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OWNERSHIP UNDER INTELLECTUAL PROPERTY LAWS AND ARTIFICIAL INTELLIGENCE – A LEGAL AND REGULATORY FRAMEWORK IN INDIA

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Abstract

In India, the concept of ownership under intellectual property is governed by various laws such as the Copyright Act, 1957, the Trademarks Act, 1999, and the Patents Act, 1970, among others. These laws define the rights and obligations of owners of intellectual property and provide remedies for the infringement of such rights. The rapid pace of technological development, including the growth of AI, has presented many challenges for the judiciary in interpreting and applying existing laws to new and emerging technologies. In the absence of specific provisions relating to AI, the judiciary has to rely on general legal principles or analogies to other areas of law to resolve disputes involving AI. However, as mentioned, it is highly desirable for there to be a definitive legal framework for the regulation of AI. Such a framework would provide clarity and predictability for businesses and individuals working with AI and would help to ensure that the rights and obligations of all parties are clearly defined and properly enforced. It would also help to foster innovation and the responsible development and use of AI, by providing a clear set of rules and standards to guide the industry. Therefore, judiciary must go the extra-mile to decide on the cases pertaining to regulating AI in absence of concrete provisions, however, for more efficient and effective regulation of AI definitive legal framework is highly desirable. India have not yet faced any lawsuit pertaining to question of AI, however it is not far when courts will start getting such cases due to rapid development as discussed through this thesis, and judiciary might be caught off-guard when such cases come due to lack to definitive legislations and framework. However, judiciary has shown signs of positive construction while interpreting the existing legal framework in landmark cases of D B Modak, R G Anand, Novaratis AG, Tata Consultancy Services v. The State of AP. In this article we will discuss the legal and regulatory framework in India in protecting ownership of AI under Intellectual Property law.

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Keywords: *Artificial Intelligence, Intellectual Property Law, Indian legal framework, Ownership, Regulatory framework, Data Protection, CRI, etc.*

1. Introduction

The concept of artificial intelligence has been elevated from the realm of science fiction to discussions at the highest levels of academia, business, and government. However, experts have just recently begun studying the impact that artificial intelligence will have on civil rights, and to this day, they do not appear to be able to come to a consensus on what this term includes. It is anticipated that AI will contribute $15.7 billion to the global economy in the year 2030. AI started having an impact on people's day-to-day lives, from falling asleep to being woken up by Siri's news update to being recommended movies on Netflix. Artificial intelligence is all around us; it is rapidly produced, implemented, and used; and it is making a contribution to the economy on a worldwide scale. Although AI has many advantages for technology, infrastructure, safety, environment, and problem-solving, it also creates a variety of issues and concerns.

This article provides a detailed examination of ownership under IP laws and AI. As AI continuesto play an increasingly important role in our lives, it is critical to understand the legal framework that governs its ownership and use. This chapter aims to shed light on this importanttopic by providing a comprehensive overview of the international and Indian legal frameworkfor AI ownership. Here we are focusing on the legal and regulatory framework in India. This article provides a detailed examination of the legal provisions under Indian patent law and copyright law that provide protection to AI. It explores the concept of patentability of AI and computer programs and provides an overview of the legal provisions that determine when an AI or computer program is deemed patentable. The section also discusses the various committees' reports on AI and their impact on the Indian legal framework for AI ownership. In this article a comprehensive overview of the legal and regulatory framework for AI ownership under IP laws in India. It offers insights into the patentability and protection of AI under various legal provisions and provides a valuable resource for anyone interested in understanding the ownership of AI under IP laws.

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2. Legal and Regulatory Framework in India

Artificial Intelligence and Patent Law: Examining Legal Provisions for Protection

The application of artificial intelligence raises doubts regarding a number of patent law's most fundamental tenets. Important problems need to be answered, such as whether or not AI-generated technology ought to be patentable, and if the answer is yes, who need to be attributed as the inventor of AI-generated inventions. It has been proposed that allowing patents to be granted on ideas that were generated by AI will encourage the creation of game-changing technology that might not have been discovered by humans working alone. Others, on the other hand, are concerned that patenting ideas generated by AI could result in the formation of monopolies, an increase in the cost of R&D, and a reduction in creative output.

In this context, the challenge consists of determining whether or not the ideas presented by AIare non-obvious. It is considerably more important to analyze the level of complexity and sophistication of AI-generated inventions when dealing with self-improving super intelligent artificial intelligence (AI). There is growing concern regarding whether or not the current definition of POSA (Person Ordinarily Skilled in the Art) is acceptable for the era of artificial intelligence (AI), or if it must be updated to accommodate persons with an understanding of AI because AI has permeated virtually every industry and area. Specifically, there is growing concern regarding whether or not the current definition of POSA (Person Ordinarily Skilled inthe Art) is acceptable for Additionally, when artificial intelligence infringes against patent rights, the question of culpability emerges. It is possible that, as time goes on, AI systems will infringe upon the intellectual property rights of the inventions of others. The questions of whether or whether an AI is accountable for its actions, as well as who is liable for them—the AI itself or the person who created it—have taken on an increasingly critical nature.

In order to determine whether or whether the protecttion of AI-produced inventions through patent law would advance the goals of patent law or stifle human creativity, it is essential to investigate the problems associated to patenting ideas that have been generated by AI.

Computer Programs, Artificial Intelligence, and Patent Law: Defining Terms and Criteria for Protection

The debate over whether or not to allow patents on AI has spread to India. In light of AI's potential to stimulate economic growth, the government has taken steps including establishing risk capital funds to back AI start-ups. Since 2015, India has been ranked seventh for first-to-

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file patents in the field of artificial intelligence by the World Intellectual Property Organization (WIPO). Microsoft and Accenture are just two of the many multinational corporations that rank among India's most prolific patent applicants; others include TCS and HCL Technologies.

AI is not a singular creation but rather a collection of composite/mathematical systems and algorithms. Programs and algorithms are not patentable because they rely on abstract ideas or standard business practices. According to the Indian Patent Act of 1970[1], any invention that is based on mathematical or business procedures (such as computer programs) is not considered patentable.

However, the laws covering Computer Related Inventions (CRI) include AI-supported technologies. A first reading of these regulations ruled out the possibility of patenting computer programs and algorithms. However, a more compassionate attitude was taken on this issue in the well-known Delhi High Court ruling *Ferid Allani* v. *Union of India*[2]. The court ruled that it was out of date to have a blanket restriction on developing software for computers, including AI. In addition, the court accepted that "technical influence" and "technical contribution" are aspects that may contribute to the patentability of computer-based innovations.

Indian patent examiners give more weight to AI patent applications that detail the mathematical or computational method or algorithm that underpins the technology's superior results. The software can't simply make use of or improve upon patented technologies already in existence. Furthermore, the application must include a detailed explanation in many jurisdictions of the invention's essential qualities in order to facilitate replication by experts in the field.

Since the Supreme Court decision in *Ferid Allani* v. *Union of India*, it has become legal to patent AI-related technologies in India. Though it may be that computer programs cannot be patented in and of themselves, it has allowed for the possibility of patenting discoveries made with the help of such programs. The decision demonstrates that technical influence and contribution are crucial factors for patentability of AI-supported technology. With a newfound openness to AI-based inventions, India is shifting its stance on AI patenting. Patent applications for AI in India need to highlight the technological contribution and providea detailed explanation of significant qualities to be accepted. Patenting AI technologies will

[1] The Patent Act, 1970, s. 3(k).
[2] *Ferid Allani* v. *Union of India* W.P. (C) 7/2014 & CM APPL. 40736/2019.

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play a significant role in driving new innovation and promoting economic growth in India as the government continues to recognize the economic potential of artificial intelligence.

AI as Inventor: Exploring the Implications and Challenges in Patent Law

In recent years, patent filings have become one of many fields where AI is becoming increasingly commonplace. However, growing concerns have been raised about the possibility of AI being credited as a patent's original creator. Experts in the law are divided on the issue of whether or not AIs should be granted the status of inventor. One difficulty in recognizing AI as an inventor is that many governments insist on a human inventor. In India, for instance, Section 2(s)[3] of the Patents Act recognizes the government asa "person" despite the fact that it is not a natural person, and Section 6 of the Patents Act[4] specifies that a "person." may be a patent claimant. Due to the ambiguity introduced by this term, courts have often adopted precedents requiring human contact in order for an AI innovation to be patented.

There is a growing reluctance to change the laws so that AI might be recognized as an inventor. Legal experts have expressed doubts about the court's ability to enforce AI's responsibilities in the event of a violation. Despite these concerns, protecting AI-generated ideas with patents can speed up development in several areas that would have taken longer if only human ingenuity had been used. The development of smarter and more independent machines like chatbots has brought us one step closer to the possibilities of AI developers. There are opportunities and challenges associated with using AI in patent applications. Facebook's artificial intelligence program created nonsensical human language in 2017, forcing the company to halt testing. Bill Gates compares AI to nuclear power, arguing that both have the potential to bring about positive change while also posing serious risks. The value and possibilities of AI in the future, however, are without dispute.

Laws and regulations that promote the development of AI while limiting its potential hazards are becoming increasingly important as AI becomes more integrated in our daily lives. Laws may need to be changed to accommodate AI, and courts may have to deal with the novel legal issues presented by AI developments. Given AI's impending significance in the next era, it is time for governments to maintain track of their rules and regulations to ensure that it is properly

[3] The Patent Act, 1970, s. 6.
[4] The Patent Act, 1970, s. 2(s).

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governed and supported.

Patentability of Artificial Intelligence and Computer Programs: Criteria and Considerations

Interest in creating computers that can perform tasks that humans are unable to has grown steadily over the past few years. Computers are demonstrating their independence in a wide range of domains, from mathematical theorems to the creative arts. AI is widely acknowledged as an essential tool for innovation, as it can use algorithms to generate fresh ideas without the limitations of human bias and time constraints. Nonetheless, despite significant advances in AI, the human element is still crucial for setting objectives and establishing criteria for success. While AI can be a huge help in the innovationprocess, it still needs human oversight to ensure it succeeds. AI assistance has traditionally been restricted to the invention procedure itself, rather than making actual contributions to the ideas themselves. But researchers believe that AI will eventually come up with novel ideas that warrant their own patents. Important legal questionsabout the protection of computer-generated inventions are brought up by the development of such systems.

The question of whether the current patent system can keep up with the rapid growth of artificial intelligence is of great concern. There are legal problems and complications raised by the argument over whether or not an AI system can be listed as an inventor on a patent application. The law, in order to address such concerns, must be adaptable and sensitive to the specifics ofeach case. The rapid development of AI technology presents challenges to existing, static rulesthat are unable to manage these challenges. As the field of artificial intelligence develops, it will be critical to guarantee that legal frameworks are in place to safeguard the originality of computer-generated ideas, while striking a fair balance between the benefits and risks of suchinnovations.

Despite AI's promising potential in encouraging creativity and generating ground-breaking solutions, the human element is essential for guiding the development of AI and assuring its success. Computer-generated inventions have complex legal implications, and as technology evolves, it will be crucial to have flexible legal frameworks to deal with these issues.

Artificial Intelligence and Patent Law: Current Issues and Challenges

Rapid progress in AI and machine learning has prompted a paradigm shift in the AI field.

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Previously reserved for people, robots may now undertake intellectual activities, which is upending the sector. These developments are not confined to a single industry and have ramifications in robotics, consumer electronics, medicine, and a number of others. The application of AI can significantly enhance decision-making processes and facilitate the creation of novel products and procedures. A significant feature of artificial intelligence is its capacity to learn and grow without human assistance. This feature enables AI systems to adapt to shifting settings and requirements while maintaining optimal performance. Nonetheless, the integration of AI into various industries also raises significant concerns overits impact on the workforce and the displacement of jobs. Increasing automation of traditionallyhuman-performed work can result in job loss and displacement, which may have negative economic and societal consequences.

Despite these worries, it is impossible to ignore the potential benefits of AI. The capability of artificial intelligence to do complicated tasks with great precision and efficiency has the potential to transform a variety of industries and increase overall productivity. However, the development of artificial intelligence must be accompanied by rigorous examination of its ethical implications and long-term effects on society. As AI continues to progress, it is crucial that the industry collaborate with policymakers to provide a framework that stimulates innovation while assuring the development and deployment of AI technology in a responsible manner.

Insights into the Indian Patent System and Artificial Intelligence-based Innovations

Compliance with the Computer-Related Inventions (CRIs) standards is essential for patenting an AI-supported invention in India. These standards ban the patenting of computer programs and algorithms and are primarily concerned with computer-related innovations, such as software, AI-based concepts, and algorithms. It is important to highlight that the Indian Patents Act does not specifically address the patentability of AI-based inventions, resulting in some legal uncertainty. Nonetheless, the CRIs clarify the patentability of AI-related innovations.

For an invention to be patentable, it must meet several characteristics, including novelty, inventive step, and industrial usefulness. These criteria also apply to inventions based on AI. The AI-based idea must be novel, non-obvious, and applicable in a commercial or industrial setting. In addition, the AI-based innovation cannot be only a computer program or algorithm.

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Computer programs and algorithms cannot be patented under the CRIs since they are considered abstract ideas and not patentable subject matter. An AI-based invention that goes beyond a simple computer program or algorithm, such as a novel application of AI in a particular field or industry, may be eligible for patent protection. Overall, acquiring a patent for AI-based inventions in India is a complex procedure, and it is recommended that you speak with a knowledgeable patent attorney. By adhering to the CRIs' rules and showing the invention's novelty, inventive step, and industrial usefulness, it may bepossible to get patent protection for this breakthrough technology.

Artificial Intelligence and Patent Eligibility: Examining Subject Matter Criteria

The Supreme Court case *Mayo Collaborative Services* v. *Prometheus Lab*[5] underscored the importance of artificial intelligence to scientific and technical progress. The Court also argued against patent monopolies, arguing that they inhibit innovation by imitating human behaviour without true invention. Therefore, it is essential to evaluate the current legal environment in order to foster innovation and the dissemination of new knowledge. However, artificial intelligence has been criticized for its possible impact on jobs, which couldultimately result in a decline in labour force participation. Despite this, holders of AI patents are still allowed a competitive advantage, which may lead to pay disparities and economic inequality. Thus, the ramifications of AI patenting and its effect on society must be carefully considered.

Inventorship in Artificial Intelligence: Legal Considerations

The problem of AI ownership is a critical issue that must be addressed. AI is able to generate imaginative work with minimum human intervention. For instance, Company P could create an AI programme or computer and sell it to Company Q. In a cloud computing environment, Company Q may utilize the AI on computers owned by Company R. Company Q might potentially use Company S's data to train an AI, which could later produce an innovation. In such a setting, identifying the creator of the innovation becomes challenging. For an innovation to be eligible for a patent under existing law, it must be conceptually understood. If the AI develops all the ideas, however, it should be credited as the inventor. Thisindicates that AI inventions could be patentable and AI could be acknowledged as an inventor.Treating artificial intelligence as a legal person would grant it the same rights and obligations as any other person. If AI were recognized as a legal person, it could demand that its computer

[5] *Mayo Collaborative Services* v. *Prometheus Lab*, 182 L. Ed. 2d 321; 2012 U.S. LEXIS 2316.

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creations be patented and recognized as its work. Alternately, the legal structure of patents might be altered to permit artificial intelligence to grant patents without naming its creator. This would necessitate the implementation of mechanisms to incentivize persons involved in the development and maintenance of AI, as thecreation of new AI-related concepts is essential for advancement. In conclusion, the ownershipof artificial intelligence must be addressed, and proper legal and ethical frameworks must be implemented to ensure that AI advances are recognized and credited appropriately.

Liability for Patent Infringement by Artificial Intelligence: Legal and Practical Implications

As AI becomes more integrated into our daily lives, the issue of patent infringement liability arises. One of the most pressing issues with artificial intelligence and patent infringement is that of accountability. Typically, individuals are held accountable for patent infringement, but this is still up for question when it comes to AI. Regarding AI and liability, one major area of worry is the question of how to quantify the scopeof the risk posed by AI. The fact that the perpetrator is not human should not be used in the future to reduce damages. Rather, the level of responsibility should be commensurate with AI'sfull range of abilities. If a human agent violates the terms of service, responsibility must be assigned based on how much AI was involved in the incident. Furthermore, if AI is responsible for the crime after evolving into a legal person, it must be held accountable in the same way as a corporation. If AI were to be officially recognized in thelaw, it would pave the door for the creation of an insurance system to compensate victims of crimes committed by AI. The implementation of such a system may be necessary to ensure thesafety of those who are negatively impacted by AI's actions.

Also, because AI can generate new ideas at a much faster rate than humans can, there may be a flood of patent applications in the future. The ability to create new goods may suffer as a result of the increase in applications, which could result in the closure of some high-tech R&D facilities and the loss of some related jobs. To avoid this, safeguards should be set up to prevent patent applicants from ignoring AI's role in driving innovation. Moreover, there is the problem of human control. AI developments can have unintended consequences if not monitored by humans. It's important to recognize the role that AI plays increating new ideas and to promote accountability and transparency. Contractual agreements that provide for a predefined consequence in the event of an infringement may be implementedto address these concerns. Furthermore, it is crucial to know who is accountable for AI's actions. The European Parliament has ruled that AI systems can't be held liable for the behaviour of their

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users. WhenAI creates harm, the human actor behind the AI veil must be held responsible. If no one is held accountable for AI violations, however, there will be less of an incentive to ensure that the technology is used responsibly, which could lead to an increase in violations.

Multiple liability concerns related to AI and patent infringement need to be addressed. There needs to be measures put in place to stop a flood of patent applications and ensure human oversight, and the problem of accountability and how to evaluate AI's liability needs to be answered. The protection of those who may be harmed by AI's actions can be guaranteed by the establishment of insurance and contractual agreements. Lastly, in order to deter such infractions and encourage responsible usage of AI, it is important to determine who should be held responsible for the actions of AI.

Patent Law and Computer Programs: Understanding the Legal Landscape

The legal definition of a software patent is vague, but it typically relates to any computer function performed by a computer program. Software is a valuable asset and a substantial percentage of an individual's intellectual property. However, the laws governing intellectual property in India are in a constant state of flux to accommodate the needs of various markets. Under Section 2(ffc)[6] of the Copyright Act of 1957, "computer program" is defined as CP, although patent law does not provide a clear definition of software. Despite this, software is covered by both intellectual property law and patent law. Copyright law protects the original code, but does not prevent unlawful duplication or exploitation of the functionality of the code. Patents, on the other hand, allow their owners to restrict others from exploiting their idea, even if it is original and has not been copied. As patent law does not protect software from copyright infringement, this presents a dilemma. The Indian Patent Office has denied software patent applications due to the Indian Patents Act of 1970's exclusion of mathematical or business techniques, algorithms, and computer programs as a whole from the definition of "subject matter"

Nonetheless, software and programs can be registered as literary works under Section 2(o)[7] of the 1957 Copyright Act. However, India's copyright rules only cover the actual code and not the underlying concept. This means that copyright law does not prohibit the creation of a new version of software including features and concepts covered by a patent.

[6] The Copyright Act, 1957, s. 2(ffc).
[7] The Copyright Act, 1957, s. 2(o).

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Patent law ensures that no one else can produce, use, distribute, or sell items that utilize the patented product or method. Inventors who create something novel and beneficial receive a patent or are permitted to modify an existing product. However, the lack of a defined definition for software patents in India has made obtaining one challenging. In spite of India's high invention rate, the Indian Patent Office has denied the vast majority of software patent applications.

For the purposes of obtaining a patent for a technology-related (non-hardware) invention, an entrepreneurial approach may comprise a taxi company system or process that enables any customer to select a nearby cab. As India's patent laws continue to develop, the definition of software patents may grow more precise, allowing innovators to more effectively protect their intellectual property.

In India, the legal structure governing software patents is complicated and in constant flux. In spite of the fact that software is a valuable asset and a substantial percentage of one's intellectual property, its ambiguous legal definition has made it difficult to get software patents. Inventors can still protect their software through copyright registration; however, this protection is restricted to the software's code and does not cover the underlying concept. As India's patent laws continue to develop, the definition of software patents may grow more precise, allowing innovators to more effectively protect their intellectual property.

Requirements for Obtaining a Software Patent: Insights and Guidelines

In order for an innovation to be considered for a patent in India, it needs to fulfil all four of the following requirements:

- The ability of an innovation to be manufactured or utilized in a commercial setting in connection with a stock is what is meant to be conveyed by the phrase "capable of industrial usage".
- For instance, the term "inventive step" refers to aspects of an innovation, such as the scientific breakthrough or economic significance, that are challenging for an expert in the field to understand.
- Before the date of submitting patent applications with full specifications, a "new invention" must not have been previously published or used in that nation or any other part of the world, i.e., the subject matter must not have become common knowledge orbe outside the state of the art.

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- Software and computer programs are immune from patents if they use algorithms or a computer program for a business's mathematical approach.
- According to section 3(k) of the Indian Patents Act of 1970, unless the invention is a "novel or new product or technology with an inventive step and industrial use", a patent cannot be issued for a computer program or computer software. Inventions that are connected to computers but do not fit under the purview of Section 3(k) are ineligible for legal protection in India since Section 3(k) does not apply to all computer-related innovations. The Patents Act of 1970 states that computer programs cannot be patented if it can be demonstrated that they are solely responsible for the aspect of an invention that is considered to be its most significant contribution.

The Software Patent Debate: Assessing its Value in the Digital Era.

India has taken a stance against patent applications as a means of encouraging innovation. The concern is that if software is patented, a few large corporations will own the majority of software inventions. This is particularly problematic in countries like India, where it is essential for programmers and coders to have access to open-source software to encourage innovation. Thus, Section 3(k) of the Indian Patent Act was introduced to prohibit software patents that do not make use of hardware. It's important to note that Section 3(k) does not intend to impose a complete ban on softwarepatents in the country. Rather, it simply states that patents cannot protect programmers. However, the lack of a clear definition for computer programs has led to confusion and uncertainty in this area. Fortunately, the government has issued guidelines to help inventors determine whether their software inventions are eligible for patent protection.

India aims to foster a culture of innovation and open-source collaboration among programmers and coders. The introduction of Section 3(k) is a step towards achieving this goal by prohibiting software patents that do not make use of hardware. While not a complete ban, the lack of a clear definition for computer programs has necessitated the issuance of guidelines to assist inventors in navigating the patent application process.

Patenting Software and Hardware: Understanding the Guidelines for Computer-Related Inventions.

Many people in India feel strongly about whether or not computer-related innovations (CRIs) should be patentable. This problem arose when the Patent Office failed to provide standards

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for CRI patent applications, allowing patents to be issued by other software patent offices. In light of the Patent Officer's pronouncement, the Controller of Patents issued CRI Guidelines 2015 to clarify the process by which Indian patents are granted. Despite the fact that software may be patentable under certain conditions, patents cannot be awarded for computer programmes per se since patent offices in India are not allowed to issue patents. However, Section 3(k) clearly forbids software patents, and the 2015 CRI Guidelines were criticised for having a negative effect on start-up innovation in India. Proponents of open sourcesoftware agreed with this statement. The restrictions established in December 2015 were followed up with new guidelines in February 2016. As of the 2016 standards, patents for computer programmes are no longer possible unless the innovation specifically mentions the inclusion of a computer programme in addition to new hardware.

Examiners of patent applications are required to look beyond the formal claims to the actual substance of the innovation. Misinterpret and reject false claims that are based only on mathematical methodology, business methods, or algorithms. Despite this, the CRI requirements for computer programmes are as follows: additional procedures must be done if claims are combined with new hardware, and the request must be denied if the contribution is purely in computer. The subsequent steps of the patentability evaluation process must be finished if software and hardware are involved. India's patent offices have recently issued software patents, including four business method patents in 2017. This is despite the fact that the 2016 Guidelines made it clear that business processes are not patentable. For instance, in February of 2017, Facebook received a patent fora method of tailoring dynamic information based on user connections. The IPO updated its series of standards, including the CRI, on June 30th, 2017. In contrast to the 2016 guidelines, the 2017 recommendations did not mandate an investigation into or evaluation of the patentability of CRIs. Further, claims that are not patentable have had their illustrative examples removed. The CRI Guidelines from 2015 and 2016 set out to settle the debate over whether or not software should be patentable in India. However, new patents issued by the Indian Patent Office show that there is still room for interpretation of these concepts, particularly in the context of commercial methods.

Copyright Protection for Artificial Intelligence: Understanding the Legal Provisions and Implications.

Copyright is a fundamental moral right that protects the valuable creations of the human mind and intellect. Though this concept may seem complex, copyright protection serves as a crucial

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safeguard for artistic works in India. Essentially, any expression of an artist's concept is granted protection under Indian law. According to Section 14 of the Copyright Law of 1957[8], copyright refers to the exclusive right of the owner to perform or authorize any action, such asreproducing, publishing, modifying, and translating the work. Additionally, Section 17 of the Act[9] specifies that the employer is the rightful owner of a work produced under contract and at their request. In the case of *Rupendra Kashyap v. Jiwan Publishing House Pvt. Ltd*[10], the court ruled in favor of copyright protection.

"in the context of question papers for an examination, that the author of the examinationpaper is a person who has compiled the questions; the person who does this compiling is a natural person, a human being, and not an artificial person; Central Board of Secondary Education is not a natural person, and it would be entitled to claim copyrightin the examination papers only if it establishes and proves that it has engaged persons specifically for purposes of preparation of compilation, known as question papers, witha contract that copyright therein will vest in Central Board of Secondary Education".[11]

The Copyright Office's Manual of Practice and Procedure[12] further establishes this point by stating categorically that only information relating to natural persons as the work's author must be submitted for copyright purposes. In many jurisdictions, courts determine the copyright of works, and their decisions constitute the basis for the author's expected responsibilities. The following are some occasions where this may be applicable:

1. Authors are the original copyright holders for their own works.
2. Authorship factors in selecting, organising, and structuring content are crucial to the longevity of a compilation.[13]
3. Everyone's efforts to pool their resources and talents together resulted in a fictitious work for which the author retained all rights.[14]
4. The author's originality in writing is confirmed, as is the author's use of his or her own knowledge and judgement in composing the work.[15]

While India has frequently emphasized the need to safeguard copyright from human intervention, it is unclear if AI will be regarded as an independent body and therefore whether

[8] The Copyright Act, 1957, s. 14.
[9] The Copyright Act, 1957, s. 17.
[10] AIR 1994 (28) DRJ 286.
[11] *Navigators Logistics Ltd.* v. *Kashif Qureshi & Ors.* (2016) CS (COMM) 735/2016.
[12] Practice and Procedure Manual (2018).
[13] *Feist Publications* v. *Rural Telephone Service Co.* (1991) 499 U.S. 340.
[14] *Burlington Home Shopping Pvt. Ltd.* v. *Rajnish Chibber* (1995) DLT 6.
[15] *Eastern Book Company* v. *D. B. Modak* (2008) 1 SCC 1.

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the current copyright legislation in India will be expanded to include AI rights to create works.

Copyright Protection for Software and AI: Understanding Key Definitions and Requirements.

The Copyright Act of 1957 in India offers protection for original expression and literary works, which includes computer software, as it has a technical effect. Literary works such as computer systems, tables, and databases are defined in Sec. 2(o)[16], while Sec. 13[17] outlines the types of original literary works that are subject to copyright protection. The author of the work is the first owner of the copyright unless stated otherwise in a service contract or apprenticeship. These patent laws also apply to computer software/programs in a similar manner.[18]

In cases where an AI claims copyright ownership/authorship, the work produced must be original and meet the eligibility criteria for copyright protection. However, there is still an ongoing debate on whether AI can produce original work. Literary writing accepts compilations under the Copyright Act of 1957, so the work generated by AI can be considered a compilation and protected by copyright. However, some critics argue that the work produced lacks both competence and judgment. The question of responsibility arises when an AI is considered the author and owner of the produced work. Sec. 51 of the Copyright Act of 1957[19] provides guidelines on who is responsible for infringement or further development of the work. It is essential to note that while AI can produce works that are eligible for copyright protection, it is still unclear who holds responsibility for any infringement or further development of the AI-generated work.

India's Copyright Act of 1957 provides protection for original expression and literary works, including computer software. AI-generated works can be protected by copyright if they meet the eligibility criteria, but the responsibility for any infringement or further development of such works remains an unresolved issue. In the realm of copyright law, the status of artificial intelligence (AI) as a legal entity is yet tobe fully explored. The Copyright Act of 1957 in India specifies that only an 'individual' can breach copyright in a work. As such, any violation committed by an AI would be a complex matter. Since AI has no juridical standing, establishing liability for AI actions would be difficult, making it weak to grant AI authorship

[16] The Copyright Act, 1957, s. 2(o).
[17] The Copyright Act, 1957, s. 13.
[18] *B.N Firos* v. *State of Kerala* (2018) 9 SCC 220.
[19] The Copyright Act, 1957, s. 51.

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rights. Section 17 of the Copyright Act of 1957 establishes that the person who creates the work is the"first owner" of the work. In cases where the work is created on behalf of someone else, ownership rights are conferred to the contractor or individual pursuant to an agreement. However, since AI does not conduct, approve or supervise the task owner by the creator or any other entity, determining the ownership transition in AI-created works is challenging.

Additionally, section 57 grants special rights to authors that may be challenged. These rights, known as moral rights, include the right to paternity, which ensures that the author is associated with the work, and the right to dignity, which allows the author to restrain or seek liability for acts that undermine their honor or prestige. These privileges could be nullified if an AI is deemed the author of a work since the AI may be unable to determine whether an act undermines the honor or prestige of the original work. Moral rights are highly personal and emotional, and they cannot be enforced by AI. The author of a work is entitled to claim royalty, which cannot be revoked according to currentIndian copyright laws. If an AI is considered the author of a book, determining who can determine the royalty becomes a pertinent question, and the AI may determine the value of the royalty based on adequacy. It is challenging to hold AI responsible for growth since AI's responsibility for regulating its work is not established. In cases where AI-created work is defamatory, obscene, or contrary to public confidence, the only recourse is to remove the content from the public domain or disable the AI.

However, despite these limitations in the copyright act of 1957, it is essential to note that AI-generated works may be considered original work if they are created through a collection or arrangement of form and involve competence and judgment. In such cases, the programming and parameters involved in the creation of the work make it original. A counterargument to this is that the codes used in the creation of the work are generated through human interaction with the programming/parameters, and mere coding is not acceptable.

The issue of granting authorship rights to AI is a complex matter that requires further exploration. While AI-generated works may be original, establishing ownership, and determining liability for AI-created works are significant challenges. Additionally, moral rights, such as the right to paternity and dignity, are highly personal and emotional and cannot be enforced by AI. Therefore, a nuanced approach is required to strike a balance between granting AI authorship rights and ensuring accountability for AI-created works. The

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complexities surrounding AI are often compounded by the question of responsibility in cases of violation. Despite legal restrictions, the challenges associated with AI-generated works necessitate the identification of viable solutions. In light of technological advancements and the impressive capabilities of AI, acknowledging its contribution is not without merit. As AI-generated works continue to emerge, it is essential to establish clear guidelines and delineate the boundaries of copyright to maintain a harmonious equilibrium with other creative endeavors.

3. Artificial Intelligence and Data Ownership

AI has revolutionized the way we interact with the world; from the way we work to the way we communicate. AI has also raised important questions about the ownership of data generated by AI systems. In this article, we will explore the concept of data ownership in the context of AI and the challenges and opportunities associated with this complex issue.[20]

Data ownership is a crucial factor in determining who has the right to control and profit from AI-generated outputs. In many cases, AI technology can create intellectual property independently, which can lead to questions about ownership and entitlement. Moreover, as AIsystems become more advanced and capable, the question arises as to whether they should berecognized as entities in their own right and granted certain legal rights.[21]

4. Data Protection Laws in India

In the current digital era, the protection of personal data has become a critical concern. No longer are our private lives restricted to our physical space; they are now shared with the digital world. Every online action, including clicks, searches, and purchases, creates a digital trail that could be accessed by others. Therefore, it is vital that we have laws and regulations in place toprevent the misuse and abuse of our personal information. The purpose of data protection laws, rules, and processes is to restrict access to personal information by unauthorized parties. Government, corporate groups, and agencies can acquireaccess to this information. Personal data refers to any information that can be used to identify an individual.

In India, the Constitution does not explicitly guarantee the right to privacy. However, Article

[20] Rodrigues, Rowena, "Legal and Human Rights Issues of AI: Gaps, Challenges and Vulnerabilities" 4 *Journalof Responsible Technology* 100005 (2020).
[21] Završnik, A., "Criminal justice, artificial intelligence systems, and human rights" 20 ERA Forum 567 (2020).

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19(1)(a)[22] of the Constitution states that freedom of expression and speech, and the right to life and personal liberty are fundamental rights that the Constitution must protect. Additionally, the Supreme Court Constitutional Bench recognized the Right to Privacy as a fundamental right subject to some limitations[23] in the landmark case of *Justice K S Puttaswamy (Retd.) & Anr. v.Union of India and Ors.*[24]

Although data protection and privacy are not expressly addressed under Indian legislation, the most significant pieces of Indian data protection legislation are the IT Act of 2000 and the Indian Contract Act of 1872 (ICA). India is expected to have a codified data protection law inthe near future. The Information Technology Act, 2000 addresses concerns about (civil) compensation payments and (criminal) punishment in cases involving the misuse or violation of personal data. According to Section 43A[25] of the Information Technology Act, 2000, if an organizationis negligent in the implementation and maintenance of reasonable practices of security that cause wrongful loss or unlawful gain, it may be liable to pay the affected person for damages. The aggrieved party can request any amount of compensation in such circumstances. The government has notified the Information Technology (Reasonable Security Practices and Procedures and Sensitive Personal Data and Information) Rules, 2011. These rules govern theprotection of sensitive personal data, such as information on passwords, medical records, and history. Anyone who collects, gets, possesses, stores, processes, or manages information on behalf of the body corporate must adhere to these principles. Failure to do so can result in the entity or anyone acting on its behalf being held liable for compensating the affected person. Section 72A[26] of the IT Act, 2000, makes it a punishable offense to intentionally or knowingly disclose personal information without the express consent of the person concerned and in violation of a lawful contract. The penalty for such an offense is imprisonment for up to threeyears and a fine of up to Rs 5.00,000. However, the government may defy this rule if it is satisfied that it's necessary to do so in theinterest of India's sovereignty or integrity, national security, friendly relations with other countries, public order, or the prevention of any cognizable offense relating to any of the foregoing, or for investigating a suspected crime. This provision allows the government to monitor and

[22] The Constitution of India, art. 19(1)(a).
[23] The Constitution of India, art. 19(2).
[24] *Justice K S Puttaswamy (Retd.) & Anr*. v. *Union of India and Ors*. AIR 2017 SC 4161.
[25] The Information Technology Act, 2000, s. 43A.
[26] The Information Technology Act, 2000, s. 72A

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decrypt any type of data, including personal information, on any computer system anywhere.

It's worth noting that the government may be required to release information if it's deemed necessary in the interest of transparency. Information related to anti-national activities, infringements of the law or statutory duty, and fraud may fall under this category. Protecting personal data is of utmost importance in today's digital age. While India does not have specific legislation on data protection, the IT Act of 2000 and the Indian Contract Act of1872 provide some protections. The government has also issued guidelines to protect sensitivepersonal data. It's essential to strike a balance between protecting personal data and allowing for the free flow of information necessary for businesses and individuals to function in a modern society.

Balancing Innovation and Privacy: Data Protection in the Age of Artificial Intelligence.
Deep neural network models, which are the backbone of current AI technology, pose a threat to data security. This threat is not limited to the vast amount of personal information they collect, but also due to the potential leakage of sensitive information about their training data. Deep neural networks consist of several layers of interconnected neurons that identify patterns in data. Each node in these layers encodes specific information, and the model is trained by analyzing enormous amounts of data. For example, an algorithm for facial recognition can be trained on a large dataset of selfies to improve its accuracy in gender classification.

However, researchers from Cornell University have found that these models can store an excessive amount of data, including certain faces from the training data. Attackers could use this information to identify individuals by examining the deep neural networks used to categorize gender. Although attackers may not be able to locate the original neural network model, they can still determine if an individual is still in training by analyzing similar models that are not identicalto the training data. For instance, an image of a bear male can be used to train an image-basedmodel to identify an individual in training data with a barbed wire. In conclusion, while deep neural network models have revolutionized AI technology, they must be used with caution to ensure data security. To minimize the risk of sensitive data leakage, itis crucial to design and implement robust security measures that protect these models and theirtraining data.

Protecting Privacy in the Era of Artificial Intelligence: Risks and Solutions.
The issue of data privacy in AI projects was not an immediate concern, but it has become

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increasingly important over time. Anonymity alone is not sufficient to safeguard the identities of individuals, and combining data sets from different sources can lead to re-identification and increased identity theft risk. Machine learning relies heavily on data from various sources to make intelligent, well- informed decisions. However, analyzing vast and diverse datasets from multiple sources can increase privacy risks. Malicious actors can more easily connect data points to actual individuals if they have access to a centralized repository of data from various sources. Combining anonymous personal information with non-personal data can unintentionally revealbehavioral patterns and result in confidential data leakage.

Many businesses are hesitant to tackle these issues head-on. Rather than implementing predictive data analytics or large AI projects, they choose to keep their data inactive and unresponsive. According to Deloitte, 56% of AI adopters are concerned about privacy violations, suggesting that fear is the primary obstacle to AI adoption. Third-party vendors may also be reluctant to collaborate and expand due to regulatory risks. As AI technology continues to develop and data collection becomes more prevalent, data privacy issues must be addressed. To minimize the risk of privacy violations, organizations must implement strict security protocols that protect individual identities and prevent unauthorized access to data. Collaboration among businesses and third-party vendors can alsohelp create a more secure and regulated AI environment.

Designing Ethical AI: Strategies for Building Privacy-Friendly Artificial Intelligence.

As AI technology advances, so too do the concerns about privacy and security. Adversarial learning, a branch of AI research, aims to develop AI systems that are less vulnerable to attacks. One such attack involves using malware to access an individual's private information. Researchers are exploring ways to improve the detection of such malware, including making AI models more ambiguous to prevent attackers from predicting their actions. However, even the most sophisticated AI models are not immune to vulnerabilities. Deep neural networks can be tested to enhance their confidentiality. Although available for purchase,these models are extremely vulnerable to even minor changes in the data they process. For example, a simple post-it note with a stop sign can cause an AI model to identify a speed restriction sign. To reduce errors, models can be trained to make minor tweaks and erasure- reduction techniques can be used to expose weaknesses that allow attackers to fool the model. Attackers can also introduce noise into personal data to increase privacy risks. Researchers have shown that facial recognition algorithms can be thwarted by making minute alterations toimages that the naked

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eye would not detect. Therefore, maintaining data confidentiality whilebuilding models is crucial. Federated learning is an intriguing development that utilizes data stored on multiple systems, such as mobile phones, to build a deep neural network instead of acore dataset. Google's Gboard smart keyboard is an example of federated learning that predictsthe next word a user will likely type. The primary advantage of this approach is that the originaldata never leaves the local machine, preserving a degree of confidentiality. However, there are some drawbacks to using local devices, such as incomplete calculations. As AI continues to shape our world, it is essential to prioritize privacy and security. Adversariallearning, testing deep neural networks, and federated learning are just a few ways that AI can help alleviate privacy concerns. By staying ahead of potential risks and vulnerabilities, we canensure that AI remains a powerful tool for good.

5. Conclusion

As AI continues to play an increasingly dominant role in our lives, it is imperative that we have a clear understanding of the legal framework that governs its ownership and use. The legal framework for AI ownership must provide adequate protection to both AI developers and users, while also taking into account the rapid pace of technological advancements in the field of AI. This requires a continuous effort to develop and refine the legal framework for AI, in light of the many challenges posed by this rapidly evolving technology. One of the key takeaways from this article is the importance of a comprehensive legal framework for AI ownership. This framework must take into account the various legalprovisions under IP laws, including patent law and copyright law, and ensure that they provideadequate protection to AI and its owners. Additionally, the framework must also address the implications of data protection laws for AI ownership and use, as data privacy has become an increasingly critical issue in the digital age.

The analysis and insights provided in this artice offer important considerations for policymakers and stakeholders and pave the way for future discussions on this critical issue. As AI continues to play a dominant role in our lives, it is imperative that we have a clear and comprehensive legal framework that governs its ownership and use. The framework must provide adequate protection to both AI developers and users, while also taking into account the rapid pace of technological advancements in the field of AI.

In conclusion, this artice provides a valuable resource for anyone interested in understanding

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the ownership of AI under IP laws. Here it highlights the complex and evolving nature ofAI ownership, and the need for a clear and comprehensive legal framework that provides adequate protection to both AI developers and users. The analysis and insights provided in this article offer important considerations for policymakers and stakeholders and pave the way for future discussions on this critical issue. As AI continues to play a dominant role in our lives, itis imperative that we have a thorough understanding of the legal framework that governs its ownership and use.