ARTIFICIAL INTELLIGENCE AND ITS ANALYSIS: UNVEILING THE BENEFITS AND DRAWBACKS IN MODERN WORLD APPLICATIONS

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ABSTRACT

Artificial intelligence is often indicated as a branch of computer science which deals with the simulation of intelligent behavior in computers i.e., referring to the ability of a machine to make intelligent decisions. It would not be an exaggeration to state that the epicenter of technological change throughout the world has been artificial intelligence, which has brought about quite a significant change in the management and operation of all facets of daily life that are crucial on a global scale as well as decision-making and rationale for how to approach them. Dynamic changes in the economy, in labor marketplaces, in corporate corporations, in the legal field and so on have been brought about by artificial intelligence. Various nations, be it the United States, China or India, have been perpetually engaged in a race in order to be the first to integrate artificial intelligence into their economic and social systems, as well as to profit from the same. The latest development, ChatGPT, which was brought on by OpenAI, may appear to have set the ball rolling in terms of artificial intelligence, however the techniques used in AI are not brand-new as they date back to the Second World War. Whilst artificial intelligence offers numerous benefits, it is also crucial to understand that there are a lot of fundamental issues that need to be addressed and hence, the regulation of AI becomes a very critical aspect since, without the same, there can be disruption caused in various facets of the economy and so on.

INTRODUCTION

The world of Artificial intelligence has been evolving rapidly for quite a few years. Various countries all the way from the United States and Canada till China and Japan have been constantly and consistently locked in a race in order to get ahead in the inclusion of AI in their economic and social systems and to capture the profits arriving with a new system. With the recent AI boom by the introduction of ChatGPT, this has only added fuel to an already existing fire. The processes involved in AI however, are not new. The systems involved in AI today, especially the concepts of machine learning have existed from the time of the Second World War, when British Scientist Alan Turing and his team created Bombe Machines, and eventually was responsible for the decryption of the enigma code, which were used by German forces in order to send coded messages to each other. It was his opinion that a machine could be termed as intelligent if a human could hold a conversation with the said machine and not have him realize that he was in fact, conversing with a machine. The term artificial intelligence however, was coined later by John McCarthy during the Dartmouth Conference in 1956. There are a multitude of uses for AI in today's digital world. A system which can process massive amounts of data at high speed and can also build on and arrive at a conclusion regarding that data is extremely useful and relevant in today's day and age. A lot of governments have been allocating resources, especially to research centers to bring about massive progress with these systems. However, it is important to know that there are inherent problems with the inclusion of such systems in our existing social strata. The major problem with respect to the inclusion of AI is that the laws and regulations governing AI is not progressing as fast as the AI itself. There are still many fundamental problems which need to be solved and questions which need to be answered before going all out on AI systems. The regulation of AI becomes extremely important as it has the potential to penetrate into and also change many professions and fields altogether, one way or another. From the medical field in which AI may be used as a detection system which may be used to detect certain diseases and disorders early on before it becomes fatal or incurable, to the legal field where AI can reduce time involved in legal research, both for advocates and other lawyers working in different fields. AI has also been proposed to supplement the roles of Judges by providing them with more information, data and analysis based on which judges can arrive at a decision faster and more precisely. The major problem with respect to AI is the data being fed into the AI based on which it makes a decision. Contrary to popular belief, data in and of itself has the potential of being biased, and when such a dataset is fed into the machine and built up, the bias increases leading to a plethora of problems. The

next problem is that the complexity of AI is such that there are instances in which it is difficult to see why the AI has arrived at a certain conclusion, resulting in lack of transparency. However, it is no debate to see that AI is well on its way to become a part of our daily life, and the more laws and regulations crop up within the country, the process of using and trusting it will become that much smoother.

LITERATURE REVIEW

1. Analyzing the Relationship Between Artificial Intelligence and Law in Indian Context Nibedita Basu, Dr. Rhishikesh Dave

   This particular paper analyses the way AI has advanced and also go in detail as to what those advancements mean for the legal system in India. It highlights the potential use of AI systems within the Indian Legal system and gives various examples as to where AI has been used, is being planned to be used or will be used in the very near future.

2. Artificial Intelligence and Law, Adarsh G Hegde Bangalore Institute of Legal Studies, Bangalore.

   This paper talks about the various ways in which AI can be used in the legal field. It is a paper with a deeper focus on how the usage of AI systems can transform the legal system in India by making it more efficient and faster. There are also sections in which the problems with using AI too much or relying on it too heavily is given.

3. Responsible Artificial Intelligence for Indian Justice System by Vidhi Centre for legal policy by Ameen Jauhar, Vaidehi Misra, Dr. Arghya Sengupta, Dr. Partha P. Chakrabarti, Dr. Saptarishi Ghosh, Dr. Kripabandhu Ghosh

   This report, even though there is focus on how the systems of AI can be a huge boost to the economy of the country, delves deeper into the potential downsides of the same. It explains in detail as to how data itself can be biased and also explains the various problems which can be brought about with the evolution of AI and its subsequent use.

4. Artificial intelligence policy in India: a framework for engaging the limits of data-driven decision-making By Vidushi Marda

This particular report highlights the challenges which can be faced by the country when AI uses extensive data and then arrives at a decision. The paper looks at the properties of machine learning systems and analyzes the potential drawbacks in a country like India where the data itself is biased in various places and not enough data is available in other places, and what would happen if personal data and the question of privacy is also involved.

OBJECTIVES OF STUDY

- Whether the recent AI boom and the race between the countries for inclusion of AI in governance and economy is a boon or a bane.
- Whether there is sufficient laws and regulations present within India in which AI can be launched safely and can be trusted.
- What are the potential downsides when a product as complex as AI systems is relied on extensively without the proper laws or regulation?

THE CONCEPT AND EVOLUTION OF AI

The concept of AI in and of itself is not relatively new. Humans have been using the concepts involved in the development of AI for quite some time. The first usage of the mathematical algorithms which are prevalent in AI today was first developed by Alan Turing, who was a British Scientist. Alan Turing was the person who was responsible for decryption of what is known as the Enigma Code. The enigma code was developed by German forces in order to send coded messages between themselves. The code was able to be decrypted due to Alan Turing's invention, the Bombe Machine, along with his team. This was when the first known and recorded concepts of Machine Learning was introduced into the world. The great scientist and mathematician also gave his own definition as to when a machine can be termed as intelligent. According to him, a machine can be termed as intelligent if it was able to hold a conversation with humans while the humans not recognizing that they were talking with a machine. The term 'artificial intelligence' however, was brought in first by the Dartmouth Conference which was organized in 1956. In specific, the computer scientist John McCarthy was the one who used the specific term. This in turn led to various research centers which were dedicated to the improvement and usage of artificial intelligence in the public sphere.

Researcher such as Herbert Simon and Allen Newell propagated and led the research for artificial intelligence from the forefront. Ever since then, the realm of artificial intelligence has grown rapidly and consistently, and with the technological boom which happened in the early 2000's, the sphere of AI has also experienced this, with various countries and institutions locked in a race to be at the forefront of the inclusion of AI. There are many people, governments and individuals willing to believe and bet on the fact that the impact of AI is believed to be so transformative that it has been referred to as the 'new electricity.[1] However, to arrive at any possible conclusion about the positivity, negativity or neutrality of the role of AI in our society, it is imperative to understand what exactly the concept of AI entails and what it means as a product and invention. It will not suffice to say that moving forward, AI has huge roles to play within a lot of fields in the society ranging from manufacturing and processing all the way till military and defense. The concept of Artificial Intelligence entails that there are systems of information which closely resemble biological systems and utilizes multiple technologies, including but not limited to machine learning, deep learning, computer vision, natural language processing etc.[2] It is important to note here that the concept of AI is not bound or limited to one technology or one process. It is a complex amalgamation of various products and processes which are working in tandem in order to give certain solutions or predictions. This complexity in and of itself can become an entirely different and huge issue which discourages many people and institutions from using or trusting AI which will be covered in the following sections. There are a lot of efforts which are being made by various countries in order to capitalize on the AI revolution and a lot of resources are being allocated towards the growth and development of AI within these countries. In many countries, including India, certain AI systems have already found its way into the existing social and governmental systems of the country. Within the United States of America, during the presidential term of Barack Obama, the White House had made reports which listed the uses of AI in various domains and industries, and the many ways which the implementation of AI was to be done for the betterment of the society. The report was called the 'Preparing for the future of artificial intelligence'. The White House also had released another document which was titled the 'National Artificial Intelligence and Development Strategic Plan' in which there was a strategy which had been laid out for research which was being funded by the government itself towards the development of AI. Apart from the United States the United Kingdom has also made

[1] VIDUSHI MARDA, *Artificial intelligence policy in India: a framework for engaging the limits of data-driven decision-making*, The Royal Society Publishing (July 27, 2023)
[2] ADARSH G HEGDE, *Artificial Intelligence and Law*, Vol. 07 (November, 2019)

significant improvement towards the improvement and inclusion of AI within its policy. The department of business, energy and industrial strategy released a paper for the AI sector. The government of Japan had also released a document on Artificial Intelligence well over 5 years ago to rocket the development of AI within the country. Many other countries such as Canada, China, UAE have also announced various projects and papers for the development of AI and its inclusion within their countries, and many other projects are being spearheaded into production for the utilization of the same. There are also various institutions which have been set up in order to push the development of AI and its research. For example, within the United Kingdom, the Alan Turing institute, there are various plans and programs which are being looked into in order to set up various committees responsible for the betterment of AI systems. Even in countries like Canada, the mission for the modification and development of both artificial intelligence and machine learning has been thrust upon Canadian Institute for Advanced Research. There are multiple institutions within Japan which are responsible for making progress with machine learning and artificial intelligence including NEDO and JST[3]. However, it is also important to note that it is not only the countries who are making progressive efforts in order to push the development of AI, many major corporations from various countries have also been pushing developments and allocating major resources in order to have a deliverable product for the public and the government. Many governments have in fact, gone into some or the other sort of partnership with these corporations in order to push the development of AI.

BENEFITS AND DISADVANTAGES OF AI

There are various means and ways in which AI has been proposed to be used. The benefits of having a completely integrated system which can handle multiple and complex functions and can be tailored to be of benefit to potentially any industry is priceless. However, at a first glance, even though such a system has huge potential with no downsides, as demonstrated by the following sections, can also have certain distinct problems which plague such a system, the very first being the complexity in and of itself. The benefits of AI are massive which can affect many industries ranging from major manufacturing all the way to the legal profession. One of the most obvious and main uses of such a system is in the manufacturing and processing industries. There are various projects and developments which are being undertaken in order

[3] AMBER SINHA, ELONNAI HICKOK AND ARINDRAJIT BASU , *AI in India: A Policy Agenda* , The Centre for Internet and Society (September 5, 2018)

to make manufacturing and processing completely automated, in the sense that there is almost no human interaction in the entire process. From the processing of the raw material, till the quality control and testing, ever part of it will be handled by robots. As of today there are various robots which are performing pre-determined functions in various industries, especially with respect to the automobile industry, where human involvement in the manufacturing processes is little to none. However, with the boom of AI, it can be seen that there is potential for AI to completely automate everything within the factory and have zero human interaction, going to the extent where problem solving skills are developed and the machine itself can identify certain issues and correct it. Even more impact is being felt in any industries which involve creativity, such as the entertainment industries. A lot of companies are using AI heavily in order to get scripts for various projects. Design and animation has become a lot easier due to the software integrated with AI being made to take the brunt of the force and making the jobs of their actual user not just easier, but also less time consuming. AI which give out certain images or designs based on certain prompts which are entered using words have become commonplace and are being used all over the world. The medical profession has also seen and understood the advantages which are presented by AI and is striving, albeit more slowly, to integrate them into its profession. The main benefit which is presented by AI in this particular profession is the prospect of detection of various diseases and disorders within the body. There are also various organizations which are looking into whether or not AI can take over the role of doctors and surgeons especially when it comes to smaller or minor surgeries. Apart from the medical field, even the legal field has undergone considerable advancement when it comes to the question of involvement of AI systems within its ambit. There are various uses of AI for lawyers and legal professionals and many who have already started to make use of the same in their work. The very first use of AI within the legal profession is for research. A lot of the work of the people in the legal profession is mostly research no matter which area of law is chosen. From academicians to advocates, all sorts of work within the legal sphere includes research and involves a lot of research. The aspect of research can be reduced considerably by both efforts and time if AI is utilized for the same. The second most important role Ai can play within the legal profession is to help advocates conduct what is known as due diligence. This is one of the most major steps which should be taken in order to avoid conflicts and suits[4]. The AI can also help judges arrive at a decision in many ways. It is important to note that the AI should be used in a form and way in which it helps judges arrive at a decision by using their

[4] ADARSH G HEGDE, *Artificial Intelligence and Law*, Vol. 07 (November, 2019)

own judgement and not relying completely on the AI in order to give a judgement.[5] With all these advantages, and the recent AI boom, it is imperative that AI becomes a standard or a norm within our daily life. Holding that same perspective, it is imperative that we understand the immense potential for negative impact which can be caused by the usage of AI especially with the pace it is going at and even more importantly if it is unregulated. Even with all its apparent perfection, there are still quite a few problems which have to be dealt with before AI can be trusted and integrated completely into the system. The very first problem is that of data. The primary way AI is developed is through the principles and processes of Machine Learning. For AI to work properly and according to machine learning processes, a large number of data is required. AI is essentially a system which processes a huge amount of data and then gives a solution or prediction. The very first problem arises with the requirement of data itself. There is a common misconception that data in and of itself is either unbiased or impartial. This however, is not true and moving forward with the same misconception is dangerous. There are various and inherent biases which exist in the data itself which, when built upon can make the AI as a whole, biased. Especially in India, there are various challenges in the collection of data as there are many instances where the data is not reliable or relevant.[6] There have been efforts which have been taken by the government with respect to National Data Sharing and Accessibility policy. However, the maximum amount of data is owned by the private sector which makes it very difficult for the public and open-source projects to get their hands on any sort of usable data for machine learning systems for their projects. Most of the time, data has something known as 'dark spots'[7] in which there are missing pieces of data in certain datasets, which may lead to certain unrequired, unnecessary or completely wrong solutions or predictions made by the system. There might be certain cases where certain classes of people are overlooked or underrepresented, when such data is used in the machine learning process, then the resultant AI will be even more biased against that particular class thus contributing to social injustice instead of reducing it or providing a suitable and beneficial solution to the same. Even in today's day and age with all the digitization happening, collecting data from certain groups or certain classes of individuals especially with respect to certain areas is either a very sensitive issue or very difficult to do so. When such a data with gaps is entered into the system

[5] AMEEN JAUHAR, VAIDEHI MISRA, DR. ARGHYA SENGUPTA, DR. PARTHA P. CHAKRABARTI, DR. SAPTARISHI GHOSH, DR. KRIPABANDHU GHOSH, *Responsible Artificial Intelligence for Indian Justice System* , Vidhi Centre for legal policy (April, 2021)
[6] VIDUSHI MARDA, *Artificial intelligence policy in India: a framework for engaging the limits of data-driven decision-making*, The Royal Society Publishing (July 27, 2023)
[7] Ibid

and the system itself builds upon it, then it becomes difficult to trust it. There are a few solutions which are being proposed to mitigate such a bias. One popular solution being proposed is to introduce a bias in the opposite direction at a later stage, thus achieving some sort of balance and neutrality, however, this becomes difficult to do as the foundation on which the machine learning system may become distorted resulting in needing to start over from the first place. The second biggest problem with respect to the technology of AI is a phenomenon known as the Black Box problem[8]. In this particular case, the system arrives at a certain conclusion, however it is not known as to why the particular conclusion or solution is arrived at. In other words, there is no explanation as to why the system gave the conclusion as it did. The only information available is what was fed into the system and what the system gave out, but there is no reason as to how it arrived at that solution. The result of this phenomenon is that the algorithms and the processes involved in it becomes untrustworthy in and of itself, when applied in a social system, there is increasing distrust of the same since no explanation can be offered. There are various ways and systems which can guarantee increased transparency and explanation; however these also present some challenges in and of itself. Increased transparency and explanation means revealing a major part of the complex algorithms to the large public, especially when used in a social institution. Eventually it means that these programs and algorithms can not only be used by others for malicious purposes, but also means that such systems used for public institutions can be targeted and turned against itself. And the risk increases exponentially when the program is deals with the data of people[9]. Privacy laws in many places around the world have not been advanced enough to deal and mitigate with such a threat, and it is important that both privacy laws and the regulation of AI using machine learning with data such as these should improve hand in hand and at the same pace. One of the only efforts which has been made in this direction is the IT (Reasonable Security Practices and procedures and sensitive personal data or information) Rules, 2011. Rule 5(3) of the same says

> "While collecting information directly from the person concerned, the body corporate or any person on its behalf shall ensure that the person concerned is having the knowledge of —

[8] AMEEN JAUHAR, VAIDEHI MISRA, DR. ARGHYA SENGUPTA, DR. PARTHA P. CHAKRABARTI, DR. SAPTARISHI GHOSH, DR. KRIPABANDHU GHOSH, *Responsible Artificial Intelligence for Indian Justice System* , Vidhi Centre for legal policy (April, 2021)

[9] AMEEN JAUHAR, VAIDEHI MISRA, DR. ARGHYA SENGUPTA, DR. PARTHA P. CHAKRABARTI, DR. SAPTARISHI GHOSH, DR. KRIPABANDHU GHOSH, *Responsible Artificial Intelligence for Indian Justice System*, Vidhi Centre for legal policy (April, 2021)

- The fact that the information is being collected;
- the purpose for which the information is being collected;
- the intended recipients of the information; and
- the name and address of —
    - the agency that is collecting the information; and
    - the agency that will retain the information." [10]

On the other hand of the spectrum, it is necessary to analyze the effect which AI has on the creative industry and its interaction with copyright laws. Within India, if a certain work should be recognized under the Copyright Act and given recognition, then it should have a certain amount of creativity at the very least. The landmark case of Eastern Book Company and Ors. v D.B Modak and Anr[11] gives a lot of distinction on the same. The important part to remember here is that copyrights and such laws can be given to persons, either artificial or natural. Since no law till date recognizes AI as either an artificial or natural person, it immediately becomes a very difficult aspect in order to enforce any kind of law relating to copyright against the entity. Fundamentally, no law can be enforced against the system since the law relates to persons and the law in and of itself does not recognize the system as a person. Apart from problems such as these, there are also the question which arises as to whether the implementation of AI on a large scale will have a major effect on the job and labor markets within the countries. Machines and robot systems can do the jobs of people much more efficiently and with a fraction of the cost. Added to this is also the fact that machines can work almost round the clock and increase productivity massively. Hence many major countries are looking at the solutions of levying heavier taxes on such companies which use fully automated systems and also mandating that there must be a certain amount of workforce who are human in the factory.

[10] NIBEDITA BASU, DR. RHISHIKESH DAVE, *Analyzing the Relationship Between Artificial Intelligence and Law in Indian Context,* IJIRT, Vol. 09, Issue No. 8 (January, 2023)
[11] Eastern Book Company and Ors. v D.B Modak and Anr., Civil Appeal No. 6472 of 2004

EFFORTS WHICH ARE TAKEN BY INDIA FOR AI

There are various efforts which have been taken in order to bring India at the forefront into the race involving AI and its inclusion within the existing social systems and organizations. A lot of resources have been consistently allocated in order to ensure that the technology revolving around AI and machine learning has been on the rise for quite some time. AI and its concepts, with special reference to machine learning has made its way into the various governmental organizations and institutions which exist today, making its way all the way to the Indian Judiciary. With respect to research and repercussions revolving around AI however, the government funded think tank NITI Aayog has been responsible for consistently spearheading the societal effects which is being brought about or will be brought about with the oncoming of AI. With the recent boom of AI and its systems, it becomes even more important for India to make sure that the resources which are being allocated for such a thing is being utilized in the right way and the development of AI is being done in a way in which the country and eventually the world is benefited. One of the first efforts which the government of India took in order to push the systems of AI into place was to set up a task force for artificial intelligence in order to 'embed AI in our Economic, Political and Legal thought processes so that there is systemic capability to support the goal of India becoming one of the leaders of AI-rich economies'. This was done by the Union Ministry of Commerce more than 5 years ago in August 2017[12]. There were also 4 committees which were set up by the ministry in February of 2018, with the main purpose being to set up an artificial intelligence program at the national level. The NITI Aayog entered into a partnership with Google in the month of May in 2018, which had the mission of training startups so they can be pushed and incentivized for the development and inclusion of AI based solutions within the strategies of their business.[13] In 2018 alone, which was a while before the revolutionary year for AI in 2023 with the introduction of ChatGPT, India had seen an unprecedented 108% rise in startups. Within this rise, it is important to note that the spectrum of AI was one of the most lucrative and fastest growing fields, with a number of more than 400 startups working on the same. One of the early adopters within the AI regime was the Indian Judiciary. It first dabbled into AI and its systems with the introduction of the eCourts project, and also had an AI committee responsible for inclusion of AI within the Indian Judiciary so that the entire judicial system could become more

[12] NIBEDITA BASU, DR. RHISHIKESH DAVE, *Analyzing the Relationship Between Artificial Intelligence and Law in Indian Context,* IJIRT, Vol. 09, Issue No. 8 (January, 2023)
[13] Ibid

streamlined and smooth. The major breakthrough for the Judiciary however, was in the project of SUVAAS, which made the process of translation of orders and rulings much more streamlined and instant[14]. NITI Aayog has released a number of papers highlighting both the disadvantages and the benefits of AI, and has been a pioneer in the advancement in the policy making of the field of AI in India.

CONCLUSION

In a world that is always on the cusp of radical and rapid changes, artificial intelligence can be considered as both, a blessing and a curse. Across countries throughout the world, including India, policy development is increasingly focusing on artificial intelligence, with the technology being used on a frequent basis to solve some of its largest issues, like the lack of healthcare facilities, the poor quality of education, the banking system and so on. Diverse, palpable initiatives have been made by the Government so as to position India at the top of the pack of nations in the race involving artificial intelligence and its integration into the current social structures and organizations. The technology centered around artificial intelligence and machine learning has long been on the rise thanks to the consistent allocation of various resources. Artificial intelligence and its facets, particularly with regard to machine learning, have permeated the many governmental and social strata's and organizations in the country, in so far as even reaching the Indian judiciary. The benefits of artificial intelligence are enormous and can influence a wide range of sectors, be it the field of manufacturing and processing, design and animation, pharmaceutical industries, corporations or the entire legal profession. The use of AI has become crucial in our daily lives, but it is crucial to recognize its potential negative impacts, especially when unregulated. The issues revolving around data, which is the foundation of AI development through Machine Learning is one such innate issue wherein, contrary to the misconception that data is impartial, it contains inherent biases that can lead to biased AI outcomes. In India, data collection faces challenges due to unreliable and irrelevant data, mostly owned by the private sector, making it difficult for open-source projects to access usable data. Additionally, dark spots in the data, where certain information is missing, can produce incorrect solutions or predictions, perpetuating social injustice by overlooking or

[14] AMEEN JAUHAR, VAIDEHI MISRA, DR. ARGHYA SENGUPTA, DR. PARTHA P. CHAKRABARTI, DR. SAPTARISHI GHOSH, DR. KRIPABANDHU GHOSH, *Responsible Artificial Intelligence for Indian Justice System* , Vidhi Centre for legal policy (April, 2021)

underrepresenting certain classes of people. Addressing these challenges requires advancements in privacy laws and AI regulation, which have to evolve in each other's cusp so as to safeguard against any innate threats. It is only by understanding and addressing these issues can a nation work towards fully integrating AI into the various spheres of a society in a responsible and trustworthy manner.