

Legal Challenges In Incorporating Machine Learning Through Artificial Intelligence In Humanoids And Autonomous Vehicles

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ABSTRACT

The proliferation of technological development has its effect in multifaceted dimensions. According to the Jurists of Natural School of jurisprudence, law is considered to be law of reason something that is unwritten and has its moral and divine touch to deal with all the aspects of society. when "intelligence" is considered to be the instinct for any human acts, the conceivment of man-made intelligence drastically changed all the aspects of human life. Initially machines were developed to substitute human labour, subsequently those conventional machines failed to comply the intelligent aspects. Researchers thus brought the concept of machine learning, where a man made machine is being thought like a child through artificial intelligence. When the world is busy in developing intelligence artificially, the legal aspects of such intelligence are forgotten. This research focuses on the radical shift from where human intelligence is converted in to artificial intelligence and how humanoids are infused with moral and legal aspects. The issue of accountability and legal liability is unaddressed when an issue arises in the field of automation, thus the paper throws light on the same. Most of the societies have seen a shift from joint to nuclear family and single parent concept, in such situation the introduction of "Alexa" through artificial intelligence has been a good human companion, and again their contemporary legal challenges are in need for discussion. Subsequently the article scrutinizes artificial intelligence concept with the Constitution of India and its role in ensuring proper legal framework. Also, the challenges of artificial intelligence and machine learning in the international arena are summarized with appropriate curbing measures. Data collection and data management are considered to be one of the privacy issues globally. From entering in to an online contract while installing an application in mobile phone to authenticating a Know Your Customer (KYC) in financial institutions, humans data are in a great threat. In such a critical circumstances, data protection and regulation by artificial intelligence may not be governed by robots without a proper legal framework. Each and every day many evolutions are made in science and technology but are not implemented practically due to lack of legal validity. Hence the paper codifies various techno-legal gaps that are a great lacunae in automation and suggest remedial measures for unlocking the legal challenges in the world of artificial intelligence.

Keywords: *Techno-legal, Machine Learning, Artificial Intelligence, Humanoids, Autonomous Vehicles.*

INTRODUCTION

The world is marching towards the easy way of accomplishing each and every tasks, gone are the days where a human interrupted and switched manually a machine to put it on, later the mechanism of remote control evolved through which the human operated the machine from far distance and now by inducing the human intelligence to a machine, the same machine acquires intelligence artificially and has its ability to perform its task without the help of humans. It is a well known fact that wherever human intelligence is involved due to human instinct, there might be biasing nature, similarly the machine which has artificial intelligence do have many challenges in the real time world. One of the greatest and significant challenges to autonomous vehicles and humanoids is the legal responsibility and accountability.¹ When a robot or an autonomous vehicles is been fabricated, its primary motto is to perform the given task rather than focusing on data privacy issues, healthcare challenges, robot-human interactive environment, risk and liability issues and many other problems. If such legal issues persist without a proper solution, then it will be of no use practically. As the maxim goes "Whatever height you may be, law is always above you", in all

¹ Adebukola, A. A., Navya, A. N., Jordan, F. J., Jenifer, N. J., & Begley, R. D. (2022). Cyber security as a threat to health care. *Journal of Technology and Systems*, 4(1), 32-64.

walks of technology and evolution of new ideas, the legal validity and liability should not be compromised by both the technologists and by the users. Therefore providing appropriate solutions legally is the need of the hour.

Legality of artificial intelligence in machines

Law and artificial intelligence are considered as a different area of study but the microscopic view of techno-legal perspective opines that they are inter-linked with some kind of legal validity measures. The core part of thinking ability in machines is to sense the information, process the information and to deliver the correct feedback as a result. In these process all the robots, think, act, perform and accomplish the instructed task through artificial intelligence. There always need an external moderator to control its legality issues, for example when the task of automated driving is instructed to an autonomous vehicle it stops the machine when an interruption (i.e. some pedestrians or an object) takes place nevertheless it rarely focuses on the rear vehicles which may severely collide due to the sudden break of that autonomous vehicles.² Similarly, in robotics, the inducement of emotional intelligence has abruptly causes many devastating results. Let us consider the newly originated DoNotPay's "robot lawyer" which is a AI developed legal assistance to the disputed parties to plead before the court of law, aimed in cost reduction justice. In this case, the economical inclusion of all the people in to the umbrella of artificial intelligence is appreciated but the ethical inclusion of disputed parties feelings and emotions are always remain unattended. In today's AI dominated world, if we focus only on automation without considering its legal issues, there are more chances for techno-legal wars in future.³

Machine learning in robotics

Machine learning is a branch of artificial intelligence through which the machine is thought like a child to acquire certain skills and programming language to perform its task. Robots are supposed to make predictions and decisions without human interruption, for that inbuilt intelligent aspect, the concept of machine learning plays a pivotal role. We can teach a child with alphabets in the initial grades of their study, likewise robots and autonomous vehicles are taught via algorithms. When a machine learning concept is viewed in the eyes of law, it has more or less a similar touch with the "Jurimetrics", where certain variables and numerical data's are tabulated and given as an input to machines but they are interpreted carefully at times of delivering a judgment. Machine learning is a tool that helps the AI to meet the real world. Robots are designed to sustain in a variety of environments. Primarily the "computer vision" is developed in the machines to learn the given data.⁴ Legally speaking, from the scratch i.e. at the time of inducing algorithms the legal aspects can also be incorporated in to such processors to qualify the machine learning legally. For instance when an machine learning is given with algorithm to learn healthcare management concepts like deducting the abnormality in the human body and suggesting relevant medications, simultaneously the medico-legal laws can be clubbed with the basic algorithms of computer or with any programming language used.⁵

Humanoids as a legal person

"Legal personality" status is one of the basic essence of Jurisprudence, providing such status to robots and autonomous vehicles is very complex to deal with, but still the same status can be validated partially to some extent by considering the appropriate works the machine does like a natural person. Critics argue that machines can never replace humans, on the other side technologists advocate that machines (Robots) can not only replace humans but also can rule the entire world. While this controversial topic is spoken globally, the Citizenship of "Sophia", a humanoid by the Saudi Arabian government is viewed as a pro-

² Ballell, T. R. D. L. H. (2019). Legal challenges of artificial intelligence: modelling the disruptive features of emerging technologies and assessing their possible legal impact. *Uniform Law Review*, 24(2), 302-314.

³ Berente, N., Gu, B., Recker, J., & Santhanam, R. (2021). Managing artificial intelligence. *MIS Quarterly*, 45(3).

⁴ Cihon, P. (2019). Standards for AI governance: international standards to enable global coordination in AI research & development. *Future of Humanity Institute*. University of Oxford, 340-342.

⁵ Cristiano, A. (2020). 4.5 AI (Artificial Intelligence) and Ultimate Reality. *Ultimate Reality and Meaning*, 36(3-4), 127-143.

active step in providing legal status to humanoids and autonomous vehicles. Let us consider the robot "X" is granted with legal status and is been considered as a legal personality, then immediately the rights and liabilities of that legal person are put in to discussion.⁶ At many instances the robots have proved that they very well enjoy the rights but when it comes to the liabilities, it remains unaddressed. To solve this, the interruption of Global Standards is the need of the hour because, one particular State or Nation cannot determine the standards of such robots because Artificial Intelligence needs global support on the whole. In September 2024, the Indian Prime Minister Narendra Modi, during his visit to America, opined that "AI would sound better as America-India rather than Artificial Intelligence", through which it is evident that multi-parties co-operation around the globe is necessary for providing a legal status to a Robot.

Privacy and data protection challenges

In the digitized era of twenty first century, life becomes easy by data management and sharing of required information to a particular domain. Both the International law and Municipal laws of many countries have already codified the Laws and regulatory mechanisms related to Artificial intelligence and they are yet to be implemented in its true sense. "Purpose Specification" should be focused when a data is been collected from the source for a particular purpose. For example, the Artificial Intelligence is applied in most of the e-commerce websites for producing various related products and advertisements, but when the same kind of data is used in the social media platform, which is entirely a different domain, it may cause a kind of privacy violation among the users. Secondly the "Collection limitation" should also be monitored by the legal statutes because many AI induced platforms are collecting the information which is more than that is required. Let us take the example of (KYC) Know Your Customer in banking sector, many of them collect the personal information which is then uploaded with AI based moderator and many legal violations like cyber crimes are made with them.⁷

Legal Responsibility of Humanoids

In today's technological development we can witness the presence of artificial intelligence everywhere. Starting from the schools in giving instructions to the students, delivering justice in the court of law, everywhere humanoids play a vital role. While the legal responsibility of an humanoids are concerned, it is more or less having the similar status of the "Cyborgs", who are human beings implanted with computer oriented programming language. Law mandates everything to be codified and provided for the welfare of the society and the same cannot be so rigid at the time of need, hence the legal responsibility of the robots must be comparatively be relaxed by complying the current positions of the technology. In artificial intelligence the responsibility of the humanoids can be categorized in to two types, one is the "Subordinate AI" and another one is the "Independent AI".⁸ Let us consider the act of a minor in terms of offence, many statutes relaxes the punishment to minors and the liability in few cases fall on their parents or guardians. Similarly, the Artificial intelligence when it is governed by some regulators like external cyber-watchdogs, it becomes subordinate in nature and the legal responsibility is very less or sometimes it is not responsible to any of its legal violations. Secondly, when the machine can able to take independent decisions like "Robotic Judge", "Autonomous Vehicles", then the whole legal responsibility lies on the robot or the machine and also the intent of such micro-processing action is liable before law.

Autonomous Vehicles and Artificial Intelligence

The advent of autonomous vehicles is un-imaginable without the application of Artificial Intelligence. So as to inbuilt a intelligence in to a machine through machine learning, here the learner becomes a vehicle.

⁶ Helbing, D. (2019). Societal, economic, ethical and legal challenges of the digital revolution: from big data to deep learning, artificial intelligence, and manipulative technologies (pp. 47- 72). Springer International Publishing.

⁷ Ikechukwu, I.J., Anyaoha, C., Abraham, K.U., & Nwachukwu, E.O. (2019). Transient analysis of segmented Di-trapezoidal variable geometry thermoelement. NIEEE Nsukka Chapter Conference, 338-348

⁸ Liu, H. Y., Maas, M., Danaher, J., Scarcella, L., Lexer, M., & Van Rompaey, L. (2020). Artificial intelligence and legal disruption: a new model for analysis. *Law, Innovation and Technology*, 12(2), 205-258.

Legally analysing there are many complex and practical difficulties persist in the autonomous vehicles. The prime motto is to plan, execute, drive, take decisions, deviate and stop at the destination, while the conventional human driving is considered, no roads in the world exist without an accident may it be due to negligence or due to violations of road safety laws. In this phenomena, the artificially induced driving skills abruptly undergoes legal violations as to a large extent and it is the need of the hour to inbuilt techno-legal procedures through Artificial Intelligence.⁹ The critical legal analysis of challenges in autonomous vehicles through artificial intelligence is clear that there are following lacunas. Firstly the observation of road safety laws, which is very crucial. When the law mandates for obliging the traffic rules, it should be done without any interruption. Secondly the artificial intelligence remains as a mute spectator in terms of insurance issues. Especially in assuring the third party insurance in case of any accidents, the liability falls on the driver-less vehicle where the owner is sole responsible. Even when the former issue is addressed to some extent, the question "Who will insure an autonomous vehicles on par with conventional vehicles?" remains as a great question mark in the legal arena.¹⁰

Legal issues in incorporating A.I. in Autonomous Vehicles

While it comes to the laws that primarily focuses on the safety of the people, the proliferation of technological advancement seems to be secondary. In India, The Motor Vehicles Act, 1988 has clearly mandates that there should not be the usage of autonomous vehicles without any drivers, but due to the advancement in techno-legal aspect and to adapt flexibility in legal statutes, the Draft Motor Vehicles (Amendment) Bill of 2017 in India however permits the research and development aspect of driverless autonomous vehicles besides allows the same for testing, nevertheless its practical usage is not provided properly owing to its legal challenges. Cyber threat including Hacking the operating system is the biggest unaddressed legal challenge in using autonomous vehicles. It is clear that the operating system lays the basic functions that are necessary to the micro processors and other micro controllers in addition to the machine learning induced by artificial intelligence, when a black hat hacker hacks the O.S. of the locomotive vehicle, then there are chances for devastating effects. The next legal challenge in driver-less vehicles is the transfer of technology and information's. Once the server receives an information it should be maintained only to the stipulated task. Let us take an example of a countries Prime Minister is travelling in the autonomous vehicle, when the extremists wants to conquer the vehicle, in today's technology there are more chances for the same when comparing to the conventional vehicles.

Indian Policies relating to Robotics

To have "Scientific Temper" is the voice of our Indian Constitution with regard to technology. The Bureau of Indian Standards (BIS) defines Robotics as the science and practice of designing, manufacturing, and applying robots. The policy makers of India have taken in to consideration about the existing "cyber-criminology" to draft various policies and statutes in India. The Draft National Strategy on Robotics is the eye-opener among all the anticipating robotic policies of India. It provides a better platform for using the technology that is more suitable to Indian society. India is a developing Nation which competes with global Nations in the field of science and technology. The Draft National Strategy on Robotics significantly focuses four major areas with regard to robotics.¹¹ They are, manufacturing, healthcare, agriculture and national security.

When manufacturing is considered there are various industrial norms and responsibilities an industry has to obey before employing an automation. It is evident that India is a welfare state, therefore with the

⁹ Maduka, C. P., Adegoke, A. A., Okongwu, C. C., Enahoro, A., Osunlaja, O., & Ajogwu, A. E. (2023). Review of laboratory diagnostics evolution in Nigeria's response to COVID-19. *International Medical Science Research Journal*, 3(1), 1-23.

¹⁰ Zhang, Y., Wu, M., Tian, G. Y., Zhang, G., & Lu, J. (2021). Ethics and privacy of artificial intelligence: Understandings from bibliometrics. *Knowledge-Based Systems*, 222, 106994.

¹¹ Agarwal, A., & Stoff, B. (2023). Ethics of using generative pretrained transformer and artificial intelligence systems for patient prior authorizations. *Journal of the American Academy of Dermatology*, 20, 23-34. <https://doi.org/10.1016/j.jaad.2023.04.030>

emerging technological advancements like automation and non-human interruption, the employment of human beings should not be in threat and their livelihood should not be compromised. When healthcare is considered, robotic technology can treat a complex surgery within few minutes, but the word "Care" is missing to treat the patients, which is very essential to cure diseases. Issues in agricultural sector might be an alarming threat because, due to artificial intelligence and robotics, the production per unit area can be improved, but the native method of agriculture without any doubt will become extinct. Similarly the un-compromised factor of any country is the security of that state. The Soviet Union's "Teletanks" was the first military robot that was deployed in armed forces and of late there are many armies in the world have already have great robotic strength in their army either by means of machines or by drones. Hence without proper cyber-security laws, artificial intelligence may have some complications.¹²

CONCLUSION

Artificial intelligence and robotics are the greatest gift from technology in the twenty-first century, but some of the existing blockages are bypassed with legal solutions, it will be a tool to renovate all the fields of study. Initially a state should have a clear idea about the "Legal Personhood" status for humanoids. While providing such status it will be very easy to predict the appropriate rights and duties that are expected from a robot. Another legal solution that cures the data protection issues and cyber threat can be strengthened by making the technological laws of a country. Improving the efficiency of cyber laws cannot be attained only through amending the existing laws, but also by providing necessary trainings to the cyber law enforcement authorities and bureaucrats. Apart from the techno-legal challenge in robotics, there also exist few ethical challenge. These ethical challenge can be evident by the usage of Amazon's "Alexa", a AI built-in interactive device that works with the help of "Internet of Things". These alexa can be a human companion to most of the lonely people but cannot understand the emotional aspects of individuals to some extent. "Autonomy issue" also has to be solved because including the Vienna convention, many protocols and international agreements have emphasized that human regulation is a must even though the machine has the ability to perform all the tasks on its own. Meanwhile the technologists argue that if there is human involvement there is no need for automation. Hence government and implementing agency should ensure proper autonomy to the robots and autonomous vehicles. Hence as per the words of Salmond "Law is the Sovereigns Command", not only the cyber laws and technical laws, each and every law can be made more effective only by stitching the loop holes in the statutes by appropriate amendments and law should always welcome the application of new technology with a positivistic approach.

BIBLIOGRAPHY

1. Dfaz-Rodríguez, N., Del Ser, J., Coeckelbergh, M., Lopez de Prado, M., Herrera-Viedma, E., & Herrera, F. (2023). Connecting the dots in trustworthy Artificial Intelligence: From AI principles, ethics, and key requirements to responsible AI systems and regulation. *Information Fusion*, 99, 101896. <https://doi.org/10.1016/j.inffus.2023.101896>
2. Duan, Y., Edwards, J. S., & Dwivedi, Y. K. (2019). Artificial intelligence for decision making in the era of Big Data -evolution, challenges, and research agenda. *International Journal of Information Management*, 48, 63-71. <https://doi.org/10.1016/j.ijinfomgt.2019.01.021>
3. Duda, R. O., & Hart, P. E. (2006). *Pattern classification*. John Wiley & Sons.
4. Ferreira, A. L., & Lipoff, J. B. (2023). The complex ethics of applying ChatGPT and language model artificial intelligence in dermatology. *Journal of the American Academy of Dermatology*, 89(4), e157-e158. <https://doi.org/10.1016/j.jaad.2023.05.054>
5. Glaser, J. I., Benjamin, A. S., Farhoodi, R., & Kording, K. P. (2019). The roles of supervised machine learning in systems neuroscience. *Progress in Neurobiology*, 175, 126-137. <https://doi.org/10.1016/j.pneurobio.2019.01.008>
6. Joachim von Braun, Margaret S. Archer, Gregory M. Reichberg, & Marcelo Sanchez Sorond. (2021). AI, Robotics, and Humanity: Opportunities, Risks, and Implications for Ethics and Policy. In J. von Braun et al. (Eds.), *Robotics, AI, and Humanity*. https://doi.org/10.1007/978-3-030-54173-6_1

12 Brooks, R. A. (1991). New approaches to robotics. *Science*, 253(5025), 1227-1232.

7. Kumar, P., Chauhan, S., & Kumar, L. A. (2023). Artificial Intelligence in Healthcare: Review, Ethics, Trust Challenges & Future Research Directions. *Engineering Applications of Artificial Intelligence*, 120, 105894. <https://doi.org/10.1016/j.engappai.2023.105894>
8. Leeson, P. T., & Coyne, C. J. (2005). The economics of computer hacking. *JL Econ. & Pol'y*, 1, 511.
9. Lesandrini, J., Idris, M. Y., & Reis, D. S. (2023). The Ethics of Artificial Intelligence and Machine Learning. *Journal of Radiology Nursing*, 42(3), 265-266. <https://doi.org/10.1016/j.jradnu.2023.05.001>
10. Memarian, D., & Doleck, T. (2023). Fairness, Accountability, Transparency, and Ethics (FATE) in Artificial Intelligence (AI) and higher education: A systematic review. *Computers and Education: Artificial Intelligence*, 5, 100152, <https://doi.org/10.1016/j.caeai.2023.100152>
11. Mueller, V. C. (2012). Introduction: philosophy and theory of artificial intelligence. *Minds and Machines*, 22(2), 67-69. <https://doi.org/10.1007/s11023-012-9278-y>
12. Palladino, N. (2023). A 'biased' emerging governance regime for artificial intelligence? How AI ethics get skewed moving from principles to practices. *Telecommunications Policy*, 47(5), 102479. <https://doi.org/10.1016/j.telpol.2022.102479>