
ARTIFICIAL INTELLIGENCE AND INTELLECTUAL PROPERTY

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ABSTRACT

The big changes in Artificial Intelligence, especially with generative AI, are changing the basics of intellectual property law. As AI systems evolve, the creativity in works, inventions, and legal thinking that used to come from humans is now more and more driven by AI. This has made it necessary for human systems to recognize authors, inventors and take responsibility for AI actions. This paper looks closely at how AI and IP intersect, focusing especially on who owns AI-generated content and who is responsible for IP violations or breaking other rules caused by AI. The main challenge with ownership is that AI-created works are protected by copyright. In most major areas like the US, the EU, and India, the law says that copyright applies only to works made by people. For example, the US Copyright Office has always said human creativity is needed. says that the person who organizes the creation of the work can be considered the author of computer-generated content. But this is hard to apply when AI is very autonomous. The issue of liability for AI infringing on intellectual property is quickly becoming one of the most contested areas. This mostly happens in two situations: when copyrighted material is used to train AI models without permission or payment, and when AI outputs accidentally break existing IP rights. High-profile lawsuits have been brought by artists and media companies against generative AI developers. Deciding who is responsible—like the AI developer for the model’s design and training data sourcing, the user for their prompts and commercial use, or even the data providers—is complex, made harder by the “black box” nature of many AI algorithms. Beyond direct IP infringement, there are also larger concerns about liability for AI-generated content. These include the risk of AI making false or defamatory statements, which could lead to legal problems for publishers; product liability issues if AI-designed products cause harm; and data privacy problems when AI models process personal data. Various legal and policy responses are being explored and implemented to help deal with this changing environment. These efforts include revising existing IP frameworks by redefining concepts like “fair use” for AI training data and considering new, strong licensing models for both AI training inputs and outputs. Many people support a human-in-the-loop approach to ensure humans remain in control and follow

current IP rules. At the same time, there is a growing discussion about whether to suggest new laws. This includes the possibility of creating special rights just for AI-generated content, going back to the basic definitions of authorship and inventorship to include AI's role, making it mandatory to disclose AI training data to clarify things, and creating clear models for how to divide liability among all the people involved in AI.

Introduction

The rise and rapid spread of Artificial Intelligence mark a significant technological shift that's set to change the way industries operate, economies function, and how we interact as a society. Beyond just improving efficiency and data analysis, AI, especially with the emergence of generative AI, has ventured into the world of creativity and innovation. Whether it's composing intricate music, writing captivating stories, developing new pharmaceutical drugs, or fine-tuning complex engineering projects, AI is now creating things that were once thought to be the exclusive domain of human creativity. However, this remarkable ability raises important questions about intellectual property law, particularly around issues of ownership, authorship, and accountability.

Intellectual property law, which includes copyright, patents, trademarks, and trade secrets, has always been based on encouraging human creativity and rewarding individual inventors and creators. It's a system built on the idea that creative or inventive efforts can be directly linked to a person. But AI is challenging this idea, stretching the definition of what it means to be an author or inventor when a machine is the main creator of a work or invention. The core concepts of originality in copyright or novelty and inventive step in patent law become unclear when AI systems, trained on extensive datasets, can create, learn, and generate new content without needing specific human guidance for every output.

It will carefully investigate the shifting legal perspectives on ownership issues related to AI-generated intellectual property, with a particular emphasis on the difficulties of obtaining copyright protection for works created by AI and the ongoing discussions about AI as an inventor in patent law. Additionally, it will thoroughly examine the complex liability questions surrounding AI and intellectual property, looking into who is accountable when AI systems infringe on existing IP rights or cause other damages. Lastly, the paper will review the various legal and policy measures being considered and implemented worldwide, along with the inherent challenges of adapting current intellectual property frameworks to the fast-evolving

landscape of artificial intelligence.

AI-generated invention and patentability

Whether AI-generated inventions can be patented is a tricky question, filled with legal and policy challenges. These inventions, like applications or devices created by advanced computers, can tackle complex tasks all on their own. They continuously learn and improve as time goes on. However, courts and patent offices have often turned down applications for these AI-generated creations, with only a few exceptions. This is largely because patent law traditionally assumes that inventors are human beings. Some government agencies and courts have also indicated that inventions developed with AI assistance aren't eligible for patents. The inventorship rights for inventions created by AI have sparked quite a debate in the realm of patent law. There's no straightforward guideline for determining what constitutes an autonomously generated invention by artificial intelligence. As AI systems become more integral to the innovation process, concerns arise about how the patent system will safeguard these AI-generated creations. Traditional patent laws struggle to differentiate between AI as a mere tool and AI as the main creator of inventions. Major companies are eager to invest in AI development, but the ambiguity surrounding the patenting of AI inventions could stifle innovation and economic growth.

Intellectual Property Ownership in AI-Generated Works

The issue of who owns Intellectual Property in works created by Artificial Intelligence is one of the most complex and urgent legal challenges we face today. Traditional IP laws, which were established long before the rise of autonomous machines, are built on the idea of human authorship and inventorship to encourage creativity and innovation. However, as AI technology rapidly evolves and begins to independently produce literature, art, music, and even scientific breakthroughs, it puts these foundational concepts to the test. In India, much like in other parts of the world, current IP laws focus mainly on human creators. Inventorship is strictly reserved for a true and first inventor, who must be a real person. This means that even if an AI system comes up with a groundbreaking technical solution or design, it can't be listed as an inventor on a patent application. In these cases, the human involved, like the AI developer or the user who guided the AI's research, who played a key role in the inventive process or defined the problem being solved, would usually be recognized as the inventor. The heart of the debate over intellectual property ownership for AI-generated works lies in figuring out how much human input is necessary to earn protection. If a human provides specific, detailed, and creatively rich prompts or makes significant choices, arrangements, and modifications to the

AI's output, their claim to authorship becomes much stronger. On the flip side, if the AI operates with a high degree of independence based on broad instructions, determining ownership can get tricky. The concern here is that such works might end up in the public domain, meaning anyone can use them freely since there's no recognized owner. While this could enhance public access, it might also discourage investment in generative AI technologies if the outputs lack commercial protection.

Liability issues in AI and intellectual property

Copyright Infringement

When an AI system generates content, like text, music, or images, that closely resembles an existing copyrighted work, it raises an important question: who is to blame? Is it the developer who created the AI's algorithm? The owner who set up the system? Or the user who gave the prompt or data? The developer might be held responsible for creating a tool that was likely to infringe or for not putting enough safeguards in place. The owner could be responsible for the system's actions, similar to how an employer is liable for an employee's actions. The user might face liability for knowingly using the AI to create infringing content. The challenge is proving intent because the AI itself has no understanding of copyright or infringement.

Patent Infringement

In the world of patents, liability issues come up when an AI-generated invention or process violates an existing patent. Like copyright, the key question is who can be held responsible. Traditionally, patent law holds the "inventor" and the "infringer" accountable.

Liability could fall on the AI's owner or operator for using a system that creates an infringing product. This follows the idea that a company is responsible for its products, whether they were created by a human or a machine. Another view is to hold the AI developer responsible, especially if the AI was designed to mimic or reverse-engineer patented technologies.

Trademark Infringement

They might create logos, product names, or ad copy that are too similar to existing trademarks. This similarity could cause confusion among customers. In this situation, the liability would likely fall on the company or person using the AI for commercial purposes. They are the ones

introducing the confusing mark into the market, and they must ensure their branding is unique. Although the AI may produce the infringing material, the individual or company selling it would be the main target of a lawsuit. The courts would then need to decide if the user acted reasonably in their efforts to avoid infringement or if they were careless.

Legal and policy responses

Ownership of AI-Generated Content

A central issue is who owns the IP rights to works created by an AI.

Copyright: Copyright law generally requires a human author. This leaves a gray area for works where AI played a significant creative role. Some proposed solutions include giving copyright to the AI's creator, the user who prompted the AI, or treating the work as being in the public domain.

Patents: Patent law requires a human inventor. This has led to debates about whether a person who uses an AI to develop an invention can be seen as the sole inventor or if the AI's contribution should disqualify the work from patent protection.

Liability for IP Infringement

Another important area is figuring out who is responsible when an AI system infringes on existing IP.

Infringement by AI Output: If an AI, trained on large datasets, creates content that infringes on a copyrighted work or a patented invention, who takes the blame? Possible parties include the AI developer, the company that owns or runs the AI, or the user who supplied the prompt. Legal and policy discussions are looking into a framework for shared responsibility or placing the burden on the party with the most control over the AI system and its training data.

Data Training Issues: The datasets used to train AI models often include copyrighted material. There's an ongoing debate about whether using such data falls under fair use or copyright infringement. Lawsuits have been filed against AI companies claiming that they used copyrighted works without permission to train their models. Policy discussions are considering new licensing models and rules to address this issue.

Scope of improvement in AI under intellectual property Law

Redefining Authorship and Inventorship

A major area for improvement is redefining the ideas of authorship and inventorship. Current laws assume a human creator, but AI can now create works and help with inventions with little to no human input.

Copyright: Policy needs to go beyond the current approach of denying copyright to AI-generated works. One possible solution is to create a new category of IP rights for these works. Another option could be to give copyright to the user who prompted the AI, the developer of the AI, or even the AI itself through a legal idea of "electronic personhood." This would provide legal clarity and encourage the use of AI in creative fields.

Patents: Legal and policy responses could consider a "mixed inventorship" model, where both a human and an AI receive credit. Alternatively, new legal frameworks could be developed to protect AI-assisted inventions, ensuring that the person who used the AI capabilities can still secure patent rights.

Addressing Training Data and Infringement

The use of copyrighted material to train AI models is a complex issue that needs clear legal guidance.

Fair Use and Licensing: The legal concept of fair use is currently being tested by lawsuits claiming that AI developers are violating copyrights by using large amounts of data without permission.

There is room for improvement in establishing clearer legal guidance on when this use is allowed. Policymakers could also look into new licensing models that would require AI companies to pay creators whose work is used for training. This approach would offer a fairer solution than relying solely on a legal defense.

Liability for Infringement: When an AI system violates an existing patent or copyright, figuring out who is responsible is a major challenge. Improvements are necessary to create a clear legal framework for assigning responsibility. This might involve setting a new standard

of care for AI developers, making them accountable if their AI is trained in a way that leads to infringement, or placing liability on the party that has the most control over the AI output.

Challenges

Liability challenges

If artificial intelligence can create content, we should think about the possibility that it could be held liable in certain cases. Artificial intelligence might face accusations of violating copyright, trade secrets, or data privacy if it analyzes a business's investment plans or customizes big data for marketing by automatically copying details from various sources. Similarly, an AI that produces artwork, poetry, or generates any 3D printing could be charged with trademark or copyright infringement if it uses someone else's intellectual property without permission.

There is a worry that artificial intelligence could create inventions that negatively impact human lives. In situations where users of AI should anticipate the results and outcomes or are responsible for overseeing AI, they could be held liable. However, if AI operates independently, self-learns, and exceeds what can be predicted, then the responsibility or liability might rest with the AI itself Policy challenges

The scientific publications and patent data show the fast growth of artificial intelligence innovation. This trend, along with the use of various artificial intelligence technologies and their future impact on people's daily lives, creates a policy challenge for the government, policymakers, and regulators. These challenges include protecting the personal data of every citizen, developing standards and norms for data sharing, determining how to fund innovation, regulating new artificial intelligence technologies, and keeping people safe from the risks posed by advanced artificial intelligence machines.

Possible solutions to overcome these challenges

Despite the challenges and debates, we need to find a practical way to handle the current situation. The results from artificial intelligence come from either its own capability or its programming. If the function of artificial intelligence is just mechanical and not creative, we might view it as lacking creativity. Current Intellectual Property laws in any country do not recognize artificial intelligence as an owner of Intellectual Property. This means that artificial

intelligence cannot own any creations unless it achieves legal status similar to that of humans. Most countries require that a rights holder must have legal status, which artificial intelligence does not have.

In the near future, artificial intelligence may surpass human intelligence and lead society to new discoveries. To support this, a country's Intellectual Property laws must protect the interests of artificial intelligence technologies. If artificial intelligence can demonstrate true innovation, it could be acknowledged as a potential author and claim copyright like human authors. Additionally, artificial intelligence that learns and improves its capabilities might qualify for patent ownership of the innovations it creates.

Looking at the main goals of Intellectual Property laws, these laws aim to grant exclusive rights to creators so they can benefit from their work. If we extend these rights to artificial intelligence technologies, they would also be able to acknowledge their contributions to such creations and enjoy those privileges. However, valuing innovation that benefits the public is a core aim of Intellectual Property law. Excluding such innovations from receiving rights would contradict the principles of Intellectual Property law. It would be against the law if legislators prioritized creativity and innovation over the well-being of people. There needs to be a reasonable balance between these two aspects

Conclusion

The intersection of AI and IP reveals a big gap between technology and legal standards. Current laws about ownership and liability struggle to address the unique challenges that AI brings. Policymakers are looking into possible solutions. These include changing existing laws, creating new legal categories for AI-generated works, and setting clearer rules for liability and training data. Fixing these issues will be vital for future innovation and for providing a fair system for creators in the age of AI.

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