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Artificial Intelligence and Legal Regulation

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Abstract

This paper studies the intersection of Artificial Intelligence and Intellectual Property Laws and the new challenges it poses to society. This article takes a walk through the historical development of Artificial Intelligence to the present threat it has brought on with it, and the steps taken by the global leaders in mitigating those threats to protect their people from unseen harm. Artificial Intelligence has spread through various industries, and it has become unstoppable because it is unregulated. As Artificial intelligence tools gain popularity and autonomy in society, it has become challenging for policymakers to regulate them in a way that upholds societal norms, ethical principles, and fundamental rights while balancing and fostering innovation and incentivization.

This paper argues that even though the innovation of Artificial Intelligence has brought on limitless development and opportunities in various industries, the lack of regulation poses significant risks, including but not limited to job displacement, the black box problem, social influence, and the rise of sentinels. While the potential of Artificial Intelligence is vast but so are the challenges it brings, which this paper explores in detail.

Against this backdrop, in exploring these dangers, the study uncovers that the unsupervised development and deployment of AI challenge not just individual rights and public confidence but also pose systemic threats to democratic institutions and global security. Therefore, this paper emphasizes the call for a preventive style of regulatory framework that promotes openness, accountability, and human-centered innovation. Through evaluating existing initiatives taken by various global leaders, as well as proposals by international bodies such as WIPO, we recognize the need for a unified and strong regulatory framework through global collaboration aimed at shaping a safer, fairer, and more equitable technological future.

Keywords: Artificial intelligence, Legal frameworks, Challenges, Security, Privacy

I. Introduction

Humans and their need for innovations have given the world many inventions which have revolutionised society for a better tomorrow. Since the beginning of time known to man, even before man could speak, man has been inventing left and right. Sometimes, they have done so by mistake or gradually, like agriculture.[1] But other times, they have done it by the sheer creative intelligence he possesses, like an eureka moment! As an instance, a wheel[2], which was first used for pottery, although through gradual but deliberate engineering, was eventually used for transportation. Man's innovation has no end in sight. Aside from opposable thumbs, mankind's innovative mind gives them an advantage in creating inventions that benefit society. From inventing the wheel to bringing mankind the Industrial Revolution and more, these inventions have been termed as "General Purpose Technology" (GPT). GPTs are technologies that are developed through human innovation and have already been proven to change dramatically how humans do the things that humans do. Initially, these GPTs came along once in a century, but now these GPTs are occurring every decade. In this Digital age, the current GPT is *Artificial Intelligence and Generative AI.*

Artificial intelligence is currently rapidly developing and entering into multiple sectors, including Healthcare, transportation, finance, and the legal system. The resourcefulness of AI in every field has pushed these sectors' industries forward, but given AI's evolving nature, these sectors have the potential to reach new heights. From automating routine tasks to enhancing healthcare diagnostics, AI boosts efficiency, accuracy, and innovation. AI has become an integral part of our lives and has completely changed how we interact with the world. AI's precision in completing repetitive tasks such as processing and analyzing vast amounts of data, identifying trends, and predicting outcomes. Additionally, the new opportunities AI is fostering for research and development, accelerating advancements across multiple fields, are remarkable.

[1] V. Gordon Childe, Man Makes Himself (London: Watts & Co., 1936), 64–66.
[2] David W. Anthony, The Horse, the Wheel, and Language (Princeton: Princeton University Press, 2007), 102–104.

AI tools aren't just saving lives, not only in the healthcare sector but also in disaster management. For instance, *the Indian National Disaster Management Authority's (NDMA) AI-based forecasting system,* which analyses enormous amounts of data from satellites, weather stations, ocean buoys, and other sources, is combined with machine learning algorithms to create forecasts. They are capable of accurately forecasting natural disasters such as storms, floods, and cyclones up to two or three days ahead of time. The system empowers authorities to deliver warnings considerably in advance, which facilitates evacuation and emergency preparedness in coastal cities and towns.

AI's power is infinite and undeniable, but with great power comes great responsibility. Even though humans have been classified as animals, he is a social animal, and what sets humans and mankind apart from the rest of the animals, among a few other things, is their consciousness, the ability to distinguish between right and wrong. Artificial intelligence is just intelligence; it learns the pattern of human choices and decisions and mimics them. AI lacks the rationality of making a choice or a decision based on its ability to differentiate between right and wrong. The fundamental rights and wrongs can be programmed into it, but it is constantly evolving and stepping into the area where it starts to function on its own by mimicking the pattern it has observed. It is easier to file a case against a human and put him on trial, as it is expected of him that he has a conscience, but an AI is nothing more than a collection of zeros and ones; to hold an AI liable is very difficult. The extent of violations AI can commit against an individual is unfathomable, which is terrifying.

However, as AI advances, it unveils significant ethical concerns about privacy, security, and employment displacement. Balancing innovation and ethical concerns is critical to ensure that AI continues to be a positive force in society, promoting development while addressing possible issues. AI technology, with its simplified usage in these various sectors, has integrated itself into the day-to-day life of humans; it is difficult to escape its web. As a coin has two sides, this technology, as much as it is very efficient and worthwhile, does create legal, ethical, and societal questions. Specifically targeting the legal complexities brought on by AI include data privacy, infringement, authorship, and ownership, to name a few, which the current legislation is ill-equipped to tackle. As a result, there is an urgency to design flexible regulations that protect the individual while ensuring that AI is developed and used responsibly,

transparently, and as per fundamental human rights. The dynamic nature of AI necessitates a proactive strategy while balancing innovation with public safety and accountability.

II. History and evolution of AI

When we define "intelligence" in the scientific setting, we typically mean the ability of a system to use available information, learn from it, make judgments, and adapt to unforeseen circumstances. It refers to having the capacity to solve issues efficiently in perspective with current conditions and bounds. The notion of "artificial" indicates intelligence that can be produced by means of computer programming and design as opposed to being inherent in living beings.

Recognizing Artificial Intelligence (AI) entails understanding how machines have been programmed to simulate human cognitive capabilities such as learning, reasoning, problem-solving, and decision-making.[3]. At its fundamental level, AI is based on algorithms that allow systems to evaluate data, spot patterns, and make intelligent decisions with little human interaction. The concept of creating machines that significantly mirror human intelligence dates far back to the talks of automation and thinking machines. Nonetheless, it was not before the mid-20th century that the concept began to take shape, and real potential and development started to occur.

Warren McCulloch and Walter Pitts spoke of their model of “artificial neurons” in 1943, and this has been recognized as the first artificial intelligence, in spite of the fact that the term did not yet exist. Later, in 1950, British mathematician Alan Turing wrote a piece titled "*Computing machinery and intelligence*" in the magazine Mind, in which he posed the question: Can computers think? He designed an experiment known as the “*Turing Test”*[4], which, according to the author, would allow scholars to evaluate if a machine could exhibit intelligent behaviour equal to or indistinguishable from that of a person.

[3] Iberdrola, History of Artificial Intelligence, available at: https://www.iberdrola.com/innovation/history-artificial-intelligence (last visited Apr. 15, 2025).
[4] H. R. Slotten, The Ideas of Computer Circuits and Numerical Calculations in Early Computer Science (Harvard University Press, 2014).

John McCarthy created the phrase "artificial intelligence" in 1956 and pioneered the creation of the first AI programming language, LISP, in the 1960s[5]. Early AI systems were rule-based, which fostered the establishment of more intricate systems in the 1970s and 1980s, as well as a spike in funding. AI is currently experiencing a renaissance due to innovations in algorithms, hardware, and machine learning tactics.

As early as the 1990s, raises in computational capacity and the availability of vast quantities of data allowed academics to develop learning algorithms and establish the foundations for today's AI. In recent years, this technology has improved substantially, because of in large part due to the creation of deep learning, which utilizes layered artificial neural networks to analyze and comprehend complicated data structures. This ground-breaking development has altered AI applications such as image and audio recognition, natural language processing, and autonomous systems.

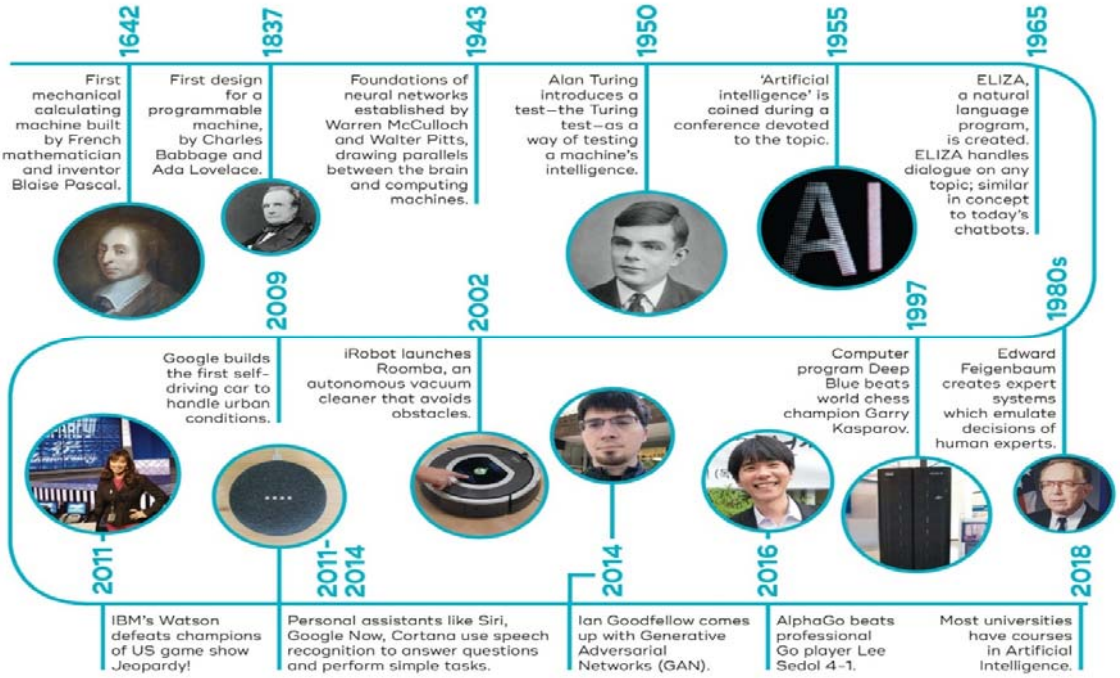

Figure 1

[5] S. Russell & P. Norvig, Artificial Intelligence: A Modern Approach (4th edn, Pearson 2021).

III. Need for AI regulations

Recent advances in technology, especially with regard to artificial intelligence (AI), are affecting our lives rapidly than ever. Nothing can deny the ability of computers to process logic. Yet, many people remain sceptical that machines can think. The precise definition of thought is of importance since there has been some intense debate about whether or not this concept is really plausible. Artificial intelligence (AI) has emerged as an innovative technology with far-reaching implications for an array of industries, including the legal profession. As AI evolves and influences all sectors of society, the necessity for comprehensive regulatory oversight seems ever more apparent.

The swift advancement of Artificial Intelligence has brought on vast benefits in society, but it has also brought significant legal and ethical challenges with it, creating the need for a regulatory framework necessity. Regulations pave the way for accountability, ensuring that AI technologies are designed and utilized in ways that are transparent, fair, and correspond with public and individual interests. It promotes the ethical use of AI and prevents the harmful use of the application, which affects the morality and rights of an individual.

AI is frequently overestimated and underestimated at the same time. People tend to overestimate the capacity of artificial intelligence to deal with humanity's most pressing problems, omitting to see that many of these difficulties are caused—and need to be resolved—by humans. This viewpoint, commonly referred to as "solutionism," claims that only the correct technology can solve all problems. In the meantime, AI is underestimated, especially with regard to how it employs Big Data to influence our social, political, and communication systems. This technological transformation is irreversible, and its future influence can be challenging to foresee due to the fast expansion of computing power and its intimate interaction with the actual, human world.

Furthermore, legislative oversight plays an essential role in fostering public confidence and encouraging responsible innovation. In the absence of precise legislation, developers and businesses may operate in a grey area, contributing to inconsistent standards as well as

potentially disastrous technology. This eventually leads to the rule of law and legal regulation. Regulation can help countries align their approaches to AI governance, particularly around areas that include data protection, intellectual property, and cross-border AI systems, and thus establish a balanced ecosystem in which innovation thrives while also protecting society from adverse impacts.

IV. Dangers of un-regulated AI

Geoffrey Hinton, referred to as the "Godfather of AI" for his pioneering work on machine learning and neural network algorithms, once said," These things could get more intelligent than us and could decide to take over, and we need to worry now about how we prevent that from happening." Unregulated AI is a threat not just to this society but also to the survival of the human race, noting that not just Hinton but many tech leaders have urged a halt to massive AI research, citing the technology's threats and risks.

Unregulated AI poses a risk, especially when it functions without human supervision or set legal bounds. One of the primary issues is a lack of accountability; AI systems may make decisions that influence people's lives, rendering it difficult to hold anybody responsible when things go wrong. Artificial intelligence (AI) has already begun to have an influence on various sectors. The following areas have been significantly affected thus far:

1. **Job Displacement by AI:** AI-powered job automation is a major concern as a variety of businesses embrace the technology. Although it is beneficial for creating new possibilities, it is also an enormous burden on already existing extremely high unemployment rates. According to McKinsey, "By 2030, tasks that account for up to 30 percent of hours currently being worked in the U.S. economy could be automated, with especially diverse employees left vulnerable to the change."[6] The Goldman Sachs report even states that 300 million full-time jobs could be lost to AI automation.[7] As AI robots expand their computational abilities and dexterity, fewer

[6] Tom Simonite, Robots Will Take Jobs from Young, Black, and Hispanic Workers. Here's How, WIRED (Aug. 6, 2021), available at: https://www.wired.com/story/robots-will-take-jobs-from-men-young-minorities (last visited Apr. 17, 2025).
[7] Michelle Toh, Goldman Sachs: AI Could Replace Equivalent of 300 Million Jobs, CNN Business (Mar. 29, 2023), available at: https://www.cnn.com/2023/03/29/tech/chatgpt-ai-automation-jobs-impact-intl-hnk/index.html (last visited Apr. 17, 2025)

humans will be required to do the same work. And, while AI is expected to create 97 million new jobs by 2025, many individuals may lack the expertise required for these technological advancements professions and may fall behind if employers fail to upskill their workforces.[8]

2. **The Black Box Problem:** This issue corresponds to the lack of transparency and explainability in how certain AI systems make conclusions, even for individuals who work closely with the technology, leaving them with a lack of understanding of what data AI algorithms utilize or why they may make biased or perilous conclusions. Without explicit explanations for AI activities, it is difficult to rectify errors, biases, or ethical problems, damaging both regulatory control and public trust in these systems. To make matters worse, AI companies continue to be secretive about their technologies. This concealment keeps the general public blind to potential hazards and makes it more challenging for policymakers to take aggressive steps to guarantee that AI development is done safely.

3. **AI-Driven Social Influence:** "No one knows what's real and what's not," Ford said. "You literally cannot believe your own eyes and ears; you can't rely on what, historically, we've considered to be the best possible evidence ... That's going to be a huge issue."[9]

   The deliberate utilization of data-driven systems to influence human behaviour, opinions, or decision-making, frequently without the user's consent, is also a risk to artificial intelligence. Pictures, videos, voice changers, and deepfakes generated by AI are encroaching on political and social opportunities and contributing to the chaos in online media and news. These technologies create a frightening situation in which it is practically difficult to tell the difference between real and fake news. These algorithms may influence what individuals see, believe, and even perform based on the information they favour over others. While they can improve the user

[8] World Economic Forum, Future of Jobs Report 2020 (2020), available at: https://www.weforum.org/reports/the-future-of-jobs-report-2020 (last visited Apr. 17, 2025).
[9] Ford Foundation, there is no technology for justice. There is only justice (8 November 2017), available at https://www.fordfoundation.org/news-and-stories/stories/there-is-no-technology-for-justice-there-is-only-justice (last accessed 21 April 2025)

experience, they can present significant ethical and legal problems, especially when they are specifically used to promote deceit, polarize public opinion, or exploit psychological failings.

4. **AI-Driven Social Surveillance:** AI raises serious questions concerning an individual's privacy and security. Governments and industries are increasingly utilizing facial recognition, predictive policing, and data-mining techniques to improve security and public administration. While such technologies can increase efficiency and safety, they also raise catastrophic concerns regarding privacy, bias, consent, and potential abuse. For example, U.S. police departments have begun to use predictive analysis to foresee where crimes will occur, and this analysis is influenced by the arrest rates previously done in specific locations, which are fueled by racism against minorities. The lack of clear legal protections and openness around the collection and use of surveillance data makes AI-powered monitoring a potential danger to civil rights and democratic accountability.

5. **Data Breach via AI:** AI tools are used to provide a better user experience, collect and analyze a vast amount of data. AI systems often collect personal data to customize user experiences or to help train the AI models you're using, like vast amounts of sensitive information, often without explicit user consent or awareness. This raises the risk of unintentional leaks, hacking vulnerabilities, and misuse of personal or confidential information. While there are laws present to protect personal information in some cases, there is no explicit law that protects citizens from data privacy harm caused by AI.

6. **AI-Enabled Lethal Systems:** These systems indicate modern weapons that can recognize, select, and engage targets with low or no human interaction, implementing artificial intelligence. This forecast realized the shape of 'Lethal Autonomous Weapon Systems'[10], which find and destroy targets on their own while complying with few restrictions. As much as these upcoming autonomous weapons

[10] International Committee of the Red Cross (ICRC), 'Autonomous Weapons: ICRC Submits Recommendations to UN Secretary-General' (ICRC, 2 October 2023) https://www.icrc.org/en/document/autonomous-weapons-icrc-submits-recommendations-un-secretary-general accessed 22 April 2025.

pose a threat to people on the ground, the threat is magnified if these weapons fall into the wrong hands. If we don't keep a check on political rivalries, cyber security hackers, and warmongering impulses, artificial intelligence may be used for malicious purposes.

7. **Rise of Sentience:** AI has now advanced to the point where even programmers are unaware of how AI arrived at a certain conclusion, and these rapid advances in AI are being generated by unethically feeding on humans' data. Artificial intelligence could develop consciousness and start functioning autonomously of human command considerably sooner than we envision. Unlike the initial systems, the future AI is capable of learning, adapting, and making autonomous judgments, which could possibly favour its logic or survival over human purpose. Such development gives rise to serious ethical and existential worries, as humanity may confront a power that it cannot completely comprehend or control. Its power lies in its unpredictability.

The current trajectory of AI development is on, and if left uncontrolled, will bring new threats to privacy, security, economic stability, democratic governance, and ethical concerns. These dangers are not inherent in AI technology, but instead arise from how it is utilized and handled.

V. Global Governance Framework

The sudden surge in the popularity of Artificial Intelligence technologies has attracted attention to the necessity to create a regulatory framework around them, given the potential harm they represent in a variety of ways. As AI has spread through various industries, the need for coordinated international efforts to ensure safety, accountability, and fairness is not merely an option but rather a requirement before it's too late.

Here is the comparison of worldwide nations' Intellectual property laws focusing on how they address AI-generated works and copyright challenges:

1. **United States (US):** The US court and the United States Copyright Office strongly believe in the "strict human authorship" requirement to be met to gain any copyrights.

1.1 USCO considers only "Human authorship," excluding sufficient human input in AI-generated work, but has consistently denied copyright registration to purely AI-generated works (e.g., Thaler case in 2023).

1.2 US policymakers have proposed a bill like the **Generative AI Copyright Disclosure Act of 2024,**[11] This aims to increase transparency about datasets used for AI training.

2. **United Kingdom (UK):** The United Kingdom Copyright Design and Patent Act 1988 grants copyright to the person who made the necessary arrangements in creating AI-generated work.

2.1 The UK grants ownership rights to purely AI-generated works, which are given under certain limitations. This provision is going under review to align with the EU vision.

2.2 Currently, the UK lacks a defence structure against unauthorised copying of third-party content for commercial AI training, which creates restrictions in AI innovation.

2.3 The proposed revision will allow programmers to use more copyrighted content for AI training, with an opt-out option for owners who do not wish for their content to be utilized anymore.

2.4 To improve transparency, this reform will require the AI developers to reveal their training data sources, balancing rights holders' interests with AI progress.

3. **European Union:** While, EU is performing a balanced flexibility, it has the same stand as the United States, requiring humans' "original intellectual creations" to grant copyrights and patents. But the EU is participating in ongoing debates about adapting laws to AI-generated content.

[11] Negar Bondari, 'AI, Copyright, and the Law: The Ongoing Battle Over Intellectual Property Rights' (IP & Technology Law Society, Gould School of Law, University of Southern California, 4 February 2025) https://sites.usc.edu/iptls/2025/02/04/ai-copyright-and-the-law-the-ongoing-battle-over-intellectual-property-rights/ accessed 22 April 2025.

3.1 The EU's Artificial Intelligence Act (AI Act), 2024, requires compliance with the EU copyright directive 2019/790[12], which talks about granting "Sui Generis Protection," which allows data mining by the programmer for scientific purposes, only if a substantial investment has been made, which generally requires authorization for commercial use.

3.2 The EU law provides for an opt-out system similar to the UK. The EU has been discussing liability and accountability for AI-generated works, on ethical and economic implications as well.

4. France: French copyright laws traditionally protect original works created by Human creators. They believe AI systems do not have any legal personality and are not qualified for ownership and authorship in IP rights.[13]

4.1 France policymakers have drafted a new law proposal (No. 1630, September 2023) which aims to give some clarity in AI- AI-related copyrights.

4.1.1 Requiring authorization from creators or shareholders to use their content for AI training purposes.

4.1.2 Assigning ownership of AI-generated works without direct human interaction to the authors or rightsholders of the works that permitted the AI's production.

4.1.3 Increasing transparency by mandating the labelling of AI-generated works and giving credits to original authors whose work was a contributing factor in AI-generated works.

4.1.4 Allowing collective management organizations to collect fees related to AI exploitation.

[12] SIB, The EU's AI Act is in force: how does it deal with the protection of intellectual property rights? https://www.sib.it/en/flash-news/the-eus-ai-act-is-in-force-how-does-it-deal-with-the-protection-of-intellectual-property-rights/ (last visited Apr. 23, 2025)

[13] Deciphering French Copyright Law in the Age of AI: A Critical Analysis of Recent Developments' (Reyfus, 19 January 2024) https://reyfus.fr/en/2024/01/19/deciphering-french-copyright-law-in-the-age-of-ai-a-critical-analysis-of-recent-developments/ accessed 22 April 2025.

4.2 France has adopted the European Union's directives regarding 2019/790 on copyright exceptions for text and data mining, relevant for AI training datasets.

5. **Japan:** Japan has taken a relatively progressive approach toward AI-generated works. Japan has allowed limited copyright protection if "identifiable human intervention" can be demonstrated.

5.1 Japan's Article 30-4[14] States that its copyright laws permit AI to study copyrighted content without permission, but with a certain protection provided to right-holders.

5.2 The Japanese government has emphasized that AI tools are a support tool for human creators rather than an independent tool. It recognizes AI's contribution to creativity therefore, it seeks to find a perfect balance between creators' rights and AI creations.

6. **United Nations:** The United Nations itself doesn't have any binding laws regarding copyrights to AI-generated works, although it does undertake to influence global Intellectual policy through the World Intellectual Property Organisation (WIPO).

6.1 WIPO addresses ownership, liabilities, and infringement challenges in AI-generated work and attempts to create a balance between incentivizing innovations and protecting creators' rights.

6.2 The UN encourages its member states to adapt to their national regulatory statutes but leaves the implementation to individual states.

7. **India:** Indian IP laws grant copyright protection to human creators or legal entities, i.e., companies, hence no explicit protection has been granted to AI-generated works

7.1 India does not have separate laws for AI-generated works, but is actively studying on-

7.1.1 Whether AI-generated works can be considered original work and can be protected by copyright?

[14] Asia IP Law, AI providers required to safeguard IP rights, says Japan report, https://www.asiaiplaw.com/section/cover-story/ai-providers-required-to-safeguard-ip-rights-says-japan-report (last visited Apr. 23, 2025).

7.1.2 How do you assign ownership and liability when AI is involved?

7.2 Similar to Europe's framework, there are no specific copyright laws enacted as of now, however, India has been focusing on global development concerning AI.

VI. Conclusions

The digital age has bestowed a gift upon humanity, yet it also comes with a cost that will be borne by them as well. Artificial intelligence has continued to infiltrate every major industry and has showered us with immeasurable opportunities, nonetheless, it has also raised a big question about our security, creativity, and privacy. The intersection of Artificial Intelligence with IPR presents legal and ethical challenges, and it has cost us and will continue to do so to an enormous extent if not controlled now. It is difficult to navigate these complex and ever-growing Artificial intelligence without putting a stop to innovation, but it is not impossible.

Through this paper, we have foreseen the potential risk that unregulated AI poses and have talked about explored the global regulatory framework on AI. In conclusion, a robust and unified framework is nowhere to be found. Even though the world has shared a table and morals in certain aspects to safeguard its people, that same zeal is yet to be focused on the AI posed threats. The reason for this could be any, but it could also be that it cannot be seen with the naked eye, however, that's no excuse for escapism. A strong framework while balancing the innovation is crucial; certain countries have taken a step towards in trying to achieve this balance, but it is just on paper and has yet to be seen in action.