

## Prospects and Challenges of Artificial Intelligence Protection in Indian IPR Regime *vis-à-vis* EU, China and the US

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The protection of artificial intelligence has become front-page news in the present scenario because of the pace with which it is being developed and used. It has transformed the world in the recent decade and opened up numerous opportunities in various domains, including healthcare, finance, education, manufacturing, and many others. However, with the shift in focus towards AI, the need to ensure its protection under the intellectual property rights regime has become crucial. The protection that should be offered is not only for some invention of AI but also for the repercussions associated with the kind of use it is put to. Consequently, the emphasis in this paper is not only on the users of AI systems but also on their developers. Nonetheless, the Indian government has released its strategy, which outlines its plan to transform India into a global artificial intelligence powerhouse in the coming years. This paper summarises the laws on AIs in the EU, China, the US, and India, and critically examines the approaches taken by these countries for AI protection. This paper also aims to compare and contrast the laws for the protection of artificial intelligence in the EU, China, the USA, and India. It includes an evaluation of the legal analysis of how these nations' IP rules now apply to the creative and inventive outputs produced with the help of AI. The legal analysis explores whether and to what extent AIs are protected by the laws of these countries. The paper offers suggestions for how to improve the application of current laws and concludes with recommendations on measures to be taken by the Indian government regarding possible revisions of laws and regulations concerning the protection of AIs.

**Keywords:** Artificial Intelligence, IPR, IP Law, EU, Data Protection, India, Global Partnership on Artificial Intelligence

The term artificial intelligence (AI) describes how computer systems mimic human intelligence functions. Learning (the process of acquiring knowledge and applying rules to it), reasoning (using rules to arrive at approximations or conclusions), and self-correction are some examples of these processes. Artificial Intelligence comprises diverse methodologies and strategies, such as computer vision, robotics, natural language processing, machine learning, and expert systems. All things considered, artificial intelligence has enormous potential to improve human talents, spur innovation, and resolve difficult problems in a variety of fields, drastically altering businesses and communities. AI regulations have different origins around the world and are impacted by different legal systems and activities. Formal AI research began with the coining of the phrase "artificial intelligence" at the 1956 Dartmouth Conference. Countries like the US and EU passed rules and regulations targeting particular applications of AI as the technology gained

popularity. The 2000s saw a rise in the publication of ethical standards and guidelines by institutions such as the European Commission, IEEE, and ISO. National AI policies and laws were developed in the 2010s by the UAE, China, Canada, and France, among other nations. Global cooperation and coordination in AI governance have surfaced in the 2020s, with programmes like the OECD Principles on AI and the Global Partnership on Artificial Intelligence (GPAI) seeking to promote discussion and create shared frameworks.

The level of AI protection that each country allows is directly linked to its level of development. In this regard, India faces several prospects and challenges in comparison to other countries like the European Union, China, and the United States. India has no explicit provision for regulating artificial intelligence; nevertheless, there are soft laws, ethical conduct rules, and platform rules that have demonstrated how moderation can be applied to the usage of AI. Artificial intelligence regulation in India has moved far more slowly than in other countries. Protecting AI in India is crucial for several reasons. It encourages

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innovation by providing legal recognition and exclusive rights to AI creations, fostering economic growth. It also enhances global competitiveness by allowing AI companies to compete effectively in international markets. It facilitates commercialization and technology transfer, enabling start-ups and research institutions to monetize their inventions. It also addresses ethical and social considerations, such as algorithmic bias and data privacy. Furthermore, it safeguards strategic interests, sovereignty, and national security against emerging threats in the digital age. By establishing robust intellectual property rights and regulatory frameworks, India can harness the full potential of AI while effectively addressing associated challenges and risks. In light of all of this, the paper concludes with suggestions for steps the Indian government should take about prospective modifications to laws and policies relevant to the safeguarding of artificial intelligence with special reference to IPR laws. It also offers suggestions on how to better put the existing legislation into effect.

### **Artificial Intelligence – The Definition and Concept**

The phrase “artificial intelligence” is used to describe the imitation of cognitive ability in devices designed to think and learn similarly to humans. In the coming years and decades, artificial intelligence, a revolutionary development in computer science, will be a crucial part of all modern software, posing both a risk and an opportunity.<sup>1</sup> No single definition of “artificial intelligence” is accepted worldwide.<sup>2</sup> However, because several subfields frequently overlap, it is challenging to precisely define boundaries and is a source of debate among researchers.<sup>3</sup> In its broadest sense, AI can be characterized as a computer-based system designed to imitate human behavior, or as a branch of computer science devoted to building robots and systems capable of carrying out operations assumed that they need intelligence from humans, with very little human involvement. Artificial intelligence, “is the science and engineering of making intelligent machines, especially intelligent computer programs”.<sup>4</sup> In a nutshell, the creation of computer programs and systems with artificial intelligence allows them to do tasks that usually require human-like intelligence, such as learning, reasoning, problem-solving, and decision-making. AI involves creating algorithms and

statistical models that can analyse and interpret complex data and make predictions based on that data.

AI has a wide range of applications, from self-driving cars to smart home systems, speech recognition, and virtual assistants like Siri and Alexa. Deep learning and neural networks, two of the most sophisticated types of AI, can handle complicated tasks like speech and picture recognition, natural language processing, and even creative tasks like creating music and art. In the fields of culture, innovation, and science—from meteorology and pharmaceutical research to media and journalism—AI systems have grown in significance. Along with being employed for cutting-edge tasks like facial recognition and autonomous driving, they are also being used to create literary and creative content. Diagnoses of diseases, drug efficacy estimates, and identification of drug properties are all made possible by AI, which is also helping to automate the search process in pharmaceutical research. In journalism, AI provides automated content aggregation, production, and delivery. While generative technologies create material without human input, assistive technologies help journalists when producing media content. Distributing technologies involve the publication or communication of automatically created content. One of the key fields where AI is already often employed is meteorology. It offers forecasts regarding the state of the atmosphere that utilize previous data as well as an understanding of the environment and the weather. Examples of automated processes include statistics incorporation, parameterization of models, any prejudice revision, thereafter of weather information, analytics for prediction, and micro reducing of model outputs. For numerical weather forecasting, machine learning is very well suited, and several businesses assist media corporations with weather reporting and forecasts. As AI systems are exposed to more data, they become better at identifying patterns and making decisions, leading to more accurate and efficient results.<sup>5</sup> Overall, AI has the power to fundamentally alter practically every area of our lives, including the ways how we work, communicate, and engage with our surroundings.

### **Interface between Artificial Intelligence and IPR Law**

The relationship between AI and intellectual property rights law is an area that is becoming

increasingly relevant as AI technology advances. As AI becomes increasingly integrated into industries such as healthcare, finance, and transportation, the question of how to protect these innovations under Intellectual Property Law has emerged. AI IP challenges often result from two business goals: preserving “freedom to operate,” or FTO, without infringing upon the IP rights of third parties, and safeguarding investments in AI research and development.<sup>6</sup> One of the most important questions in the field of artificial intelligence is whether conventional measures of protecting intellectual property are sufficient or possibly feasible for safeguarding an AI and its by-products. This argument is mostly based on the conventional belief that IP protection is human-centered. Certain AI-generated works may be eligible for protection under some provisions of IP laws, provided that the requirements for protection are met. AI-generated software, computer programs, and algorithms can be protected as literary works, visual or musical works, audio-visual works, and visual works. AI-generated databases, data compilations, and datasets can also be protected as compilations, provided they exhibit creativity and originality. AI-generated inventions and technological advancements may be eligible for patent protection, subject to novelty, non-obviousness, and utility criteria. Industrial designs for consumer products, industrial machinery, and user interfaces generated by AI can also be protected as industrial designs, covering the ornamental or aesthetic aspects of a product's appearance. However, determining the ownership and legal protection of AI-generated works poses a challenge in IP Law. The complicated legal environment of today necessitates a practical and subtle strategy for safeguarding the intellectual property associated with artificial intelligence. The lack of a human creator is one of the main barriers to protecting content produced by AI, which can make obtaining IP protection challenging.

Furthermore, the increasing use of AI in data analysis and other areas raises concerns about data protection and privacy that IP Law will need to address. Therefore, it is crucial that IP law adapt and evolve to keep pace with the rapid advancements in AI technology and protect the rights of individuals and entities involved in this new field. Indeed, increasingly autonomous AI systems are already able to produce new ideas and works. However, as IP Law does not recognize non-human authors or inventors,

there is a chance that it will provide little incentive for humans to develop and train AI systems that can independently come up with new ideas.<sup>7</sup> Therefore, just like in the first instance, the human who developed the AI system should be granted IP rights for all forms of creative work.

IP tools that can protect AI include patents, trademarks, copyrights, and trade secrets. While copyrights can cover AI-generated works of art, literature, music, computer program code, data, and images, patents can protect AI-generated inventions like new algorithms or procedures. Novelty, inventiveness, and potential for industrial use serve as the benchmarks for any invention that is patentable. Patent protection can play a crucial role in supporting innovation in the AI industry by providing legal protection to inventors and companies that invest in AI technology. Patent protection provides the broadest form of IP protection for AI technology. Copyright Law also offers a form of protection for AI technology. Copyright laws protect original works of authorship, including software code and visual or audio-visual creations. If AI-generated works pass the creativity test, that is, if a work is original, that might qualify for copyright protection. The question of who owns ownership rights to works created by AI is still up for debate in the copyright legal system. Trademark protection is available for AI innovations that involve names, symbols, or designs that set a company's goods or services apart from those of its rivals. The branding used to promote the technology, including any logos and phrases, can be registered and given trademark protection even though the AI itself cannot be protected by trademarks. Trade secrets can be used to protect highly sensitive AI-related data, such as training data and algorithms. Given the significant time and resources that businesses invest in creating their data or carefully selecting data from other sources, trade secret protections are a useful way to safeguard AI training data. Despite the fact that corporations do not want others to utilize certain data, some people have claimed that trade secrets are a bit of a kluge. Due to the prevalence of private data sets in AI-based technologies, one can employ trade secret protection to stop other people from exploiting or disclosing that information. For businesses, copyright and trade secret laws are essential instruments for protecting AI training data, but they must be utilized in conjunction with other legal recourses, administrative measures, and technical solutions.

## **Relationship between AI and Intellectual Property Rights Law**

AI technology and the works generated by it raise unique questions about ownership, authorship, infringement, and enforcement related to IP Law, among others. The issues associated with AI concerning IPR Law are as follows:

### **Privacy and Data Protection**

AI has a variety of privacy-related effects, including data confidentiality, tracking privacy, and even a person's liberty. Because it frequently has a significant impact on how people view themselves and what they value, want, and prefer, individuals enjoy an inalienable right to have ownership of their individual information as well as the decisions they have made based on it.<sup>8</sup> By doing this, it can guarantee the autonomy that the person needs to make their own decisions, which is a crucial component of one's personal development, self-worth, and autonomy. Since AI systems have access to and the ability to handle large volumes of personal data, privacy issues and the possible abuse of sensitive information have been raised. AI systems often require the use of sensitive IP data, so it is crucial to maintain the confidentiality of that data.

### **Accuracy of AI-Analysed Data**

Using AI to analyse data is becoming increasingly popular, however, it is crucial to guarantee that the algorithms used by AI are reliable and impartial. AI lacks transparency and raises the possibility of bias, and any flaw might harm millions of individuals, opening businesses up to class-action lawsuits.

### **Security**

There is a risk that AI systems can be hacked or manipulated, leading to the theft of IP data.<sup>9</sup> National security databases frequently employ AI, which can be abused by criminals to finance or coordinate crime. Accelerated hacking and AI terrorism are also potential negative impacts of AI.

### **Lack of Ethics**

The use of AI in sensitive areas such as criminal justice, healthcare, and finance raises concerns about ethics and ethical decision-making.

### **Ownership/Authorship**

One of the key issues in AI and IPR Law is the question of ownership.<sup>10</sup> Generally, if a human author creates a work, they are regarded as the IPR's owner. However, once a machine learning system produces a

piece of art, the issue becomes more complex. There is debate about whether the owner should be the person who created the AI system or the person who owns the AI system. To take advantage of the authorship presumptions, creators or publishers may misidentify AI-generated works as their own. If no linked entitlement or sui generis option is accessible, only then, will "authorless" AI-assisted products remain entirely unprotected.

### **Infringement**

The issue of infringement is an additional concern. If a piece of art produced by an AI system resembles one that already exists, is this a case of infringement? This is a complex question that depends on factors such as the nature of the work and the level of creativity involved in its creation. Moreover, if an AI system makes an error in an IP-related matter, determining liability can be difficult.

### **Regulation**

The regulatory and policy landscape for AI in IPR law is an emerging issue in many jurisdictions. The fast-paced development of AI technology has outpaced the regulatory framework in some areas, creating legal and regulatory challenges. Unregulated AI can also have negative effects. Regulation of artificial intelligence is necessary to both encourage AI and manage its associated risks.

### **Territoriality**

The territorial nature of IP affects issues around AI. For instance, computer-generated works created by inventors in the US, India, and other nations may be recognized at home but may not be given the same protection abroad. In reality, individuals and businesses who spend time and money in these nations developing advanced AI risk infringing on their IP rights in other countries by basing their application on an AI author or inventor.

### **Enforcement**

Finally, there is the issue of enforcement. Current IPR law may not address this issue fully, and enforcement may be challenging due to the difficulty of identifying the creator of the AI-generated work.

AI and the IP challenges it brings are still developing, opening up new issues for commercial entities. Many of the requirements to gain IP protection for AIs are challenged by AI itself, and it is not yet clear which solution is suitable. To use the necessary legal strategies to direct them as they

deploy and defend AI-based technologies, businesses will need to consider legislative developments.

## **Protection of Artificial Intelligence in the EU, China, the US and India**

### **European Union**

The laws and regulations around Europe on AI are relatively novel and are still evolving as AI technologies advance in complexity and sophistication. A key regulatory framework for AI in Europe is the General Data Protection Regulation (GDPR), the landmark Data Privacy Law that came into effect in 2018.<sup>11</sup> The GDPR has significant effects on the usage of AI, such as legal justification for processing personal data, data protection by design and default, rights of data subjects, and privacy impact assessments. In April 2021, the Artificial Intelligence Act (AIA) was proposed in the EU, which aims to establish a clear set of rules for AI and set out a regulatory framework that will foster innovation while ensuring that the technology is used in an ethical and accountable manner.<sup>12</sup> This is the first law on AI by a major regulator anywhere. It provides broad standards for the development, use, and exchange for based on artificial intelligence products and services inside the boundaries of the EU. It establishes different levels of risk, and enterprises are left to determine which risk category their AI systems fit under. In summary, the main goal of European AI Law is to make sure that AI technology is created and applied in a manner that is secure, moral, accountable, and consistent with EU core values. The AIA and GDPR are two key pieces of legislation driving this vision for the future of AI regulation in the region. To ensure the moral and people-centered advancement of AI in Europe, the European Parliament has passed new transparent and risk-management criteria for AI systems.<sup>13</sup> A draft negotiating mandate for the initial AI regulations was approved by the Internal Market Committee and the Civil Liberties Committee. MEPs seek to ensure that AI systems are secure, clear, identifiable; impartial, and environmentally advantageous through their adjustments to the Commission's proposal. They also desire a uniform definition of AI that applies to both existing and future AI systems, independent of technology.<sup>13</sup> In the EU, AI technology is subject to legal protection under Intellectual Property Law as well. EU Law protects AI innovations in IP Law under patents, trademarks, copyrights, and trade secrets.

### **Patent Protection**

EU Patent Law provides robust protection for technological innovation, including AI. Patents are issued for inventions following Article 52 of the European Patent Convention, that are novel, inventive, and capable of industrial application.<sup>14</sup> The EPO also includes specific provisions for inventions made by AI systems. The EPO states that only a person can be listed as an inventor on a patent application; AI systems cannot. In 2019, the EPO modified its Examination Guidelines, including Guidelines G-II, 3.3, Mathematical Methods, and G-II, 3.3.1, Artificial Intelligence and Machine Learning, regarding the technological nature of AI inventions.<sup>15</sup> The new guidelines aim to facilitate the grant of patents for AI innovations by clarifying the procedure and criteria for assessing inventions that rely on machine learning and AI algorithms. The EPO guidelines also clarify that inventions that are merely algorithms or mathematical methods, without technical character or effect, are not eligible for patent protection.<sup>15</sup> This means that pure AI or machine learning algorithms that do not solve a technical problem are not eligible for patent protection in the EU.

### **Trademark Protection**

There are a few important considerations to keep in mind when seeking trademark protection for AI-related products or services. AI innovations can be protected as trademarks if they meet the criteria of distinctiveness, non-descriptiveness, and non-deceptiveness in the EU.<sup>16</sup> For instance, Amazon's Alexa, a virtual assistant using AI technology, was granted trademark protection in the EU for the name, logo, and product design.<sup>17</sup> Businesses should be careful to avoid infringing on existing trademarks in the AI industry as well. This can be especially challenging given the rapid pace of innovation in AI and the potential for overlap in product and service offerings. Trademark protection also applies when the AI system's output is used for commercial purposes, such as product labelling, packaging, or marketing.

### **Copyright Protection**

In the EU, copyright ownership typically belongs to the person who created the work. AI-generated works present a challenge because they are created by algorithms rather than human authors. As such, there is uncertainty about who owns the copyright in these works. The EU Directive on Copyright in the Digital Single Market, 2019 extends copyright protection to "works created by autonomous

intellectual creation”.<sup>18</sup> In terms of copyright, recent research conducted by the International Association for the Protection of Intellectual Property looks at the subject of “Copyright in Artificially Generated Works” in more than thirty jurisdictions, including fourteen EU Member States.<sup>19</sup> The resolution that follows denies copyright protection for “AI - generated works” produced without human participation; however, it does evaluate the possibility of related rights that would protect such production. Additionally, on 27<sup>th</sup> January 2020, the influential French organization *Conseil supérieur de la propriété littéraire et artistique* released a report on “Mission Intelligence Artificielle et Culture” that included an analysis of how AI-assisted outputs can be protected by copyright.<sup>20</sup>

#### *Trade Secret Protection*

AI technology can qualify as a trade secret if the information is confidential, significant, and provides a competitive advantage. Protecting AI-related trade secrets can be critical to maintaining a competitive advantage in the marketplace. In the EU, trade secret protection is governed by the Trade Secrets Directive, of 2018. The Directive establishes a minimum level of protection for trade secrets across the EU and provides a legal framework for protecting confidential business information. In the context of AI, protecting trade secrets can be challenging because AI systems often involve collaboration and the sharing of information between multiple parties.

The recently proposed EU AI Act is “dysfunctional” in that it leaves no room for altering the lists of unacceptable and limited risks and does not contain accessibility guidelines for AI providers and users. Furthermore, only data that has been registered by providers is included in the EU repository for vulnerable AI systems, keeping the general public in the dark. For the EU Directive on Copyright in the Digital Single Market, 2019, however, there is still debate about the meaning and application of this provision and how it applies specifically to AI-generated works. Another consideration is the potential for copyright infringement in the context of AI. For example, AI systems can generate deepfake videos or other manipulated content that infringes on the copyright of existing works. In these cases, it can be difficult to trace the source of the infringing content and hold the responsible parties accountable. In conclusion, the

protection of AI technology in EU Law is vital in promoting innovation and economic growth. The EU continues to strengthen its legal framework to provide adequate protection for AI technology, which keeps pace with the rapid advancement of the technology and protects the rights of innovators. Even though the EU has made substantial strides in IP protection for AI, there are still debates on whether or not AI systems should be granted patent rights as inventors.

#### **China**

Following two programs, the Made in China 2025 and Internet Plus projects, China has emerged as one of the biggest countries in the field of artificial intelligence. This is true both for the development of technology and market infrastructure as well as for laws. Several national-level policy documents reflecting China’s intention to develop, safeguard, and apply AI in a number of industries have reportedly been released since 2013.<sup>21</sup> At present, China has the most extensive system of legislative acts and state plans containing priorities for the development of AI technologies.<sup>22</sup> The rules and regulations that deal with AI protection in China include the Cyber Security Law, New Generation AI Development Plan, 2018 White Paper of AI Standardization, 2019 Guidelines, E-Commerce Law, Code of Ethics for New Generation AI, Data Security Law, Personal Information Protection Law, Regulations on the Administration of Deep Synthesis of Internet Information Services, and Administrative Measures for Generative Artificial Intelligence Services. China’s “New Generation Artificial Intelligence Development Plan” from 2017 calls for standardizing AI technology and enhancing the protection of intellectual property rights in the field. It also suggests creating an AI patent pool to encourage the adoption and spread of novel AI. On 11<sup>th</sup> April 2023, the Cyberspace Administration of China released draft Administrative Measures for Generative Artificial Intelligence Services that aim to ensure “the healthy development and standardised application of generative AI technology.”<sup>23</sup> China has also made remarkable achievements in the IP protection of AI-related technology. Chinese Intellectual Property Law provides several mechanisms for the protection of AI innovations that include patents, trademarks, copyrights, and trade secrets.

**Patent Protection**

AI innovations that meet the requirements of novelty, inventive steps, and industrial applicability can be protected under Patent Law in China. Specifically, AI can be protected under the category of “computer software” under the Patent Law of China. As AI technology continues to evolve, the Chinese government has recognized the need for further clarification and guidance on patent protection for AI inventions. In 2017, the State Intellectual Property Office of China issued guidelines on the patent examination of AI-related inventions, guiding on how to assess the various patent requirements for AI inventions.<sup>24</sup> To further strengthen IP protection in AI, the Chinese government has established platforms for IP owners to share, track, and verify ownership information of patented technologies. While computer programs “per se” might not be eligible for patent protection, inventions that contain computer programs might qualify as patentable subject matter. According to Rule 21 of the Implementing Regulations and Article 2 of the Patent Law, a computer program application is only eligible for patent protection if it represents a technical solution.<sup>25</sup> The application must be able to provide a technical effect, handle technical problems, and apply technical methods to meet this requirement. In order to meet the expanding and shifting needs of innovative subjects to protect their inventions, the China National Intellectual Property Administration released the most recent Draft Revision of the Guidelines for Patent Examination in 2021.<sup>26</sup> This revision further clarifies the examination provisions for computer-implemented inventions in new industries like AI.

**Trademark Protection**

To be eligible for trade mark protection in China, an AI-related product or service must be distinctive and not be identical or similar to any prior trade mark registration or application. One example of trademark protection in China is the recognition of iFlyTek’s “Suiyi” speech recognition system trademark, which was registered with China’s State Intellectual Property Office in May 2018. It is worth noting that AI is a rapidly developing technology with diverse applications, and the China Trade Mark Office may have limited experience recognizing or examining AI-related trademark applications. Therefore, it is critical to ensure that the trademark application clearly describes the characteristics and functional features of

the AI product or service, as well as any distinctive branding or design elements.

**Copyright Protection**

Protecting AI-generated works under Copyright Law is a complex issue in China, as the current legal framework does not have clear specifications for AI-generated works. According to Chinese Copyright Law, works must be created by human authors. This legislative criteria is similar to the EU criteria of copyrightability. This implies that works generated solely by AI may not be eligible for copyright protection. AI innovations that are produced by natural persons or legal entities are recognized as original works of authorship and, thus, can be protected under Copyright Law.

**Trade Secret Protection**

In China, AI technologies can be protected as trade secrets. Under Chinese Law, to protect the trade secrets of AI technology, certain measures can be taken, like confidentiality agreements, restricting access, continuous monitoring, confidentiality controls in contracts, and secure storage of data.<sup>27</sup>

AI Law in China is geared towards promoting innovation and the development of AI technologies while ensuring that their use is conducted ethically and responsibly. The Personal Information Protection legislation, Cybersecurity Law, and Data Security Law each handle certain areas of developing, supplying, deploying, and using AI systems, although China has not yet developed legislation that holistically regulates AI. China also continues to strengthen the legal framework and enhance IP protections to combat the ever-growing threats of IP infringement and cyber espionage impacting AI. China has adopted a top-down approach to AI regulation, with the government promoting AI as a strategic priority.

**United States of America**

In the US, the creation and application of AI technology in particular contexts are subject to a number of federal and state legislation and regulations. The National AI Initiative Act of 2020 in the United States establishes a coordinated federal initiative to hasten the development of AI for economic and national security goals, as well as to look into the problems of protecting intellectual property in the context of fostering innovation.<sup>28</sup> The Government Act of 2020, encourages the use of reliable AI at the federal level and regulates how AI is

used by the federal government. The White House Office of Science and Technology Policy published a white paper titled “Blueprint for an AI Bill of Rights” on October 4, 2022. The document's objective is to offer rules for the development, use, and deployment of automated systems to “protect the American public in the age of artificial intelligence.” The Artificial Intelligence Training for the Acquisition Workforce Act (AI Training Act), 2022, takes a risk management approach towards federal agency procurement of AI. Apart from this, the US has the Digital Platform Commission Act of 2022, the American Data Privacy and Protection Act, 2022, the Health Equity, Accountability Act of 2022, and the National Defense Authorization Act, 2023 which directly or indirectly deal with AI regulation. In terms of privacy and security, the Health Insurance Portability and Accountability Act and the Children’s Online Privacy Protection Act provide regulations for the collection, use, and disclosure of personal data by healthcare providers and online services targeting children, respectively. The Equal Employment Opportunity Commission has issued guidelines for the use of AI in the workplace to ensure that it does not result in discrimination or other unfair practices. Overall, the lack of a comprehensive federal AI Law in the US has resulted in a patchwork of regulations and guidelines that apply to various aspects of AI development and use. US laws protect AI under intellectual property through several mechanisms, including patents, trademarks, copyrights, and trade secrets.

#### ***Patent Protection***

In the US, AI technology can be protected through patent protection. To obtain patent protection for AI-related inventions, the requirements for patentability must be met. The US Supreme Court has made it clear that an individual is considered to be a “human” and not a machine.<sup>29</sup> Therefore, it would seem that most patent offices are opposed to treating AI computers as inventors. A consultation report was released in 2020 after the USPTO issued its request for public views on IP protection for AI innovation at the end of 2019. Also in 2020, the USPTO released a petition ruling outlining how only natural people are permitted to be included as inventors in patent applications under current US Law.<sup>30</sup>

#### ***Trademark Protection***

To obtain trademark protection for an AI product or service in the US, it must meet certain

requirements: Distinctiveness; use in commerce; non-confusing; and non-generic. For example, if a business creates and uses a distinctive name or logo for its AI-related product or service, it can apply for trademark registration to protect its brand image against infringement by others. Similarly, businesses can trademark slogans, product names, and even specific sounds used in their AI products to protect their brand identity. Trademark protection is also available in the US under the Lanham Act.<sup>31</sup> The Act recognizes the unauthorized use of AI for advertising, marketing, and competition as a violation of trademark rights. The Act also allows for remedies such as legal injunctions or court-ordered prohibitions against the unauthorized use of AI-generated trademarks.

#### ***Copyright Protection***

Throughout the US, Copyright Law serves to safeguard original representation, but in the case of artificial intelligence-based data security, no specific rule has been made, however, the legislation expresses that copyright necessitates “an original work of authorship.”The creator has in fact been interpreted as a person or mortal being by the US legal system, therefore when employing machine learning and artificial intelligence for artistic purposes, there must be sentient input.<sup>32</sup> Databases may be covered by copyright protection in the US if they were created with some creativity and labor. However, the evolving nature of AI and the ownership of copyright in AI-generated works make the legal landscape complex and challenging in the US as well.

#### ***Trade Secret Protection***

It is another form of intellectual property protection that can be used to protect certain aspects of artificial intelligence technology in the US. Trade secret protection can be used to protect a wide range of AI-related information, including algorithms, software, datasets, and other confidential information related to the development and training of AI models. The Defend Trade Secrets Act, 2016, allows businesses to safeguard databases as long as they take reasonable precautions to prevent disclosure and maintain confidentiality (such as, putting in place password safeguards, limiting access to specific locations, and using confidentiality provisions in contracts).<sup>33</sup> In addition to the above, the US recognizes trade secret protection rights under the Uniform Trade Secrets Act, which offers protection to AI-related trade secrets.

From the above discussion, it can be concluded that the US protection of AIs is fundamentally different from that practised by the EU and China. The US has a relatively loose legal framework for AI that is primarily focused on promoting innovation and competitiveness. There is no comprehensive federal law regulating AI, but several states have enacted privacy and data protection laws that apply to AI.

#### **India**

At the moment, AI is not specifically regulated in India by codified laws, statutory rules or regulations, or even official guidelines. The Information Technology Act of 2000 and the rules and regulations created thereunder outline the requirements in this area. Recently, the Ministry of Electronics and Information Technology established a few committees to create a framework for policy development and analyses of topics including exploiting artificial intelligence, essential policy enablers needed across many industries, and AI-related legal and ethical concerns. The Ministry of Commerce and Industry established an AI taskforce in 2017 that focused on the difficulties in implementing AI regulations in India as well as numerous industries that are crucial to the AI regime. A directive to start AI programs and their applications was given to the National Institution for Transforming India in 2018.<sup>34</sup> Government initiatives like Digital India, Make in India, and Start-up India encourage innovation, entrepreneurship, and investment in high-tech manufacturing and R&D, including AI regulations. The National Strategy for AI which was unveiled in June 2018, highlights the ethical concerns about AI that the government has also acknowledged. An AI-explicit computer architecture called "AIRAWAT" was suggested to be set up in January 2020 by NITI Aayog to satisfy the processing requirements of innovation hubs, startups, researchers in AI, and students.<sup>35</sup> The NITIAayog provided principles regarding the proper management of artificial intelligence systems that Indian stakeholders can apply in a paper titled "Responsible AI for All," which was released in February 2021. The Personal Data Protection Bill 2019 was dropped by the Ministry of Electronics and Information Technology, and the government published the Digital Personal Data Protection Bill on November 18, 2022, as an updated version of its predecessor. This bill is one of several pieces of legislation, along with IT regulations, a new Digital India Act, and a National Data Governance Framework Policy. The

upcoming Digital Personal Data Protection Bill, 2022 will apply to AI developers who develop and facilitate AI technologies.<sup>36</sup> No doubt India's IPR regime extends to AI, but it has been criticized for being weak, which raises uncertainty regarding the protection of AI. India's efforts towards amendments in the Patent Rules, 2003 and the Trademark Rules, 2017 also contribute towards securing AI protection in India.

#### **Patent Protection**

India is dealing with a legal ambiguity on who would be acknowledged as the creator of any product or method produced by AI. In India, the trend of AI patent applications has been steadily increasing over the last few years, with a notable uptick in 2020. AI technology can be protected under Patent Law in India if it meets the criteria for patent eligibility, as outlined in Section 3 of the Indian Patents Act, 1970.<sup>37</sup> The criteria include novelty, inventiveness, and industrial applicability. In addition, some specific requirements also need to be met for computer-related inventions. For example, the invention must solve a technical problem, involve a technical contribution, and be significant to be eligible for patent protection. AI-related inventions are assessed using the subject matter exclusions mentioned in Section 3(k) of the Indian Patents Act, 1970.<sup>37</sup> The phrase "mathematical methods, business methods, computer programs as such, and algorithms" is defined in Section 3(k). Guidelines for the evaluation of patent applications involving AI and machine learning were published by the Indian Patent Office in 2017. The guidelines provide clarifications on interpreting claim terms, assessing inventive steps determining industrial applicability for AI inventions, as well as what should be allowed and what shouldn't be allowed in terms of commercial or mathematical operations, computer programs in general, or algorithms.

#### **Trademark Protection**

AI inventions, such as virtual assistants and chatbots, can be protected as trademarks if they are capable of distinguishing goods/services and are not descriptive or generic in India. For example, "Siri," Apple's virtual assistant, has been granted trademark protection in India. However, as of now, there is no specific legal framework in India for the registration and protection of AI-generated trademarks. Some challenges in protecting AI-generated trade marks in India include identifying the owner, distinctiveness, and identifying infringement.

### **Copyright Protection**

AI-generated creations may be protected under copyright in India if they meet the criteria for originality as outlined in Section 13 of the Copyright Act, 1957.<sup>38</sup> The works must reflect the author's originality or effort and not be copied from another source. In India, copyright protection can be granted to literary, dramatic, musical, and artistic works. AI applications' "source code" and "object code" are protected as "literary works" under Section 2(o) of the Copyright Act.<sup>38</sup> All artificial intelligence programs are deemed to be the property of their author or developer unless they are produced or created by the author while they are working as an employee. The Copyright Act also authorizes reverse engineering and fair use. According to the Copyright Act, a work's creator only has a copyright if they "are a natural person, a human being, and not an artificial person," and only a natural person's information can be supplied while registering a copyright. The 'tool' that is used to create intellectual property is only seen as a machine, and as such, it is not considered to be the 'owner' of such intellectual property. However, the Copyright Office for the first time recognized the co-authorship of an AI tool called "Raghav Artificial Intelligence Painting App" and the application's owner in a painting titled "Suryast" in November 2020.<sup>39</sup> In India, the AI-generated music industry is rapidly growing and is eligible for copyright protection. An example of this is the app "Raaga," which provides AI-generated music that users can stream and download.

### **Trade Secret Protection**

The Indian Contract Act, 1872, the Information Technology Act, 2000, and common law principles of confidentiality and non-disclosure all protect trade secrets in India. Trade secrets can cover confidential information such as algorithms, programs, source codes, and other technical information used in AI systems. India recognizes trade secret protection, but its efficacy in enforcing the protection is limited. Depending on its nature and distribution *via* contracts or under tort law as well, the concept, idea, and structure of an AI application may be protected as a trade secret in India. Trade secret protection laws in India offer a strong framework for businesses to protect their AI-related trade secrets, but it is crucial to implement comprehensive protection strategies and enforce trade secret protections to ensure that businesses can safeguard their innovations and competitive advantage.

The Indian IP framework protects AI technology, encouraging innovation and investment in the technology, which has become critically important. The Indian government is committed to providing legal clarity and guidance for IP protection for AI, ensuring that innovations in this sector can continue to flourish. In its report, the Standing Committee on the IPR Regime recommended that "a separate category of rights for AI and AI-related inventions and solutions should be created for their protection as IPRs" concerning this. To incorporate emerging AI technologies and inventions relating to AI under its scope, it was also suggested that the Department relating Parliamentary Standing Committee on Commerce consider the 1970 Patents Act and the 1957 Copyright Act. India has enormous prospects in the AI domain, but several challenges need to be addressed to ensure effective AI protection in the country's IPR regime.

There are structural differences and considerable bifurcation in the protection of AI-related technologies in different countries. Currently, the EU retains an edge in the global advancement of AI protection, closely followed by China. China has moved ahead of the US and other jurisdictions in regulating AI. China's AI system has undergone significant changes over the past few years. In addition, Chinese Law differs significantly from that of the United States and other European nations. Although both the US and the EU appreciate and protect AIs, their methods for granting, protecting, and upholding these rights are highly dissimilar. While the United States includes AIs as part of its existing Intellectual Property Law or Trade Mark Law, the EU utilizes a highly developed, independent system of legislation and regulations expressly for AIs. Together, the EU and US systems provide a good representation of the variety of strategies used by most nations now engaged in AI protection. As such, they can be helpful role models for India. The EU's GDPR and other data privacy regulations protect data privacy, while India does not have specific regulations to govern data protection. Developing appropriate data privacy regulations is a challenge for India, requiring investment and reform. The current legal framework of India is not fit for purpose in the age of intelligent machines, and there are numerous questions about whether the existing legal framework is adequate. European AI Law frameworks prioritize transparency, accountability, and ethics, while the US

and China place more emphasis on innovation and competitiveness. However, the planned EU AI Act would offer useful suggestions for enhancing Indian AI Law.

### Conclusion

The legal protection of AIs differs from one country to the next. While there is considerable uniformity in the way the legal tests are applied in the laws of many nations around the world about AI, there are also several significant variations. To safeguard AI-assisted outputs in India, it is important to investigate the role of alternative IP regimes. In order to preserve AI-assisted outputs in India, it is important to investigate the role of alternative IP regimes and pinpoint potential directions for future legal changes to India's IP Law.

AI development and protection must go hand-in-hand, and India has made progress in safeguarding the interests of inventors, researchers, and technologists in the AI domain. The country must address the challenges effectively to ensure adequate and efficient IPR protection for AI-based inventions. By developing a robust IP protection regime, India can foster innovation and create a more supportive environment for AI companies. Improving awareness of AI IPR protection, ensuring adequate enforcement, and amending policies comprehensively can enable India to enhance its position as a leader in the tech innovation domain while safely securing protection for its AI technologies. India also needs to invest in the development of a comprehensive licensing regime for AI that provides effective IP protection. The study concludes that rapid, significant modifications to India's copyright and patent laws are not necessary or justified given the current level of AI research. India's AI development strategies can be analyzed and enhanced in several ways using the experience of the EU, China, and the US in this area.

There is no doubt in saying this, that India should enact new regulations on AI. AI-generated media should be subject to stringent regulations, including the obligation to include identifiers like watermarks. Comparative analysis of the EU, China, US, and Indian contexts reveals that India could benefit from modelling its laws and regulations after those of these more developed nations. All of these, however, still have the possibility of development. Despite the Ministry of Electronics and IT declaring on 5 April 2023, that the government does not intend to

introduce legislation to regulate the growth of AI, India should unquestionably take into account the recently proposed EU AI Regulation; nevertheless, it is unclear if adopting a similar strategy would encourage or restrain AI research in India.<sup>40</sup>

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