

Standards, Ethics, Legal Implications & Challenges of Artificial Intelligence

Sanjana Chauhan
Faculty of Law
University of Oslo
Norway

sanjana.chauhan@student.jus.uio.no

Arvind Keprate
Department of Mechanical, Electronics and Chemical Engineering
Oslo Metropolitan University
Norway

arvind.keprate@oslomet.no

Abstract - We are moving towards an era of automation and technological revolution with Artificial Intelligence (AI) at its core. There is no doubt that AI has created commercial value across various industries such as e-commerce, security, engineering, etc. Thus, the paradigm of AI is understood as something that is making our lives easier, but is it as simple as it looks? This paper looks at some challenges and risks of AI through the lens of ethics and law. The risks are multifaceted and bring about chaos in society if no strict measures are taken. By looking at various ethical and legal concerns we will look at the current ongoing legislation at the European Parliament regarding law and AI.

Keywords- AI, Ethics, Law

I. INTRODUCTION

The 21st century earns the sobriquet “computer age or digital age” due to computers revolutionizing our daily lives. Due to convergence of factors such as data generation, evolution of computer power, cheap data storage, availability of tools (such as python, TensorFlow, etc.) coupled with insatiable desire for efficiency has led to development of imparting human like intelligence to computer, which is often technically termed as Artificial Intelligence (AI).

It is indisputable that AI has made our lives more convenient as it is more economical, faster and reliable to get the work (that is repetitive in nature) done by an AI agent or algorithm than humans [1]. The applications of AI are multifaceted, such as diagnosing diseases, efficient farming to prevent climate change, the establishment of smart cities that will resolve the problem of carbon emissions and numerous additional alternatives that one employs in their daily lives. These advancements through AI makes one believe that we are going towards an era of ‘automation revolution’ or ‘fourth industrial revolution’. Nevertheless, as Stephan Hawking stated, “Artificial Intelligence (AI) is likely to be either the best or the worst thing that can happen to humanity”.

Despite the benefits of AI, it poses many challenges, risks and ethical question. Though, it is becoming an essential part of lives, but can we trust them completely? To understand the potential risks and challenges one must understand the concepts and theories behind the design of

AI? Konstantine & Selmer argue that AI is built on concepts developed by philosophers and logicians [2]. Therefore, when “thinking machines” are created, it brings forward many philosophical and ethical questions to maximize the use of machines while no harm is done to humanity. An approach that ensures that technology is used to serve and improve humans' lives while respecting their rights shall be adopted.

II. WHAT IS AI & HOW IT POSES CHALLENGES?

Before we make an effort to define AI, it is worth to define it’s counterpart human intelligence (HI). HI is the ability to utilize your memory and then act based upon the details of the memory [3]. Thus, HI revolves around adapting to the environment using a combination of several cognitive processes. The field of AI is a branch of computer science focusing on designing machines that can mimic human behavior [4]. It is worthwhile to delineate the differences between HI and AI.

TABLE I: AI vs. HI [5]

| Artificial Intelligence | Human Intelligence |
|--|---|
| Fact Based: Data and Algorithms | Experience Based: Observation, Learning and culture |
| Adaptive to environments with abundant data, more dimensions of variables and greater predictability | Adaptive to environments with high uncertainty and low predictability |
| More accurate and effective at deterministic tasks | More competent in judgement, creativity, and understanding |

As can be seen from Table I, the main ingredient of AI is “algorithms” which are defined as “encoded procedures of transforming input data into a determined output, based on specified calculations” [6]. Barfield argues that algorithms are not as easy as they seem, and they do not fit in the definition of algorithms. He emphasizes on robots that are based on “predetermined motions” and no decision making involved. When these systems that are based on complex human performance, thought process and experience learning come into play they pose various challenges in various fields of law and ethics. For example, if a machine acts negligently, can the machine be held

liable? In law, the principle of foreseeability is essential to prove negligence and in the case of AI not all algorithms can be traced back to the human programmer because some algorithms are associated with deep learning and these systems are controlled by algorithms that are not controlled by humans after all [7].

III. AI IN GOVERNMENT AND PUBLIC ORGANIZATIONS

The government's objective is to cater to a welfare society and its individuals, which are achieved by responding to society's changes. Technological innovations are also one such development in the society and governments across the globe are investing millions of dollars in new projects for a better governance. The probabilities of algorithmic governance are increasing, but its risks are also rising with its uses. The use of AI in public domain has resulted in increase the productivity, reduce the administrative burden and improve capabilities. Furthermore, if algorithmic governance is used to implement law in the society it is therefore necessary that the core values of law are also instilled in the AI, such as administrative law, due process of law and due diligence.

Machine-learning (ML) algorithms also hold significant potential for use by governments in more efficiently allocating resources and assisting in adjudicatory and policy decision making. One recent analysis assessed the outcomes that the US Environmental Protection Agency (EPA) could achieve if it used ML to determine to which of the many industrial facilities throughout the country it should send its limited number of regulatory inspectors. The result was an improvement by as much as 600% the agency's ability to target inspectors to those facilities that are most likely to be violating the law. It is believed that algorithms can be used to perform more human-like functions such as adjudicating cases, policing and setting regulations. An example of various government agencies using algorithms can be seen in the United States where the local governments are using algorithms and machine learning to identify where 'rodent-baits' should be placed in inspecting restaurants. In New York algorithms are detecting unsafe buildings for the fire department to inspect [8]. Traffic patterns are being optimised in Los Angeles by which traffic signals are turned red or green depending on the congestion data collected through sensors [9].

In Estonia, the information system SATIKAS uses deep learning methods to analyse the satellites data coming from European Copernicus program to detect mowing on the Estonian grasslands. In Belgium, AI system is being used to predict accurate day care services to improve the quality of the services and wellbeing of the children. The Swedish Government is using technologies to automate various social assistance decisions such as sickness benefits, unemployment benefits, taxes and has had a successful implementation. This has led various citizens to in a

perplexed state as they are concerned about their application not being accepted.

In the Netherlands, SyRi system is being used by the government to detect welfare fraud more effectively. The effective system operates on legal basis and indicates which data can be captured, stored, and shared. This has been helpful in reducing misuse of public funding and makes sure that this could be used to reduce crimes as the citizens would be under a watch [10].

IV. CHALLENGES WITH AI

A recent study done on potential impacts of AI describes that the harm of the AI can be two folds as shown in Table II. [11].

TABLE II: Potential Impacts of AI

| <u>Material Harm</u> | <u>Immaterial Harm</u> |
|--|---|
| <ul style="list-style-type: none"> • Safety • Health of Individuals • Loss of Lives • Damage to Property | <ul style="list-style-type: none"> • Loss of Privacy • Freedom of Speech & Expression • Discrimination |

Therefore, the panel suggested a regulatory framework to minimise the risks that can cause potential harm to the society. Some of the risks involved are as follows-

1. **Social and Cultural Discrimination & Biasness** - One of the main problems which were identified through the research identifies rules designed to protect fundamental rights, including data and privacy protection as well as safety and liability related issues of individuals. For example, if a University uses a machine-learning algorithm to grant admissions rejects an applicant. The applicant sues the University alleging that they have acted racially discriminatory by not granting them admission to the student though he met the criteria. The University refuses the charges and states that the system cannot see the race of the student applicants. The machines can also be gender bias or discriminate based on the economic status of an individual.

Another example of discrimination in government and public organisations is recruitment. Unconscious biases through datasets where a certain population is underrepresented can lead to discrimination, for example, a female applying for a job gets rejected by the AIs algorithm. In October 2018, Amazon scrapped its AI recruiting tool that showed bias against women [12]. The company claimed that the system was recruiting based on the past ten years patterns largely from men and teaching themselves that male applicants were preferable. The tool immediately penalised the applications with the term

“women”. Biased decisions can also be based on variables and data that is available to the AI. For example, identification of race-based on the country name or postal code.

2. Lack of Transparency – Ethical questions in governance such as fairness, transparency and privacy, allocation of services and goods and the economic displacement shall always be an issue. Judges granting bails to criminal defendants depend on algorithms, though they’re not bound by it but mostly they follow it. This can be understood by citing an example of a judge granting bail to a suspect based on the decision of the AI. What if there is a bias and the AI grants bail only to people of a specific race [13]. The advocates or the judges do not understand how the algorithms work yet trust the AI. Even in other public and governmental sectors transparent system is necessary.

3. Erosion of Privacy and Liability – The working of AI systems is based on data-collection, analysis, and treatment of information on the internet. This poses threats such as phishing, risks to digital security and various other risks that are connected to human rights concerning freedom of speech, peaceful assembly, and association. Human rights are protected under various international treaties such as article 12 of the Universal Declaration of Human Rights, Article 17 of International Covenant on Civil and Political Rights but when it comes to privacy on the internet it is still undermined [7]. In Europe itself the right to private and family life is protected under Article 8 of the European Convention on Human Rights. When a computer is asked to perform functions that of humans, imagine the kind of dangers it could possess. The main question arises from the fact that who can be held liable behind the acts of a machine. Through deep learning algorithms can almost perform tasks on their own without any human involvement, would it be justifiable to hold humans liable. And if one was to hold human liable when such a machine acts negligently, who should be held liable – the people who designed the machine or the humans who produced the algorithms and the software? Therefore, Barfield suggests that a law body should be available to guide the courts to decide such disputes, particularly allocate liability between human or the machine when the system allows control by both parties [14].

4. Accountability & Moral Responsibility – In a society everyone owes each other a moral responsibility. The wrong doers are held accountable under law if they act against law, but in the modern age where AI controls and performs human like functions should be held accountable if a wrong is committed. To understand this let’s look at a case Jones Versus WIM Automation Inc, where a worker entered a prohibited area got struck by a robot in the head. Despite of holding the robot accountable

the Court investigated the system of the robot [7]. In another case, United States Vs. Athlone Indus, the Court declared that “robots cannot be sued”, but we need to understand that the AI is more sophisticated and advanced now and works on autonomously. In most of the cases, the Court unravels the technology and apply ill-fitting case laws to determine accountability. For example, tort law, malpractice claims, negligence, reasonableness etc.

5. Protection of Human Rights – The issues regarding rights of individuals are not only related to privacy but various other fundamental rights. A 2018 study “Algorithms and Human Rights-Society” laid down violations of rights in the field of right to a fair trial, right to judge through the presumption of innocence, equality etc. There are multiple risks related to algorithmic choices such as racial, ethnic origin, political, religious beliefs of a person, their sexual orientation etc [15].

V. TURN TO ETHICS

The only dangers of the AI are comprehended through movies or the internet. AI is such a broad term that it does not have a precise definition, as John McCarthy quotes, “as soon as it works, no one calls it AI anymore”. It is indeed an emerging field and therefore researches, theorists and scholars are analysing ethical questions and identifying new harms and ethical answers to the harms. How can ethics be developed along with rapidly developing technologies?

Ethics can be understood as “virtue ethics” and “applied ethics”. Virtue ethics are normative ethics that emphasise virtues of mind and character and applied to emphasise that there is a need for philosophical examination from a moral standpoint, especially dealing with issues in private and personal lives. Ethics shall not be confused with law because the latter consists of binding rules sanctioned by the government, whereas ethics are non-binding guidelines that define the moral conduct of individuals or society.

When one comes across the expression "machine ethics", it leaves readers baffled because machines are considered as objects and how can ethics be applied to objects? Therefore, the term can be understood as ethics that ensure machines' behaviour towards human users and other machines. Dignum states that AI reasoning should be able to consider societal values, moral and ethical considerations. AI should be able to consider various perspectives, such as different stakeholders, multicultural contexts along with this be able to explain the reasoning and transparency [16].

With Artificial Intelligence development, it is necessary to apply ethics not when the AI starts to interact with humans, but when it is first designed. The systems are advancing and evolving on their own. Therefore, the

principles of the philosophy, rule of law, and ethics shall be at the core of the design and cognition of the AI.

VI. LEGAL IMPLICATIONS

The complicated relationship between law ethics and technology poses many questions, the fact that technology is overgrowing, do we have enough laws to control or bring technology under the purview of legal liabilities. Governments across the world realize the importance of having a risk free and effective method, a system that is transparent, traceable and under human control.

The European Parliament is one of the first to initiate recommendations on what the AI rules should consist. It considers legal implications in all fields, tax, tort, intellectual property rights and criminal justice. Though the General Data Protection Regulation (GDPR) has been a significant step in building trust and protecting citizens across Europe, the Union wants strict and legally binding steps regarding AI. In mid-2020, the White Paper on Artificial Intelligence was launched, which raised vital issues and the importance of having legal clarity. The European Parliament has adopted proposals for the EU to produce an ethics framework for AI, amendments in legislation for civil liability when AI causes damages. Regulation of the European Parliament and the Council proposed in November 2020. The European Commission is expected to produce legislative proposals in early 2021.

The European Commission communication 2019 welcomed seven key requirements to follow while applying ethics, law, and robustness in AI, which are discussed below [17]:

1. *Human agency and oversight* – to have a more human centric AI, the AI must empower human beings allowing them to make informed decisions and choices. The AI should support and foster human agency and fundamental rights. To achieve oversight, the Commission recommends a system that has a human in command and in order to achieve that a stricter governance is required.
2. *Technical robustness and safety* – systems need to be more resilient and secure against attacks. They need to ensure a fall-back plan in case of occurrence of problems. They aim to have a technology that works for humans and protects them against identify theft, hacking etc.
3. *Privacy and data governance* – full respect to privacy and date of individuals at every level. In order to build a system that is trust-worthy the AI should ensure individuals that they have full control over the data, and it will not be used against them. Therefore, adequate data governance mechanisms shall be

adopted that consider the quality and integrity of the data and legitimised access to data.

4. *Transparency* - A system that is traceable in order to explain the process and decision of the AI. It must be communicated to different stakeholders about the limitations and capabilities of the AI. While interacting with the AI, individuals must know that they are interacting with a system and who are the people behind it. Explainable AI can paly vital role in creating transparency in AI systems and thus building greater trust in them.
5. *Diversity, non-discrimination, and fairness* – The training and operating system might have data sets that include historic bias, incompleteness and bad governance models which might lead to unfair bias and discrimination. Therefore, a diverse design team must set up mechanisms that ensure no merorganization of vulnerable groups and no prejudice against them.
6. *Societal and environmental wellbeing* – The integration of AI into the society will have various social impacts and therefore it is essential for the system to be trustworthy and its impact on the environment should be taken in account. Furthermore, the AI should be sustainably and ecologically responsible and it should be beneficial for the future generations.
7. *Accountability* – AI should have mechanisms that are responsible and accountable to assess the algorithm data and the design. This can be achieved through auditability of the system by internal and external auditors. Evaluation reports will contribute towards building a more efficient and trustworthy system. Potential negative impacts shall be identified, and the system shall have an adequate readdress mechanism.

VII. CONCLUSION

AI has already impacted our lives in a plethora of ways, and it is expected that in the next decade, we shall encounter novice AI applications in sectors such as transportation and healthcare. Hence, AI systems must be employed in ways that augment trust and understanding on one hand and demonstrate reverence to human and civil rights. The reassuring innovation, policies and processes must cater for ethical, privacy, and security consequences, coupled with simultaneously working to guarantee that the benefits of AI technologies will be widely disseminated in an unbiased manner. This is will be crucial for AI research and its applications for exerting a positive impact on the human life worldwide.

REFERENCES

- [1] Abbott, R. (2020) "Introduction: Artificial Intelligence and the Law," in *The Reasonable Robot: Artificial Intelligence and the Law*. Cambridge: Cambridge University Press, pp. 1.
- [2] Tarleton Gillespie, The Relevance of Algorithms, In *Media Technologies* (Tarleton Gillespie, Pablo J. Bockowski and Kirsten A. Foot, eds MIT Press 2014)
- [3] Yara, O. ., Brazhehev, A. ., Golovko, L. ., & Bashkatova, V. . (2021). Legal Regulation of the Use of Artificial Intelligence: Problems and Development Prospects. *European Journal of Sustainable Development*, 10(1), 281. <https://doi.org/10.14207/ejsd.2021.v10n1p281>
- [4] Miraut M., Zalucki M. Artificial intelligence vs human intelligence, in [Artificial intelligence and human rights][Madrid : Dykinson, 2021.] - Permalink: <http://digital.casalini.it/5109965>
- [5] Miraut M., Zalucki M. Artificial intelligence vs human intelligence, in [Artificial intelligence and human rights][Madrid : Dykinson, 2021.] - Permalink: <http://digital.casalini.it/5109965>
- [6] Arkoudas, K. and Bringsjord, S. (2014) "Philosophical foundations," in Frankish, K. and Ramsey, W. M. (eds) *The Cambridge Handbook of Artificial Intelligence*. Cambridge: Cambridge University Press, pp. 34–63.
- [7] Barfield, W. (2018). Towards a law of artificial intelligence". In *Research Handbook on the Law of Artificial Intelligence*. Cheltenham, UK: Edward Elgar Publishing.
- [8] Appel, S. M. and Coglianese, C. (2020) "Algorithmic Governance and Administrative Law," in Barfield, W. (ed.) *The Cambridge Handbook of the Law of Algorithms*. Cambridge: Cambridge University Press (Cambridge Law Handbooks), pp. 162–181.
- [9] <https://www.nytimes.com/2013/04/02/us/to-fight-gridlock-los-angeles-synchronizes-every-red-light.html>
- [10] Misuraca, G. and Van Noordt, C., AI Watch - Artificial Intelligence in public services, EUR 30255 EN, Publications Office of the European Union, Luxembourg, 2020, ISBN 978-92-76-19540-5 (online), doi:10.2760/039619 (online), JRC120399.
- [11] White Paper on Artificial Intelligence - A European approach to excellence and trust (COM (2020) 65 final), available on: https://ec.europa.eu/info/sites/info/files/commission-white-paper-artificialintelligencefeb2020_en.pdf
- [12] <https://www.reuters.com/article/us-amazon-com-jobs-automation-insight-idUSKCN1MK08G>
- [13] https://www.washingtonpost.com/opinions/big-data-may-be-reinforcing-racial-bias-in-the-criminal-justice-system/2017/02/10/d63de518-ee3a-11e6-9973-c5efb7ccfb0d_story.html
- [14] Jones v. W 1 M Automation, Inc. 818 N.Y.S.2d 396 (App. Div. 2006), appeal denied, 862 N.E.2d 790 (N.Y. 2007).
- [15] Humane Artificial Intelligence the Fragility of Human Rights Facing AI Author(s): Maria Stefania Cataleta East-West Center (2020) URL: <https://www.jstor.org/stable/resrep25514>
- [16] Müller, Vincent C., "Ethics of Artificial Intelligence and Robotics", *The Stanford Encyclopedia of Philosophy* (Winter 2020 Edition), Edward N. Zalta (ed.), URL = <<https://plato.stanford.edu/archives/win2020/entries/ethics-ai/>>
- [17] Communication from the Commission to the EU Parliament, The Council, The European Economic and Social Committee and the Committee of the Regions Building trust in Human centric Artificial Intelligence <https://ec.europa.eu/transparency/regdoc/rep/1/2019/EN/COM-2019-168-F1-EN-MAIN-PART-1.PDF>