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ARTIFICIAL INTELLIGENCE - A LEGAL AND ENVIRONMENTAL PERSPECTIVE

Author –

Doreen Ann Jacob

Student, B.Com LLB (H)

Amity Law School, Amity Univeristy, Noida

ABSTRACT

Artificial Intelligence revolves around the concept of making intelligent machines. The scope of AI has been ever-expanding and now, it can be seen in almost everything around us, from our phones to the televisions, to our cab services, to our online shopping sites, etc. AI has made an impact in many fields ranging from medical facilities to transportation, to industries and in fact to society in general.

Artificial Intelligence is already here and has come to stay. Simply said, it is our present and our future as well and there is no denying that. The field of Artificial intelligence is powerful, vast and will continue to have a significant impact in the development of our modern world. With its presence almost everywhere, within our jobs and everyday lives, the understanding of whether AI carries more risks than benefits needs to be analyzed.

In spite of the huge progress made in the field of AI, one question that is still in the minds of many, is whether this development comes at a particular cost? What is at stake with the level of technological advancement we are at? Has Artificial Intelligence come to replace humans? Does AI intrude into our privacy? Does it violate the human rights that we believe we are entitled to? Further, we need to see whether there are any laws that can regulate the functioning of AI and if yes, then is it enough? We may in fact be taking on far more than we are prepared for. The researcher of this paper aims to understand what the concept of Artificial Intelligence is, its scope in the present world and the future, its types, the legal aspects and challenges that are faced by AI and whether or not AI plays a role with our environment.

INTRODUCTION

1.1 Understanding Artificial Intelligence

The concept of Artificial Intelligence is one that has evolved over the past few years and ever since has only been expanding. To completely understand the effect of such technology on our future, one has to first understand what the term Artificial Intelligence exactly means or AI as often referred to as.

The first time the term Artificial Intelligence was coined was around the year 1955 by John McCarthy where he proposed for a study which aimed at the following “every aspect of learning or any other feature of intelligence can in principle be so precisely described that a machine can be made to simulate it. An attempt will be made to find how to make machines use language, form abstractions and concepts, solve kinds of problems now reserved for humans, and improve themselves.”¹

In simple terms, one can say that artificial intelligence aims to create machines that are as intelligent or perhaps even more so than human beings are. AI comes under the branch of Computer Science and these intelligent machines are programmed to be able to solve real-world problems without any assistance from human beings. They are designed to be inbuilt with abilities of logical reasoning, problem-solving, planning, the ability to move objects, speech recognition, etc. In short, they are to perform the same activities that we as people do and more, except with an increased level of efficiency and productivity. One of the main properties of AI is to act and react like a human would but for this it would be necessary for the system to be inbuilt with all the information or data available so as to enable and process the required information as and when needed. If the machine is able to understand and learn the data that it already has, then it will be able to make predictions or find solutions to the required problem. In fact, all of us, in some form or the other, are already using some form of Artificial Intelligence which may be either through the most commonly used Google Search, Siri, Netflix, Amazon, etc.

Many Artificial Intelligence systems are developed in a way with an ability to learn and understand the environment they are in, to process and draw conclusions and to make decisions as and when required. As of today, the stream of artificial intelligence has expanded and one of the one-going projects is that of robots. Robotics is one of the major fields that fall under AI. However, it is to be understood that it is not the robots or the robotic body that is referred to as AI rather it is the computer or the software and data that is in the robot that is referred to as AI. These forms of artificial intelligence have the capacity of human imitation, problem-

¹ John McCarthy, *A proposal for the Dartmouth Summer Research Project on Artificial Intelligence*, (Aug. 31, 1955), <http://www-formal.stanford.edu/jmc/history/dartmouth/dartmouth.html>.

solving, the performance of tasks where the ability to think is required and also the capability of making decisions. An example of this could be the humanoid robot named Sophia which was created by Hanson Robotics, a Hong Kong-based company who is able to express human-like emotions and is capable of having an interaction with people. She is able to process visual data, emotional data, conversational data and hence able to form relations with people. Around the year 2017, Sophia was granted citizenship by the Kingdom of Saudi Arabia as well. Robotics as a field requires intelligence to handle tasks such as object manipulation and navigation, along with sub-problems of localization, motion planning and mapping.²

Other than this we even have driverless cars that are apparently able to predict traffic movement, minimizing the speed of the car as per the environment requirement, etc. with little or no assistance at all from humans.

As of recently, new research has paved the way for a concept where AI is taught to function just as the brain does in the Human Body. Just as the set of neurons in our brains are used to enable learning, if the same pattern or structure of the brain can be replicated into a computer system, there might be a chance of cognitive capabilities in machines. This field falls under the concept of Deep Learning as it is far more complex, tedious and requires a lot more research.

The progress that has been made in the field of Artificial Intelligence has become possible because of the huge amounts of funds that are being made available by the governments and non-governmental organizations. Further, the opportunities available through open-source projects like Tensor Flow by Google, Keras, IBM Watson have provided a ground for entrepreneurs and creators to put their effort to solve diversified problems around the world. However, we are still far along from achieving the true potential of AI as a lot of research is still pending. We have yet to reach a stage where these systems of AI are capable of performing work with no error.

² 1 Janani Bharatraj & M. Clement Joe Anand, Fuzzy Circle and AI 203 (Sergey Y. Yurish, Advances in Artificial Intelligence: Reviews 2019)

AI Vs. Machine Learning Vs. Deep Learning

Before moving forward, there are two concepts that are closely interrelated to Artificial intelligence and are sometimes interchangeably used in spite of there being a significant amount of differences between the terms. One of them is Machine Learning and the second is Deep Learning.

The term Artificial intelligence is in fact the wider term and it is within this term that the two other words fall wherein Machine Learning comes first, and within this comes Deep Learning. So it can be seen that they should rather be considered as branches of AI instead.

One of the ways of distinguishing them has been given in a definition by Frank Chen, a venture capitalist, who says, “Artificial Intelligence is a set of Algorithms and Intelligence to try and mimic human intelligence. Machine Learning is one of them, and Deep Learning is one of those machine learning techniques”³

Now, from this statement, It can be understood that Machine Learning is the concept where the machine is taught or given the ability to learn. The machine trains itself by utilizing the large amounts of data and algorithms thereby learning how the task is to be performed. It is an approach that is adopted so as to eliminate the need for coding the software by hand and enabling the machine to react with all the data that is already provided to it. Also rather than being focused on the success rate, machine learning is concerned with the accuracy of performing the task better each time. One such example could be identifying signs or depression based on the speech pattern of a patient.

Two of the main factors that contributed to the growth of Machine Learning were that, firstly it was realized that teaching a computer how to learn was an easier task rather than showing the system what had to be done each time there was new information.

³ *What is artificial Intelligence*, BUILTIN, <https://builtin.com/artificial-intelligence>.

The second factor was the coming of the internet itself. The internet proved to be better storage for data than human minds and because of this, machines had a lot more access to information than it did previously because of data storage limitations.

Machine Learning can be classified into three types:

- **Supervised Learning:** The data that is provided in this method is labeled in such a manner to make it possible for the machine to detect a pattern, if any exists and where the outcome is already known.
- **Unsupervised Learning:** The system of labeling is not present under this method, rather the machine sorts out the information based on similarities or differences that may be found and makes predictions. In this method, the outcome is not known and it is for the machine to figure it out.
- **Reinforcement Learning:** Under this method, feedback is given to the system each time it carries out the necessary action. There are no labeled data sets under this method either.

On the other hand, Deep Learning as mentioned before is a subset of Machine Learning. Rather it could be understood as a more advanced technique of Machine Learning instead. This method is utilized to understand more complex patterns when provided with large amounts of data. The algorithms used under this method are almost similar to processing patterns that are used in the human brain. The computer learns based on pictures, or through sound or texts. An example of this could be face recognition, or even identifying a pedestrian from a lamppost. In Machine learning, if the prediction made is inaccurate, a person will need to step in to correct the error by making certain changes to the machine. However, in Deep Learning, the machine will already know if the prediction made is inaccurate through its neural networks.

1.2 Types of Artificial Intelligence:

One of the ways AI can be classified is based on its ability or caliber, i.e. level of intelligence that has been embedded. There are three types when classified this way:

1) Artificial Narrow Intelligence (ANI): This type of AI is specialized only in a particular or one area. For example, the spam filter that we have in our emails uses its intelligence to figure out what is considered as spam and what is not based on our preferences and choices and accordingly tailors its intelligence to catering to that specific need. If asked to perform any other function, it will not be able to. However, this type of intelligence, i.e., ANI is regarded as weak AI even the ones that appear to be far too complicated for the common man. Most of the AI that is present in today's world is ANI itself and some other common examples are our GPS systems, Google Translate, etc. As the name itself suggests, these systems are equipped with a narrow range and are thus limited to a set of tasks that can be performed.

AI like Siri, Alexa, etc. are equipped with the ability of Natural Language Processing (NLP). That is, by being programmed to respond when any particular speech or text is put forth in the natural language.

2) Artificial General Intelligence (AGI): AI that has reached this level will be capable of replicating and being just as smart as a human being is. This AI is also referred to as Strong AI or may also be called Human-Level AI. Creating an AI is much more complex and we have yet to reach this stage. AGI will be capable of possessing enough intelligence to think abstractly, comprehend even the most complex ideas, be a quick learner, remember and learn from the experience too just as a human being would be able to and in fact even more easily. In simple words, they would possess the multi-functional capabilities that we possess.

3) Artificial Superintelligence (ASI): This form of AI is not just smarter than human beings but one that is almost a billion to trillion times smarter than even the best human brains that one could find irrespective of the fields they are in. Once this stage is achieved, we would perhaps be at the highest point in the research of AI. In comparison to abilities that AI would possess at the AGI stage, ASI would be exceptionally better at whatever task is at hand because of data processing and analysis that would be faster, greater memory power, etc. However, since we are still at the rudimentary stage of AI, there is a long way to get to the other two stages. Once we

reach the AGI stage though, the time till it becomes ASI would most probably be short since the AI would engage in its own ability of constant learning thereby the rate of getting a smarter will in itself be faster and at a level surpassing all of our intelligence combined.

1.3 Significance of AI:

Why do we need AI or what exactly is the importance AI holds for the future?

Aid to Human Beings: With all the technological advancement rapidly spurring around us, AI does indeed play quite a significant role. Artificial intelligence has grown to become one of the most useful assets for human beings. AI is capable of performing an enormous amount of work at a constant rate thereby not only proving to be more reliable but also tends to be more accurate and error-free. Also unlike humans, they are not prone to the feeling of fatigue or tiredness. AI hardly requires manual intervention if programmed well and also since they self-learn. Hence, they tend to make our lives easier.

Adds more value: Aside from the above, AI is now inbuilt into existing products in the market so as to make it more ‘intelligent’ or ‘smart’ such as our phones, televisions, etc. thereby making these products capable of performing a lot more tasks rather than AI being sold as an individual product.

Capable of Adapting: One of the main reasons for the coming of AI was the fact that it can learn by itself and through the continuous flow of data in the system, AI finds a pattern thereby acquiring a skill which one can say, it becomes an expert in. AI uses this to make predictions or to classify and whenever new data is given to it, it has the capability of adapting and adjusting based on the information it receives. The technique that is utilized by the AI which allows it to improvise and adjust upon receiving new data through training is called Back Propagation.

Deep Analysis: With the breakthrough of the internet, the amount of data that is now available to AI is far more than it once was over 5-10 years ago. AI is now capable of analyzing more in-depth using neural networks which may be covered under many hidden layers. We are now capable of building fraud detecting systems that are concealed under multiple layers which were practically

unthinkable a couple of years back. Lots of data needs to be made available to deep learning systems because the more data they get, the more precise they become.

AI is capable of making the most out of data: When algorithms keep learning by itself, the data may itself become intellectual property. The data in itself are the answers which can be brought forth using AI. The significance of data in itself has increased now more than ever and can be used to create an advantage in a competitive market. The company with the best data always wins in the industry even if the techniques being applied by all are the same.

Increased Level of Accuracy: Using Deep neural networks, the preciseness increases each time the AI is utilized. For example, in the medical fields, the ability of AI to detect cancer cells or to know whether cancer benign or malignant based on just symptoms and health records is just as good as when a radiologist performs his job.

1.4 Limitations of Artificial Intelligence:

Indeed, AI has significantly contributed to a lot of fields and there are many pros of AI, yet there are certain limitations which are just as important to overcome. Some of the weaknesses of AI are mentioned below:

Requirement of data: One of the major setbacks of AI is the constant availability of data. Indeed, there is a lot of data available, but those that are truly relevant for the AI to process are not very easily found. It is through supervised learning that the most powerful AI's presently function and for this form of learning to take place, there is a need for labelled data which is rare. AI is always looking for data and requires almost thousands to millions of examples so as to be able to perform its function properly. Further for AI to be useful to an organization, all the data given must be relevant and integrated in such a manner so as to enable the AI to understand and convert it into material that is useful. However, there are attempts to try resolving this limitation using methods like 'Active Learning', 'Transfer Learning'.

Bias: There is an awareness of the fact that AI is bias and the reason for this is that machines simply work on algorithms. They keep following the pattern that it has already established. If the data that is received by the AI is bad and mixed with racial, ethnic or any other form of bias, then the rest of the data that is being processed will be based on such data itself. Hence it is necessary to create an AI system which is unbiased and such an attempt has been taken by Microsoft which automatically detects any unfairness in the series of algorithms.

Lack of Knowledge and Understanding: Even though AI is capable of processing large amounts of data and perform the task it was assigned for, there is no guarantee as such that AI is able to understand all the data that is provided to it. Also, even though the output received might be right, there is no explanation that is given or can be given by the AI as to how such an answer was arrived at. The researchers themselves who train the AI often can't make sense of how the algorithms work. This becomes a problem in fields where decisions taken based on such information may result in significant consequences.

Some of the other limitations that may be noted are AI also lacks creativity and emotions and does not react the way humans do. They are incapable of understanding when a situation is a critical one. Further, the cost and maintenance are quite high along with the continuous need to keep upgrading with the dynamic environment. It may not be too viable for small organizations. Further, because it lacks creativity and cannot just come up with ideas as humans do, it becomes a major deciding factor for organizations which function on creativity and such spontaneous thinking such as a marketing firm.

CHAPTER - 2

ARTIFICIAL INTELLIGENCE –

A VIOLATION OF HUMAN RIGHTS OR NOT?

Human rights are those which are inherent in nature and are universally accepted, as they are meant to preserve the life and dignity of an individual. Governments and organizations are responsible for ensuring that they do not infringe on such rights and rather enable its protection.

According to Olly Buston, the CEO of Future advocacy, *“There is a possible future in which artificial intelligence drives inequality, inadvertently divides communities, and is even actively used to deny human rights. But there is an alternative future in which the ability of AI to propose solutions to increasingly complex problems is the source of great economic growth, shared prosperity, and the fulfillment of all human rights. This is not a spectator sport. Ultimately it will be the choices of businesses, governments, and individuals which determines which path humanity takes.”*⁴

Based on the most significant international documents related to human rights which are the Universal Declaration of Human Rights, The International Covenant on Civil and Political Rights (ICCPR) and the International Covenant on Economic, Social and Cultural Rights (ICESRC), some of the rights which have been impacted by AI have been discussed below:

Right of Equality and against Discrimination

Artificial Intelligence can often bring about bias by choosing from certain impartial attributes that have an oppressive effect against minorities or ladies. For example, if the precondition on hiring workers into an organization is based on the successful employees in the company which happens to be a majority of men, the AI system relying on such data may reject and exclude ladies as they do not fit the criteria. Also, if the data that is fed to the system is already tainted with pre-existing prejudice, then this may become a disadvantage to candidates and thus take away a good opportunity.

Further, these days AI is also playing a growing role in criminal justice systems. An example for this is, in the US a criminal risk assessment tool⁵ is used once a person is arrested. This tool is used as an aid for judges to help in predicting what the chances are for the defendant to commit the crime again and whether the defendant should be sentenced to prison or sent for rehabilitation. It all comes down to a score which determines whether the person is at high risk or low risk, and based on the score given, the judge decides the sentence. The question that is raised is whether

⁴ *Technology and Human Rights: Artificial Intelligence*, BUSINESS AND HUMAN RIGHTS RESOURCE CENTRE, <https://www.business-humanrights.org/en/technology-and-human-rights-artificial-intelligence>.

⁵ Karen Hao, *AI is sending people to Jail – and getting it wrong*, MIT TECHNOLOGY REVIEW (Jan. 21 2019) <https://www.technologyreview.com/2019/01/21/137783/algorithms-criminal-justice-ai/>.

decisions made on such predictions can be considered as a fair trial to the defendant because the system is entirely working on data that has been put in by the police along with historical data which may already be tainted with existing bias. Further, when reasons cannot be given for why such a score is given or why such a sentence is given, rights may end up being violated.

Also, studies have shown the accuracy of AI in detecting people using facial recognition is inherently discriminatory as it can only recognize a person with fair skin. That is to say, the darker the skin color of a person, the possibility of the system making errors increase.

For example,⁶ Idemia, which is a French Company provides its services to the US and other countries by scanning millions of faces. However, after its test results from the National Institute of Standards and Technology, it was noted that the system matched white women's faces falsely at a rate of one in 10,000. However, when asked to match black women's faces, it made errors at a rate of one in 1000 which is 10 times more.

Freedom of movement

Further AI is also being used to track the whereabouts of people along with identifying and recognizing faces and voices of those who may actually be wanting to live a secret and anonymous life. An example of this could be the Chinese using facial recognition as a tool to keep a watch over the Muslim Minority which has been condemned by the international community.⁷ With the technology that is currently present, we are able to receive detailed information on one's live location along with predicting the location one might be moving towards.

As we keep advancing our development in infrastructure and current transportation systems, we may reach a point where we have smart highways and public transportation systems equipped with biometrics which give the governments more power in controlling our movements.

⁶ Tom Simonite, *The Best Algorithms struggle to recognize Black faces equally*, WIRED (July. 22, 2019, 7:00 AM), <https://www.wired.com/story/best-algorithms-struggle-recognize-black-faces-equally/>.

⁷ Paul Mozur, *One Month, 500,000 Face Scans: How China is using A.I. to profile a minority*, THE NEW YORK TIMES (Apr. 14, 2019), <https://www.nytimes.com/2019/04/14/technology/china-surveillance-artificial-intelligence-racial-profiling.html>.

Freedom of expression

With the spread of social media and many platforms available for people to put forth their opinions and express their thoughts, Artificial Intelligence is used widely by internet companies to flag any content that violates their service terms. Further, governments that follow an Authoritarian regime may use AI and censor what they do not find fit for be posted. In China⁸, AI is used to remove material that is either portrays material that is sensitive in nature, pornographic or violent in nature. Further, anything that is said which criticizes the political scenario is mandatorily taken down by the companies.

Twitter also uses AI in detecting posts that are in the form of hate speeches or maybe promoting extremist views and accordingly deleting their accounts.

Videos that may be the only source and evidence of horrific crimes and violations that are taking place may be taken off such platforms only because they get ‘flagged’. For example, YouTube has been accused of deleting multiple videos that show the atrocities and attacks taking place in Syria.⁹

Such forms of restrictions may also be utilized in nations where following a particular religion is at a risk. AI could be used by such authorities to target and keep an eye on the actions of such a religious minority and also flag any content that they may post thereby violating their rights of following the religion they wish to, praying, teaching those interested in following the same or even allowing the people of such a community to gather and associate with one another.

Privacy and other concerns

One of our basic needs as human beings is for our privacy to be respected and protected. Privacy could be understood as the ability or the power to retain and keep hidden or confidential certain information about himself or herself which may be sensitive in nature, so as to reduce the overall influence that another person may have in one’s own behavior. With this fast pacing world, especially where information is available just a click away, it becomes essential to understand

⁸ *The Great Firewall: China looks to AI to censor online material*, INTERNET OF BUSINESS, <https://internetofbusiness.com/china-censorship-online-material-ai/>.

⁹ Kate O’Flaherty, *YouTube keeps deleting evidence of Syrian Chemical Weapon attacks*, WIRED (June. 26, 2018), <https://www.wired.co.uk/article/chemical-weapons-in-syria-youtube-algorithm-delete-video>.

where our privacy stands. Of course, AI does help in modernizing our world and has a positive impact.

However, after a certain point, there always lies some risks when too much of something is used and thus may lead to having some negative impact. Just as we all know AI is present in most of the things we use. Our constant use of technology just helps in more data being collected each time. These days we don't even pay attention to the disclaimers that come in front of us and just 'accept' whatever terms and conditions are set forth without realizing how much of our privacy is being given away. Most of the products which have AI embedded in them have sensors that just keep collecting information without either the permission or just general awareness of the people around how much and what all is being collected. Such data that is sensitive in nature may be used to exploit other individuals through blackmailing or could just in general be mined for various purposes like marketing. Of course, it helps to have anti-virus tools but this only help to the extent of threats that are already known to the software. It does not help when a new threat or virus comes. Also, businesses tend to use VPN's to keep their searches secure.

It is not only the Governments but also private individuals who are on the receiving end of such sensitive data. For example, we have Facebook which has so much data collected of all its users. In 2018, Facebook said, "that an attack on its computer system almost exposed the personal information it had on nearly 50 million users."¹⁰

Also, Since AI is often used to forecast or make predictions using its machine learning technique, profoundly delicate data may be derived from information that may not really be sensitive in nature as such. These days, by analyzing the way people type on their computers, their emotions are also capable of being detected (as to whether they are sad, depressed, anxious, etc.). When such data which may be related to political convictions, or one's personal wellbeing, or sexuality is taken from inconsequential information like web-based social networking likes, their location, their internet history, the profiling may lead to biasness and discrimination.

In 2016, IBM developed software which it believed could distinguish and aid governments in identifying 'real' refugees from imposters, untangle terrorist cells and could also possibly predict

¹⁰ Mike Issac & Sheera Frenkel, *Facebook security breach exposes accounts of 50 million users*, THE NEW YORK TIMES (Sept. 28, 2018), <https://www.nytimes.com/2018/09/28/technology/facebook-hack-data-breach.html>.

bomb attacks.¹¹ Most railways in India as well will be equipped with the facial recognition mechanism by the end of 2020 according to an article¹² to help prevent crime. From this, we can see that AI also has the potential of sorting, classifying and identifying and maybe even ranking people without the slightest knowledge of the person and again without the capacity to challenge the results of these procedures. This could affect people when it comes to daily life situations because AI does play a role in assessing and shapes one's access to borrowing and taking loans, housing facilities, in getting employed, etc.

Further, there have also been concerns over the fact that when there is more dependence on the web and internet for political participation, there are more chances for the disorder to take place. From the chances of highly advances bots taking part in online discussions to the hacking of systems used to check votes to the hacking of organizations so as to create chaos.

Other than the above, there has been a lot of ethical concerns over AI being brought in to replace humans and take away their jobs. AI may be able to increase efficiency and perform much better than people do in most tasks but what about the unemployment rate that is going to rise because of the lack of jobs available to people. Further, this would lead to an uneven distribution of wealth because only those people who are involved in the AI business will be able to earn large sums of money.

We, as human beings have survived and dominated because intelligence is the advantage that we have over other animals. However, concerns have also been raised that if AI does indeed reach the stage where it is a million times smarter, then would still be capable of having control over the technology and just pull the plug?

¹¹Patrick Tucker, *Refugee or Terrorist? IBM thinks its software has the answer*, DEFENSE ONE (Jan. 27, 2016), <https://www.defenseone.com/technology/2016/01/refugee-or-terrorist-ibm-thinks-its-software-has-answer/125484/>.

¹²Annie Banerji, *Indian Railways to use facial recognition amid privacy fears*, REUTERS (Jan. 28, 2020, 7:59 PM), <https://www.reuters.com/article/us-india-tech-railways/indias-railways-to-use-facial-recognition-amid-privacy-fears-idUSKBN1ZR1RP>.

CHAPTER - 3

Legal Personality of Artificial Intelligence in India

We have reached a point where it has become crucial to determine what is the actual status of artificial intelligence and robots in our society. To grant a legal personality entails covering the subject certain with rights, duties and liabilities. Legal personality has repeatedly been used with the ability of an individual to be autonomous. However, this has not been restricted to people only but rather in India, this status has also been granted to associations, idols, rivers etc.

Presently there are no laws in India that recognize Artificial Intelligence as a legal person but it has become imperative to establish a certain level of responsibility given the circumstances in which AI has been involved such as accidents of driverless cars.¹³ As such there are no criteria specifically mentioned in our legal system that determines what can and cannot be conferred a legal personality.

However, there are two certain objections that were mentioned by Solum¹⁴ along with other authors stating why it would be difficult to assign a legal personality to AI. The crux of the two arguments can be understood as follows:

The Responsibility Objection: Under this argument, the main question was how can responsibility be placed on a machine or a robot. In spite of the way they are able to perform their duties with the required level of care and expertise as needed but in case of a breach of duty or a possible malfunction, how is a liability to be placed? AI cannot be given a sentence in jail for any criminal act performed. The concept of punishing AI is a little difficult to grasp because how does one actually punish a computer system? The situation is just not the same or as easy as when a human being breaks the law. The author says that however, a similar situation can be seen in corporations as well when it comes to criminal liability where the owners are held responsible and in such a scenario, maybe this could be applicable to AI as it does not ‘intentionally’ commit a crime on its own.

¹³ Phil McCausland, *Self-driving Uber Car that hit and killed woman did not recognize that pedestrians jaywalk*, NBC NEWS (Nov. 9, 2019, 8:28 PM), <https://www.nbcnews.com/tech/tech-news/self-driving-uber-car-hit-killed-woman-did-not-recognize-n1079281>.

¹⁴ Lawrence B. Solum, *Legal personhood for Artificial Intelligences*, 70 N.C.L.REV.1231, 1244-1253 (1992) available at: <https://scholarship.law.unc.edu/cgi/viewcontent.cgi?article=3447&context=nclr>.

The Judgement Objection: This argument brings to our attention the AI is really only just capable of performing the functions that it is programmed or functioned to do. In reality, however, AI is not capable of making any decisions on its own, whether moral, legal or in case of change of circumstances. If an entity is granted legal personality then they would be entitled to enter into contracts, to sue and to be sued. But in case, an AI is caught up in a legal lawsuit, how is it supposed to defend the claims that are put forward and know what decisions are crucial to the legal matter.

If by chance, hypothetically that is, we do confer a legal personality on AI and associate it with the way corporations are conferred the personality, then as long as the AI remains within its rights and liabilities provided under civil law, its creators will remain in the shadow. However, in the case of criminal liability, the dimension changes. If the wrong is malicious and intentionally done by one of the creators, then the corporate veil may also be pierced.

Even though it would be easy to treat AI as corporations given that the situation is almost quite similar, there exists a difference in the fact that behind corporations there is always some person that can be held responsible. That is to say, they are fictitiously autonomous. However, AI on the other hand, some of the functions that it performs are beyond the scope of its creators as well and sometimes they themselves do not know or understand the working of the system. Also, it would be difficult to consider the aspect of AI having the free will to do as it pleases and thereby leading to its commission of the crime thus making it wrong to place responsibility on it. When it has reached a stage where it is in fact capable of making its own decisions or taking actions as well (Strong AI), where the creators behind the technology are not held liable for acts performed solely by the AI, even then the only punishment that comes to mind is re-programming the entire system but where is the justice in that?

CHAPTER - 4

LEGAL CONCERNS PERTAINING TO AI IN INDIA

AI and Contracts:

In India, Contracts can be entered into only by a legal person and since machines, robots or any other form of AI has not been recognized as a legal entity yet then they will not be able to execute nor be bound by the contract. Since the status of Artificial intelligence is yet to be determined, any contract entered into by AI will be void and will not be considered valid.

Further, in the case of E-contracts, there may arise situations, where the terms may end up being expressed in programming terms which may cause difficulty for the courts to understand as they may not be very well acquainted with it and also whether the terms that were communicated to the AI have been received right. There is a need to legislate on such matters as the rise in technological advancement takes place so as to be ready and well equipped to regulate such matters when the time comes.

AI and Intellectual Property Rights:

What will be the status of copyright laws with the introduction of AI since they have the capacity of creativity to a certain extent? Intellectual property rights are given to those people who have managed to create something different, original and that is quite useful. The present AI is capable of making music, painting, writing poems, etc. Does this mean they can obtain copyrights for the creations?

Works created by AI can be put into two categories, one in which there is an intervention by a human being and the other is without human intervention. In a situation where there is an intervention by a human, the ‘author’ as per section 2(d)(vi) of the Copyright Act, 1957¹⁵ will be the person himself as he was required to help in the creation of the work. However, in a scenario where the AI creates without the help of a human being, then is the AI entitled to copyright? In

¹⁵ “(d) author’ means, (vi) in relation to any literary, dramatic, musical or artistic work which is computer-generated, the person who causes the work to be created;”

such a situation perhaps the person who programmed the AI could be regarded as the author for the mere fact that the AI is still functioning based on the data that was input by the programmer. Also, it wouldn't be entirely true to say that the work of the AI is original for the mere fact that all the information that is available is already present in the public domain and some of it may already be someone else's copyright. Thus we are in a gray area regarding the ownership of AI creations without the help of humans.

Presently in India, regarding the word 'persons' in the same definition, copyrights are only granted to either natural persons or those artificial persons who are recognized by law. Further, the tools or machines utilized for the creation are merely recognized as tools itself. Also, this brings about confusion regarding the patent rights of AI as we have yet to determine its legal status.

Industrial Laws and AI

There is a rising demand for automated forces to increase the overall productivity and efficiency in organizations. The current laws and regulations that we have are meant for the regulations of a human workforce, but what happens when some of the fields are replaced with artificial intelligence? Do the same laws apply to AI as well and if yes, does this mean they are also entitled to benefits of gratuity and the provident funds? Will they have a recourse from the employer in case they get terminated wrongfully? This gap between the use of AI and the laws to regulate it may result in an adverse scenario and there is a need for clarity in our present laws.

Taxation and AI:

There is a growing debate on whether robots should be taxed or not.

As per the Income Tax Act, 1961 for an entity to pay tax, they have to fall within the definition of 'person' which is provided for in Section 2(31) of the said Act¹⁶. Since AI does not currently fall under the said provision as its status is yet to be determined, the provisions of the Act do not affect

¹⁶ The Income Tax Act, 1961.

AI. However, in the coming future, the definition may be changed to include AI entities as the tendency to exhibit a behavior autonomous in nature and not under the control of its programmers.

According to Bill Gates, ‘the robots who take human jobs should pay taxes’.¹⁷ There is a concept called a robot tax. According to this, any company that is replacing its human workforce with an automated one should be made to pay tax which is then to be used for helping these displaced workers. This is looked at as a social tool to reduce the pace of displacement taking place and to afford the displaced individuals sufficient time to find opportunities to work elsewhere. One of the countries that have already implemented the concept of a Robot tax in South Korea.

Recently 2018, NITI Aayog¹⁸ developed a strategy for the inclusion of AI in all fields and not specifically for military or economic development. It aims to empower the younger generation with an increased level of skill, to invest in researching and discuss areas of healthcare, education, agriculture, smart cities etc where AI can be applied to maximize growth and benefit from the most. Also, certain challenges that are present and may affect the implementation of AI have also been identified and mentioned for such as privacy and security, low awareness of adoption, etc. Further, it was mentioned that India must encourage AI innovations and aid in setting up the infrastructure that is AI-friendly so as to prepare job and skill markets for the future along with many other recommendations.

CHAPTER - 5

ARTIFICIAL INTELLIGENCE AND THE ENVIRONMENT

Artificial intelligence has quickly risen as a tool for the maintenance and safety of our environment and natural resources. AI’s machine learning technology has a lot of potential in improving the sustainability and tackling problems of climate change. AI has been used in improving the prediction of hurricanes or earthquakes and other like natural disasters.

¹⁷ Malcolm James, *Here’s how Bill Gates’ plan to tax robots could actually happen*, BUSINESS INSIDER (Mar. 20, 2017, 8:48 PM), <https://www.businessinsider.com/bill-gates-robot-tax-brighter-future-2017-3?IR=T>.

¹⁸Niti Aayog ,*National Strategy for Artificial Intelligence*, (June, 2018)
https://niti.gov.in/writereaddata/files/document_publication/NationalStrategy-for-AI-Discussion-Paper.pdf.

Researchers have also used AI to create simulations showing a scenario of what people’s houses and surroundings would look like if the sea level keeps rising and no action was taken to prevent such happenings.¹⁹ Also with the introduction of AI in the automobile industry, there could be a reform and reduction in the carbon footprint along with a fall in the pollution rates. According to a report by the Intelligent Transportation Society of America Projects, “intelligent transportation systems (ITS) could achieve a 2 to 4 percent reduction in oil consumption and related greenhouse gas emissions each year over the next 10 years”.²⁰

One can also use AI to identify whether the water that is being used is clean, fit for consumption and free from harmful bacteria. Along with this AI could also be used to reduce our dependence on fossil fuels and rather make the renewable sources present more cost-effective and efficient.

Further AI is also playing a major role in the field of agriculture and can optimize the farming process itself by recommending the time to plant, harvest, the essentials to guarantee a profitable crop, etc. based on the climatic conditions present. This in turn will help in the overall reduction of harmful chemicals and sprays being utilized and excessive water being wasted which may sometimes ruin the crop itself. In India, AI has helped farmers get 30 percent higher groundnut yields per hectare by providing information on preparing the land, applying fertilizer and choosing sowing dates.²¹ India, being a country where agriculture is a major part of many people's livelihood also has a huge impact on our GDP will benefit from AI a lot. This could help in the rise of bumper crops and an efficient way of allocating these crops and resources among people in such a way so as to achieve the Zero Hunger Goal (which is part of the Sustainable Development Goals).

AI can also be utilized to detect deforestation or poaching of animals along with the protection of species that are on the brink of extinction.

Despite the numerous ways in which AI can help the environment, there is just one problem that has recently arisen. According to a study²² done by researchers at the University of Massachusetts,

¹⁹ Jackie Snow, *How artificial intelligence can tackle climate change*, NATIONAL GEOGRAPHIC (July. 18, 2019), <https://www.nationalgeographic.com/environment/2019/07/artificial-intelligence-climate-change/>.

²⁰Julie Pyper, *Self-driving cars could cut Greenhouse Gas pollution*, SCIENTIFIC AMERICAN (Sept. 15, 2014), <https://www.scientificamerican.com/article/self-driving-cars-could-cut-greenhouse-gas-pollution/>.

²¹Renee Cho, *Artificial Intelligence- A game changer for climate change and the environment*, STATE OF THE PLANET (June. 5, 2018), <https://blogs.ei.columbia.edu/2018/06/05/artificial-intelligence-climate-environment/>.

²² Emma Strubell et al, *Energy and Policy Considerations for Deep Learning in NLP*, (June 5, 2019) arxiv.org/pdf/1906.02243.pdf.

Amherst, it was discovered that the carbon footprint that is released when training an AI (NLP models) is huge and is almost equivalent to 626,000 pounds of carbon dioxide. This is approximately five times the emissions released from an average American car in a lifetime. The authors have expressed their concerns about the fact that the cost of development is quite high and that these are the emissions when the AI is trained to reach just the basic level and the higher the level of training, the higher the numbers.

However, it has been noted that not all forms of AI emit the same. The smaller forms of AI that are limited in their functions require very little computational power. Hence, we have come to a point where it has become essential to create and train AI as well in an environmentally friendly manner.

However, there is still a lack of discussion and awareness about the Emissions from AI training which need to be addressed given the level of AI potential we have reached.

CONCLUSION – THE FUTURE OF AI

The growth of AI is likely to only rise in the future and may penetrate into every part of society. AI definitely has the capability of making our lives better and easier like in the medical fields, banking and finance area, etc.

Rather than looking at this as a race against AI, there should be a symbiosis of humans and machines where on one hand the monotonous and tiresome work is given to AI to handle and on the other hand, human beings are involved in work that requires more creativity. Indeed, AI can predict and analyze complex data for more than people, yet when it comes to proper decision making, machines rely on human beings itself when decisions are to be made using the subconscious heuristics methods to determine the outcome. As AI keeps evolving, so should humans by adapting, improving and updating themselves along with their analytical & digital skills so that there is a balance between the two making it possible to work together.

Recently Kerala and Chennai have started using robots for police work and for a robot-themed restaurant respectively. There exists a need for all countries especially India to address the issue

of holding an AI responsible for its actions and for ascertaining the legal status of AI. There should be a balance struck between safeguarding the rights of our citizens and encouraging the development of AI.

There is a need to determine the rights of the user of AI and the person developing the AI. What are their rights, liabilities, the limit of services provided, warranties, etc.? Before we allow driverless cars into our society, regulations must be set in place ascertaining the liability so that it is clear on how to proceed.

Further, the IT Laws in India need to be reassessed based on the pace at which we are going forward with AI because in case of a breach in the data protection, who is to be blamed in case there was no human involvement?

Hence, the only way to move forward is to work around the current issue because AI will soon cover all aspects of our lives and when it does, we should not be unprepared, rather we should be at a position where we are ready for whatever is to come. Decisions that are made today about AI will bring forth its respective consequences for times to come.

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