI is a tool of tremendous utility. The utility of AI, or artificial intelligence, is vast and varied. Furthermore, as AI becomes more prevalent, there is a need for public and political discussions regarding its ethical implications, such as its effects on human workforces and society as a whole. Addressing these challenges and developing effective AI-driven ecosystems can lead to a better and more efficient future for everyone. It is evident that AI has become a part of our lives and is here to stay, and it is essential to embrace its potential while simultaneously addressing its challenges.