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Convergence Between Artificial Intelligence And Trademark And Copyright Laws

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Abstract

The progress of artificial intelligence has accelerated and turned upside-down different sectors around creativity, innovation and intellectual property. It becomes even more clear when AI becomes autonomous enough to create art, music, literature and even new inventions that frame mostly traditional control on intellectual property rights faces unprecedented challenges. This dissertation addresses the intersection of AI and IP critically, exploring where generated AI content disrupts established ideas of authorship, ownership and protection in existing legal regimes. In the very beginning, it studies the history of evolution of AI and ITS abilities in contemporary processes of creativity and industry. The research probes into the fundamentals of intellectual property rights and outlines the various kinds of IP, including copyright, patents, trademarks and business secrets and their standard applications. Such research emphasizes the key challenges that AI poses to these legal frameworks such as determining the authorized owner to AI-generated works, use of copyright and patent protection on machine-created content. It also includes risking copyright infringement as AI systems are trained using vast amounts of explicit authorizations. The dissertation also includes live legal conflicts, policy discussions, and global legislative reactions to the impact of AI on IP. It assesses how different legal systems adapt to AI-related questions by milestones and law developments from jurisdictions like the United States, the European Union and possible further territories like India. In addition, ethical issues related to the usage of existing creative works AI, fair use principles and potential exploitation by human creators will be examined. Possible reforms will be scrutinized to deal with those issues, including redefining the scope of intellectual property laws, creating licensing frames specific to AI and hybrid legal models balancing innovations with rights of creators. This perspective focuses on the role of the masses that include the political creators, parties and courts in shaping the future of intellectual property management.

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Keywords: *Artificial Intelligence, Intellectual Property, Copyright, Trade Secrets, Patent Law*

INTRODUCTION

Artificial Intelligence (AI) and the Trademark and Copyright within the crime area is an evolutionary and complex area. The AI, which refers to the systems that can issue tasks that generally require human intelligence, are increasingly integrated into criminal trials. AI transforming legal investigation, contracting contracts, assistance in demands and record automation using faster, more efficient and correct crimes. Predictive analysts promoted by AI can predict the consequences of a case based on the law in the case of the law, while AI controlled tools help in control and design contracts and increase performance in legal exercises. In addition, the upward pressure of AI increases the main challenges in the field of intellectual things, especially in terms of possession and protection. For example, because the structures of AI grow so that they are particularly capable of producing innovations and innovative works, is the questions rise to who has the rights over the following creations: AI Machine, its creator or human agency that the AI possesses?

In the Patent Law, this caused the debates to be approximately if the AI should be taken into account as an inventor. In addition, in the copyright law, the issue of authorship includes the foreground when the AI generates the original works, which leads to the questions if the protection of copyright must practice the content of the AI produced. In addition, the ability to analyze and use existing works brings concerns related to fair use. AI's ability for secret exchange regulation provides the AI, the opposite engineer or replicated proprietary technologies provide demanding situations to traditional security concepts. In addition, the law of AI within the prison area increases moral problems related to duty, bias and justice, especially because AI systems undoubtedly decide to the results that cause forms. Since the legal framework adapts to this new reality, AI's position in DPI states that it raises fundamental debates approximately the future of innovation, possession and regulation of the time.

EVOLUTION OF ARTIFICIAL INTELLIGENCE

The idea on which AI stands has its roots somewhere back in the central part of the last century. He was a British mathematician and logician Alan Turing, who published an important document in 1950 called **"Computing Machinery and Intelligence"** and asked the famous question**: "Can machines think?"** In his contribution, Turing has offered what is now called touring test as a criterion in the form of an "imitation game" to assess to what extent the machine can show

intelligent behavior that corresponds or indistinguishable from the behavior of a human being.

Encyclopedia Britannica Birth of research AI The formal establishment of artificial intelligence as a separate field can be said to have happened during the Dartmouth conference organized by John McCarthy and others in 1956. That was really the start of AI research, where the participants hoped to develop such a machine that will have intelligence like humans. Some really early work included the development of algorithms to perform such tasks as problem solving and symbolic reasoning.

During a period of optimism and setbacks. The 1960s and 1970s were marked by government and research agency funding, which subsequently seemed to throw up growths in areas such as natural language processing and robotics. But results did not materialize within the anticipated time frames. This led to what came to be known as "the winter of AI"- characterized by dwindling funds and matters of reduced interest in AI technology. These retreats have a lot to do with overestimation of the capacities of AI and underestimation of how complex is human cognition and knowledge.

CAPABILITIES OF ARTIFICIAL INTELLIGENCE HAS COME TO FAR WIDE AND VAST IN DIFFERENT DOMAINS:

1. **Machine Learning:** This is an AI technique that makes use of software algorithms that give systems the ability to learn from data and improve performance with experience. Application areas include predictive analytics, image recognition, and speech recognition.
2. **Natural Language Processing:** NLP provides the machines with the ability to comprehend, interpret, and generate human languages. Applications involve the online chatbots, translation services, and sentiment analysis tools.
3. **Computer Vision:** An area of this branch enables machines to interpret the information and process the images from the world. The computer vision application areas are facial recognition, autonomous vehicles, and medical image analysis.
4. **Robotics:** In collaboration with AI, robotics developed autonomous systems for accomplishing complex tasks across sectors from manufacturing to healthcare and exploration.
5. **Reasoning and Problem Solving:** These are higher-level attributes that some AI systems now possess when analyzing large data sets, making decisions, and solving problems, mainly as applied in finance, logistics, and strategic planning.

While AI develops rapidly, ongoing research continues to pursue Artificial General Intelligence and the social, ethical, and technological implications of systems that are becoming more autonomous.

INTELLECTUAL PROPERTY RIGHTS (IPR)

Intellectual Property Rights (IPR) provide legal protection to writers and inventors so that they may secure their artistic or inventive original works like drawings and symbols. With that, individuals

and organizations gain the right to control how their creations will be used for profit from all the labor and investment made.

FORMS OF IPR can be generally divided into four, i.e. patents, copyrights, trademarks, and trade secrets. The different forms serve different purposes and applications.

1. **Patents**: Patents provide the inventor with exclusive rights to the invention and protect him from unauthorized making, using, selling, or distributing the patented invention without permission. For an invention to be patentable, it must be new, non-obvious, and useful. Entirely

Traditional Applications:

- Technological Innovations: These include processes, machines, and compositions of matter that are generally thought to be new and useful. To give an example, we can quote the electric light bulb patented by Thomas Edison.
- Pharmaceuticals: Patent-making by pharmaceutical companies is the way to create new patents on patented drug formulations that allow these companies to recover research and development costs.
- Manufacturing Processes: There are so many new production processes, line assembly for instance, that attract patent coverage, which result in competitive advantage against an opponent.

2. **Copyrights**: Copyrights Broadly signifying exclusive rights to copy, distribute, publicly perform, or display one's own creative work, copyright would include everything from literary works and music or other artistic creations. Copyright attaches to the work automatically upon creation, so it does not require registration for its validity although registration confers additional legal advantages.

Traditional Applications:

- Literature: This restrains giving unauthorized reproduction of texts or such pieces like books or poems.
- Music and Art: Using a person's song or painting would not be possible for musicians and artists without permission.
- Film and Software: Filmmaker and software developer rights are protectively bent from copying or distributing their films or software.

3. **Trademarks**: All signs, symbols, or expressions that are distinguishable from others should be called trademarks specific for the products or services of an identified source. The trademarks provide the identity of a brand by reducing consumer confusion. **Traditional Applications:**

- Brand Logos: Logos, such as the Nike "swoosh," or the apple of Apple are a well-known trademark icon that would keep alive the brand identity.
- Product Names: Trademark includes legal protection against imitation and misrepresentation, such as in the case of a product name like "Coca-Cola."

- Slogans: These catchy phrases such as **"I'm lovin' it" by McDonald's** keep a firm in association with the brand.

4. **Trade Secrets**: Trade Secrets include secret information of the business giving it the competitive advantage such as formulas, practices, processes, designs, or compilations of information. Transmission safeguards trade secrets without registration but rather depends on sensible measures taken to protect the secrecy. [1]

Traditional Applications:

- Formulae and Recipes: The recipe of Coca-Cola is one of the simplest yet beautiful examples of a trade secret which has maintained a unique market positioning through confidentiality.
- Manufacturing Processes: Competitive advantage proprietary methods are treated as trade secrets.
- Business Strategies: Marketing plans, customer lists, and other critical business information must also be protected.

CONVERGENCE OF AI AND DIFFERENT TYPES OF IPR

The convergence of Artificial Intelligence (AI) and Intellectual Property (IP) is really and truly reshaping the old dimensions of IP-the major challenge as well as opportunity. With the phenomenal advancements AI technology has reached, it leads towards an aspect that has already included more and more of the intellectual property laws and introduces a new dimension with respect to creation and ownership and even infringement.

1. **Authorship and Ownership of AI-Created Works**

Traditionally, the IP laws have taken a human-centered approach in granting rights to human authors or inventors while the developments in AI-generated or AI-assisted content have raised the rights dilemmas of works produced autonomously by AI systems. Whether to vest such invention with the developer of the AI system or the users of an AI system or leave it unprotected on account of being non-human authorship is uncertain across the myriad legal systems of the world. Most legal experts think that AI-generated works, wherein the human intervention did not enter significantly, should not be protected under any copyright-a view which is in fact totally in the loop with current propositions reiterating basis of human creativity as the whole edifice on which building rests IP rights.

2. **Copyright Infringement and Fair Use in AI Training**

Unless society develops "creative" and very much improved AI systems that can be increasingly trained up, AI training involves training on millions upon millions of datasets that serve as training

[1] Jones Day, *Trade Secrets and Generative AI: Protective Measures In an Evolving Technological Landscape* (2023).

materials and are essentially the core components marked under copyright. Issues arise about infringement or take the shape of incidents through which the restricted works are used without the express permission of the author, such as lawsuits that happen from time to time in cases where artists have brought the AI developer to court over the unauthorized use of their created works in training datasets. [2]For instance, over 3,000 artists raising a huge banner regarding the auction by Christie's of AI-generated art show what their issues are against taking up their works without their permission.

Operationally, these examine indulgence towards a dogma that posits contradiction between promoting the innovation in AI and the rights of the creator, further making the case for the clear-cut guidelines on these elements of fair use and licensing in the environment of training by AI.

3. Patentability of AI-Powered Innovations

While AI can now also invent, it is proving to stir up much debate in the field about whether inventions produced by AI can be patented or not. Interestingly, many traditional patent laws actually require a human inventor, thus posing several challenges where an invention came up with its independent mechanism through an AI system. This raises the question of whether it is ethical to submit a patent application for that invention and, if so, whom to name as inventor on the patent. The lack of appropriate legal frameworks in terms of AI inventorship is hardly going to benefit the protection or commercialization of AI innovations. Much need modification in legislation to accommodate the changes.

4. Trade Secrets and Data Protection

Proprietary algorithms and data are protected as trade secrets by most companies to the same extent that they build artificial intelligence. Postgraduate collaborative research projects, however, increase the risk of misappropriation and unauthorized disclosure because of the multidisciplinary nature of AI.

Strong legal protections need to be enforced to secure trade secret rights, and hence the competitive edge endowed by proprietary AI models and datasets could be well guarded. Furthermore, since AI processes enormous amounts of data, concerns of data privacy and ownership will need regulations that strike the balance between innovation and individual rights.[3]

5. Legislative and Policy Responses

To respond to the problems that AI creates under existing IP schemes, some policymakers have

[2] Mohamad Albakjaji, *The Dilemma of the Copyrights of Artificial Intelligence* (2024).
[3]Iveta Petrova, Data Privacy and AI: Securing Intellectual Property Rights in the Modern Digital Landscape

legislative reforms under considerations. For example, what now receives criticism as the AI Act generates such implied loopholes by which creators might be subjected to exploitation, as the well-grounded copyright provisions against unauthorized use of creative for AI training are lacking in that act.

A clear picture also emerges from the United States, where D.C. lawsuits have been levied against AI developers on misuse of copyrighted material; for example, the lawsuit against OpenAI by The Intercept. [4]

Such developments signal growing recognition of the need to adjust IP laws to address the challenges posed by AI technologies to those laws.

In conclusion, the application of AI in itself as a means in creative and innovative processes has become a tangible threat to established paradigms concerning IP requiring a serious shake-up in concepts of authorship, ownership, and infringement. The emerging picture of AI called for flexible realignment of legal frameworks to keep pace with the development of rights-critical human creators and to encourage the innovation of technology into this field.

Development of Artificial Intelligence

Artificial intelligence as a field began at the age of 50 when a mathematician and computer scientist Alan Turing suggested the question: "Can machines think?" His famous 1950 paper, computing machines and intelligence, introduced the concept of a machine that could simulate human intelligence through a "touring test"[5]. Turing's vision AI has set the ground for years of progress and field failures.

In decades after Turing's work AI, it has seen slow but stable progress and initially focused on symbolic thinking and rules -based systems. The 1950s and 1960s meant the first main attempts to create machines that could solve problems by imitating human reasoning. In the 1970s, however, AI research faced a significant slowdown, known as "Winter AI", due to limited computing power and high costs.

The 1980s have brought a restored interest in AI, powered by progress in machine learning and the development of professional systems-AI programs designed to simulate the decision-making skills of human experts. In the 90 and 2000. These approaches allowed computers to process large data sets, learn from patterns and predict.

Today, AI is integrated into various industries, from software for facial recognition and voice

[4] P G Picht and F Thouvenin, 'AI and IP: Theory to Policy and Back Again – Policy and Research Recommendations at the Intersection of Artificial Intelligence and Intellectual Property' (2023) 54(6) *IIC* 916.

[5] A M Turing, 'Computing Machinery and Intelligence' (1950) 59(236) *Mind* 433.

assistants to more advanced systems capable of creating music, visual art and written content. As the AI evolves, the Act on Mental Property is increasingly affected, in particular as regards the ownership and rights of creations generated by AI systems.

Legal Foundation on Trademark and Copyright Laws

The trademarks and copyrights are two basic forms of intellectual property that protect the creations of the human mind. Both play key roles in the protection of the rights of the creators and ensuring fair competition on the market.

Trademarks

The trademark is a symbol, word or other identifier used to distinguish goods or services from others. Protection of trademarks is essential for businesses to protect their brand's identity, prevent counterfeiting and building consumer confidence. The trademarks can be words, logos, slogans or even sounds and colors that represent the brand. The concept of trademark protection has existed for centuries, with the first modern trademark law established in the UK in 1875. In the United States, the Lanham Act of 1946 a formally recognized trademark Act, which lays down the legal framework for the registration and protection of trademarks.

Copyrights

Copyright, on the other hand, protects original authorship such as literature, art, music and software. Copyright Law grants the creators of the original work exclusive rights to reproduction, distribution and displaying their work. The history of the Copyright Act dates back to the status of Anna in 1710, which granted the authors in Britain exclusive rights to their work for a limited period of time. The Copyright Act has evolved over time, especially with the growth of digital content to deal with problems such as fair use and rights of digital creators.

The trademarks and copyrights are necessary to maintain the balance between the encouragement of innovation and ensuring that the creators are properly compensated for their work. However, as AI systems are becoming increasingly capable of creating work independently, the application of these laws has become more complex.[6]

AI and Trademarks – The Convergence

The convergence of AI and trademarks has become a significant area of interest, as AI technology is increasingly involved in the creation and recovery of trademarks. One of the key areas where AI

[6] C Sharma and R Sony, 'AI-Generated Inventions and IPR Policy During the COVID-19 Pandemic' (2020) 2(2) *Legal Issues in the Digital Age* 63.

affects trademarks is their creation.

AI systems are now used to generate brands, logos and other brand identifiers. AI can analyze existing trademarks, detect patterns and by machine learning to design new unique logos or names that do not violate existing brands. For example, AI controlled tools are used to create logs based on market research data, customer preferences and trends[7]. These logos and names generated by AI question the traditional understanding of authorship in the trademark law, as it raises the question of who owns a trademark created by the AI system. Should it be held by a programmer, artificial intelligence itself or a company that uses AI?

In addition to creating, AI is also used to monitor and protect the trademarks. AI driven tools can scan the Internet, databases and social media platforms to identify potential trademark violations. These tools can analyze millions of real -time data points, which makes it easier to detect counterfeit goods and unauthorized use of their trademarks. AI has become an essential tool for removal of trademarks and offers companies proactive access to the protection of their intellectual property.

Copyrights and AI - The Convergence

Given that AI is becoming more able to create original works of art, music and literature, questions about the ownership of copyright are becoming more complex. The traditional copyright Act is clear that the creator of the work has rights to him, but it has always been assumed that these creators are human. But the guns generated by AI do not have human creators, which represents a challenge for traditional copyright frameworks.

In 2018, the US Copyright Authority rejected the application for copyright for work created by the AI "Treativity Machine" system and claimed that the protection of copyright requires a human author[8]. This decision was in accordance with existing legal interpretations that require human authorship for copyright protection. However, it caused debates on whether the works generated by AI should be eligible for copyright protection and whether the law should adapt to the unique nature of AI creations.

Some argue that AI generated works should be eligible for copyright, and the rights will potentially go to the AI developer or individuals who used the AI tool to create work. Others suggest that a new category of "machine -created" works with their own legal protection should be introduced. In the future, the legal reforms may need the complexity of AI authorship in copyright.

Real World Applications of AI and Trademarks and Copyright

[7] IBM, *AI-Powered Trademark Monitoring* (2020).
[8] US Copyright Office, *Copyright Registration and AI-Generated Works* (2018).

In order to better understand how AI interacts with trademarks and copyrights, we can explore several case studies in the real world.

In 2019, the AI "dabus" system created a beverage container. The patent office in several countries, including the US and Great Britain, originally rejected the application because the creator was not man[9]. This case raised questions about whether inhumane entities should be able to have intellectual property rights, especially when AI plays a decisive role in the process of creating.

Similarly, the AI -generated music caused a significant discussion in copyright. In 2016, an AI called AIVA (virtual artificial artificial artificial intelligence artist) was used to compose classical music. The music composed AIVA was registered at the French Copyright Office in 2018, which meant one of the first cases of music generated by AI, which was provided with legal protection. This case emphasizes the ongoing debate on the ownership of works generated by AI and whether AI should be credited by authorship.

In the world trademarks are used by companies such as Microsoft and IBM AI to protect brand identity. AI systems can automatically detect infringement online, indicate unauthorized use of log, trademarks and other brands. These technologies enable businesses to quickly act against counterfeiting and trademark violations, helping them maintain the reputation and market share of their brand.

Overview on Historical Development

The historical development of AI, trademarks and copyrights reveals a complex and evolving relationship. AI significantly influenced both the creation and promotion of trademarks and represents new challenges for copyright. Since AI systems are more able to produce creative work independently, issues concerning ownership and authorship in intellectual property law are becoming increasingly urgent.

While the current trademarks and copyright laws primarily focus on human creators, the rapid development of AI technologies may require new legal frameworks. These laws will have to explain the unique challenges that are generated by AI and ensure that the rights of the creators are respected in supporting innovation at digital age. Given that the AI will continue the procedure, the connection between AI and the right of intellectual property will undoubtedly be an even more important area of legal studies and practice.

[9] *WIPO, AI and IP: Who Owns the Rights? (2020).*

Relationship between AI and Trademark and Copyright

The rapid progress of artificial intelligence (AI) has brought significant challenges and opportunities in the field of intellectual property rights (IP), especially as regards the protection of copyright and trademarks. Given that AI technology proceeds and begins to create original works such as art, music and logos, traditional frameworks of authorship and ownership are questioned. This document examines how AI intersects with copyright and trademarks and emphasizes legal issues such as authorship, ownership, violations and need for reforms in IP right to adapt to this new reality. Through the analysis of current legal frameworks, case studies and scientific perspectives, this document deals with the developing relationship between AI and IP and proposes potential legal reforms for the future. The rapid development and application of artificial intelligence technologies (AI) began to transform many sectors, including creative industries that traditionally governed by intellectual property laws (IP). AI systems, such as machine learning algorithms and deep neural networks, can now create content that has previously created human authors or creators. This includes generating music, art, literature and even log for branding. Such advances have evoked complex legal issues concerning the nature of ownership and authorship of works generated by machines.[10]

The relationship between AI and the right of intellectual property (IP), namely the copyright and the trademark law, is in the forefront of the ongoing debates on how to manage these emerging problems. The Copyright Act traditionally protects the original authorship, while the trademark Act protects the characteristic signs used to identify and distinguish goods or services. The arrival of the AI generated works produces traditional definitions of authorship and ownership, leading to challenges to reform in IP legislation to suit the growing influence of AI. This dissertation examines how AI interacts with copyright and trademarks Act, analyzes legal and ethical consequences, calls in promoting existing laws and the need for legal reform in this rapidly developing area.

Artificial intelligence concerns machines and systems that show cognitive functions similar to human beings, including learning, solving problems, reasoning and perception. AI technologies, such as Machine Learning (ML) and Deep Learning (DL), allow systems to learn from data and gradually improve their performance without being explicitly programmed. [11]The AI role in the creative process has expanded significantly in recent years. AI driven machines are now capable of generating original works that are indistinguishable from those created by people such as AI - generated images, music and even product designs. For example, AI tools such as OpenI's GPT-3 can produce written content, while deep learning systems such as Dall-E can generate artwork from

[10] Arpeeta Mohanty, *Artificial Intelligence in Intellectual Property Protection: Application of Deep Learning Model* (2024).

text descriptions. Copyright Law protects the original authorship fixed in a tangible medium of expression. This includes literary works, music, art and other creative expressions. In most countries, copyright protection is provided automatically after the work is created and the rights are usually held by the author or creator.

[12]Because the works generated by AI begin to enter into creative domains, they question the traditional understanding of authorship and ownership in the Act on Copyright Rights and Trademarks.

Impact of AI in Copyright Law

The Copyright Act has long relied on the concept of authorship and demanded that the work be created by a human author to be eligible for copyright protection. However, when AI generates the work independently, this principle becomes problematic. For example, if AI creates an image or piece of music, work can be protected by copyright, and if so, who holds the rights? AI systems are only as good as the data on which they are trained, and distorted data can lead to AI -generated works that maintain social unevenness or stereotypes. Ethical reflections on the justice of the AI -generated content are a permanent problem, especially if such content is used in trademarks or public ads.[13]

In 2018, the Office for Copyright of the United States refused to grant copyright protection for work created by the AI system and stated that work must have a human author (US author's office, 2018). This decision emphasizes the struggle of traditional copyright laws to adapt to the works of generated AI.

There are also ethical concerns about the displacement of human creators. If AI can generate art, music and logos faster and cheaper than human designers, what is the impact on employment in creative sectors? The ethical consequences of AI replacing the human creators are deep and future politicians will have to deal with the balance between automation and human work.

Problems with authorship and ownership

The main problem surrounding the work generated by AI is the question of authorship. Under the current copyright law, only people can be recognized as authors. However, AI systems can create work autonomously and raise questions about who should keep the copyright. Should it be a developer AI, a user who instructs AI or the AI system itself? Ethical issues concerning the works of generated AI are complex. Given that AI systems are increasingly creating original content, the question of who deserves recognition for this work is becoming a central point. Is the creator of AI,

[12] Mohamad Albakjaji, (2024) The Dilemma of the Copyrights of Artificial Intelligence
[13] Soni, T. (2024). Impact of AI on IPR Framework. *SSRN Electronic Journal*.

user AI or the machine authorized to assign?

One potential solutions could be the recognition of AI system as a tool used by a human creator. In this case, the human creator or operator would retain ownership, similar to the photographer owns the rights to the photo by a pointed camera. Some scholars alternatively argue about creating a new IP rights category specifically generated by AI, which could recognize both artificial intelligence creators and users as common owners (Gervais, 2020).[14]

Impact of AI in Trademark Law

Trademarks generated by AI

AI also created its mark in the field of trademarks. Many companies now use AI to create logos, brands and other distinguishing brands. These AI systems can analyze existing trademarks, identify trends and create new designs that fit into the required brand criteria. For example, some companies turned to AI to create logos in a fraction of a time when a human designer would require it. Current laws are not adequately equipped for the processing of works generated by AI. Similarly, the trademark law does not explicitly deal with trademarks generated by AI. Since AI is constantly evolving, the need for legal reforms that adapt to the new reality of AI involvement in creativity. [15]Legal scholars have proposed various reforms to address these challenges.

The main problem is whether the logos and names generated by AI trademark can be generated. The trademark Act requires the trademark to be characteristic and used in the store, but if AI creates a trademark without entering the people, it becomes unclear who owns the rights to such a stamp.

Breach of trademark and monitoring AI

AI tools are increasingly used to monitor and recover the rights of trademarks. AI systems can scan platforms on the Internet and social media to detect unauthorized use of trademarks and help companies identify and solve real -time violation problems. This use AI provides a more efficient and automated solution of the growing challenge of protective mark protection at digital age when enforcing IP. Some advocate the creation of new categories of trademark rights that would specifically apply to AI -generated works. Others suggest that work on AI should be treated as renting work, with a developer or AI operator to be marked as a holder of rights.

Ownership of trademarks generated by AI

As with copyright, the issue of ownership arises when AI generates a trademark. Who should have the rights to the AI generated logo? Should it be a company that has developed a system AI, a

[14] D Gervais, 'Artificial Intelligence and Copyright: The Challenges of Protecting AI-Generated Works' (2020) 15(7) *Journal of Intellectual Property Law & Practice* 433.

[15] G I Zekos, 'AI and IPRs' in *Springer eBooks* (2021) 461.

user who made AI to create a logo or AI itself? Like copyright, there may be a need for legal reforms that clarify ownership and ensure that the AI -generated trademarks are reasonably protected under IP. Different countries are approaching AI and IP differently. While some jurisdictions, like the European Union, are beginning to explore copyright reforms, others such as the United States have been slower to adapt. [16]International cooperation will be essential in the development of the cohesive framework for AI and IP.

The relationship between AI and the right of mental property is rapidly evolving and representing both challenges and opportunities. Since AI continues to play a larger role in the creation of content, traditional concepts of authorship and ownership must be re -evaluated. Legal reforms will be necessary to ensure that the laws on copyright and trademarks are reasonably dealt with by the new reality of the works generated by the AI, thus balancing the interests of human creators with the progress of technology. It is essential that lawmakers, lawyers and IP experts cooperate to create laws that support innovations while providing appropriate protection to creators.

Ethical Considerations of AI and Trademark and Copyright

Artificial intelligence (AI) has become an integral part of modern society and influenced the industry from health care to entertainment. However, as AI systems become more sophisticated, ethical and legal challenges arise, especially in intellectual property, trademarks and copyright. This document examines ethical and legal considerations around AI focusing on its consequences for trademark laws and copyrights.

Participation and justice

AI systems are trained on large data sets and distortion in these data sets can lead to unfair or discriminatory results. The ethical development of AI requires the implementation of righteous and impartial algorithms to ensure fair treatment across different populations. AI bias can occur when hiring algorithms, credit scoring models, facial recognition software and law enforcement. Developers must actively audit AI and ensure that discriminatory formulas are identified and corrected to avoid unfair results. AI applications in the area of law enforcement, health and financial services must be transparent in order to gain public confidence. If AI is used to decide on life change, such as determining credit scores or diagnosis of diseases, ethical concerns about liability will arise. Developers and politicians must ensure that the AI decision -making processes are understandable and exempt from hidden distortion.

Transparency and responsibility

AI decision -making processes are often opaque and increase concerns about transparency. Users

[16] US Copyright Office, *Copyright and the Law of Works Created by Artificial Intelligence* (2018).

and parties should have access to explain the decisions of the generated AI to ensure responsibility. Developers and companies must be responsible for the actions and consequences of AI -controlled technologies. Regulatory frames should order AI developers to provide explained AI (XAI) models that allow users to understand how they decide.[17]

Privacy and Data Protection

AI systems rely on a huge amount of data and increase concerns about the protection of the user's personal data. The ethical use of AI requires strict data protection measures, including compliance with regulations such as the General Data Protection Regulation (GDPR) and ensuring informed data of data subjects. Companies must implement robust data anonymization techniques and secure storage mechanisms to avoid unauthorized access and violation of data. Ai-fired advertisement uses personal data to target consumers with accuracy. Although it increases marketing efficiency, it also raises ethical concerns about manipulation. Consumers must have the right to understand and control how AI collects and uses its advertising data. AI ethical instructions should order transparency in marketing practices controlled by AI.

Legal Considerations of AI and Trademark and Copyright

AI and trademarks

Companies began to use AI to monitor and identify potential breach of trademarks. However, automated detection systems can also indicate non -Russian content, leading to disputes over false positives and role AI in legal enforcement.

- AI represents opportunities and risks for trademark owners: Automated detection of trademark violation: AI can help with more efficient identification of trademark violations than traditional methods.
- AI -generated trademarks: If the AI system creates a logo or mark, determining the authorized owner becomes legally complex.
- Deepfakes and brand reputation: Deepfakes generated by AI can damage the brand's reputation and require stronger legal measures against the fraudulent content of the generated AI.
- Use AI in counterfeiting: AI can be used to create counterfeit trademarks and deception of consumers, which requires stronger protection AI protection.

Act on AI and copyright

Copyright Law protects the original authorship, but AI questioning traditional ideas about authorship and ownership.

[17] Iveta Petrova, Data Privacy and AI: Securing Intellectual Property Rights in the Modern Digital Landscape

Work generated by AI: According to current laws, copyright rights are awarded to human creators. However, if AI generates art or music, ownership rights remain ambiguous.

Fair use and training AI: AI models often train on copyright content and increase concerns about fair use. Legal frameworks must look at whether AI is a violation of copyright.[18]

Moral Rights: The work generated by AI may lack moral and ethical considerations attributed to the content created by a person, which requires legal reforms.

Authenticity of content and plagiarism: The content of the generated AI can blur lines between original and derivative work, which requires stronger content authentication mechanisms.

Role AI in the workplace: Creating jobs or relocation of work?

One of the most urgent ethical dilemmas AI is its impact on employment. The effectiveness of AI in automating creative and analytical tasks led to concern about the displacement of work. The ethical deployment of AI should prefer human and AI cooperation rather than complete automation. Governments and corporations must cooperate on creating policies that support workers influenced by AI changes in their industries.

Police trademarks driven by AI: double sword

Companies are increasingly relying on AI to monitor and recover trademarks and scan a huge amount of online data to identify violations. However, automated enforcement mechanisms can lead to incorrect demands on legitimate enterprises. Legal frameworks must balance the effectiveness of AI in the field of police trademark with warranty against incorrect demands.[19]

Copyright calls in the era of AI

1. Copyright Act and works generated by AI: Traditional copyright laws are based on the concept of human authorship. When AI autonomously generates music, articles or work of art, it challenges existing copyright definitions. Should copyright belong to AI developer, a user who commits orders or no one at all? Courts and legislators must set clear regulations to deal with these uncertainties.

   In recent years, art works generated by AI have been sold for significant amounts at auctions. However, the lack of human authorship raises questions about copyright eligibility. The courts and politicians are struggling to see if the content generated by AI should receive the same protection as works created by man. Some jurisdictions rejected the copyrights on copyright works with the necessity of human authorship.
2. AI and unauthorized use of copyright: AI relies on extensive data sets for training, often using works protected by copyright without permission. Whether AI use of copyright materials is a fair

[18] Mohamad Albakjaji, (2024) The Dilemma of the Copyrights of Artificial Intelligence

[19] Picht, P. G., & Thouvenin, F. (2023). AI and IP: Theory to Policy and Back Again – Policy and Research Recommendations at the Intersection of Artificial Intelligence and Intellectual Property.

use remains a questionable legal problem. The regulatory frameworks must look at whether the AI training data should require licensing agreements to compensate the original creators.

3. Licensing and Content created by AI-created: AI generated works blurring a line of authorship and complicating the traditional licensing structure. The development of new licensing models that fairly distribute the income between AI developers, users and original content creators is essential. These models must balance innovations with the rights of the Creators and ensure that the works generated by AI do not satisfy human intellectual property.
4. Plagiarism and authenticity in the contents created: The ability to create realistic content similar to a person raises concerns about plagiarism and authenticity of content. If AI unknowingly replicates the current work protected by copyright, who is responsible? Implementation of digital tools for watermark and authentication can help identify the content of the generated AI, reducing the risk of plagiarism.

The future of AI regulation and intellectual property rights

Need for intellectual ownership laws specific to AI: Existing intellectual property laws were not designed with regard to AI. Governments must establish law specific to AI to deal with the complexity of copyright and trademarks resulting from the works generated by AI. These laws should clarify the role of AI in the ownership and responsibility of intellectual property.

International legal harmonization for AI regulation: AI is a global phenomenon, yet the laws of intellectual property differ between jurisdictions. AI international regulations can ensure the consistency of AI administration and prevent legal gaps that can be used in different regions. The united approach to AI law would support justice and responsibility across the borders.

Laws on AI and Intellectual Property Rights

AI and Copyright Laws

Copyright Law provides exclusive rights to the creators of the original works, including literary, artistic, music and audiovisual creations. However, the content generated by AI challenges the traditional idea of human authorship. Copyright provides exclusive rights to the creators of original works such as literature, music and visual art. The creation of the content of the generated AI challenges traditional laws on copyright, which leads to ongoing legal debates.

Requirement for human authorship: Courts and legislators continue to discuss whether the works created by AI-are made according to the existing copyright laws are considered “original”.

Righteous use and training AI: AI models are trained on a huge amount of copyright protected, raising concerns about unauthorized use and doctrines of fair use.

Moral rights in the works generated by AI: Some jurisdictions recognize moral rights (such as the right to assign), which complicates the ownership of the content of the generated AI.

Data mining and copyright material: AI models are trained on vast data sets, often including copyright works, leading to fear of fair use.

Digital rights management (DRM) and AI: As the AI -generated content should be protected according to existing DRM frames, it remains unresolved.

Common authorship: Some legal systems consider human cooperation to be common authorship, but the definitions differ.

International Framework

Berne Convention (1886): The Berne Convention determines automatic copyright protection for the authors without required to register formal registration. It orders to work, is original and attributed to the human author.

WIPO Copyright (1996) Copyright Agreement: This Agreement extends the protection of copyrights to the digital environment and ensures protection against unauthorized reproduction and distribution of digital content.

TRIPS Agreement (1994): Agreement on Aspects of Intellectual Property Rights (Trip) related to Trade (Trip) sets the minimum global copyright standards for which all WTO members must observe.

AI and Copyright in National Laws

The United States: The US Copyright Authority has decided that works created exclusively by AI without human intervention are not eligible for copyright protection. In recent cases, the artistic works generated by AI denied copyright because there was no author.

EU Union: The EU Directive on Copyright on the Digital Single Market (2019) introduces the provisions for the content of AI generated, places responsibility for digital platforms and ensures fair compensation for the creators.

Great Britain: The British Copyright Act allows you to work with the copyright AI-assisted if there is a human creator who meaningfully contributes to the final ascent.

Japan: It recognizes works by means of Ai-assisted, but in determining copyright eligibility, it applies human intervention as a key factor.

India: Currently, the Indian Copyright Act does not explicitly address the work of generated AI, leading to legal uncertainty.

AI and trademarks

The law of trademarks protects brand identifiers such as names, logos, slogans and significant proposals. The role of AI in the creation of brand and marketing represents new legal challenges.

Logos and brands generated by AI: with AI tools that are able to design the logos and names of products, there are legal issues concerning ownership and originality.

Detection of trademark violation: AI -powered systems help detect and prevent counterfeiting, but automated measures to enforce the right must be in accordance with the requirements of proper processes.

Deep fake technology and brand identity: AI generated advertising and deep fake confirmation are risks for brand reputation and consumer protection laws.

AI and Trademark National Laws

The United States (Lanham Act): It is governed by trademarks, service stamps and unfair competition and ensure protection against confusion and brand violation.

The European Union (EUTMR): It lays down rules for registration and recovery of trademarks across EU Member States.

The Chinese trademark Act: China has a strict system of first file, leading to challenges with trademarks generated by AI and potential registrations of bad faith.

Trends and Legal Reforms

Automated brand creation: AI tools can generate unique brands and logos and raise questions about authorship and protection. Detection of trademark violation: AI controlled systems help identify counterfeit goods and unauthorized use of brand. Deepfake abuse and trademarks: Deepfakes generated by AI represent the risks for brand reputation and consumer protection. The trademarks protect brand identities and provide exclusive rights over names, logos and slogans. Given that AI is increasingly involved in brand creation, new legal problems arise.

Artificial intelligence (AI) revolutionizes the industrial industry by automating processes, increasing decision -making and even creating the original content. However, this rapid progress raises complex legal issues concerning intellectual property (IP), specifically in the field of trademark and copyright. The legal frameworks governing these areas develop to suit the cannons of generated AI, automated brand creation and the role of AI in patent innovations. This document examines international and national laws, regulations and provisions concerning AI, trademarks and copyrights and emphasizes key challenges and emerging trends.

The intersection of AI, trademarks and copyrights is a continued legal challenge. As AI technology continues to evolve, lawmakers must adapt the framework of intellectual property to balance innovations, ownership rights and fair competition. The solution to these questions ensures legal clarity and promotes the responsible use of AI in creative and commercial applications.[20]

[20] Jones Day, (2023), Trade Secrets and Generative AI: Protective Measures In an Evolving Technological Landscape

Courts and AI-Generated Works

AI-generated works challenge traditional trademark law, which is based on human distinctiveness. Judges must determine whether AI-generated content qualifies for protection and who holds the rights.

Notable Judicial Rulings

- U.S. Copyright Office Denial of AI trademark (2023): The U.S. court ruled that works created solely by AI are not eligible for trademark, reaffirming the human authorship requirement.
- UK Court on AI-Assisted Works: The UK judiciary has recognized AI-assisted creations if human input is substantial enough to meet originality criteria.
- European Court of Justice on trademark Ownership: EU courts have ruled that AI-produced content cannot be granted trademark unless a human has exercised creative control.

Judicial Challenges in AI Trademark Cases

- Interpretation of "Originality": Judges must decide if AI-generated works meet the legal threshold of originality required for copyright.
- Ownership Disputes: Courts are faced with conflicts regarding whether AI developers, users, or businesses should own AI-generated content.
- Fair Use and AI Training: Judges must balance fair use rights when copyrighted material is used to train AI models.

Courts Addressing AI-Generated Trademarks

Trademarks safeguard brand identity, but AI's ability to generate unique brand elements raises legal concerns. Judges determine whether AI-created trademarks can be registered and protected.

Landmark Cases on AI and Trademarks

- USPTO and AI-Generated Logos: The U.S. Patent and Trademark Office has ruled that AI-created logos require human input to be trademarked.
- European Courts on Automated Brand Creation: EU courts have examined whether AI-generated trademarks meet distinctiveness criteria.
- China's First AI Trademark Case: The Chinese judiciary ruled on an AI-created brand's eligibility for legal protection under first-to-file laws.

Judicial Interpretation of AI Trademark Infringement

- AI-Powered Brand Confusion: Courts assess whether AI-generated brand names or logos cause consumer confusion.

- Deepfake Litigation and Brand Misuse: Judges address legal actions involving AI-created deepfake advertisements harming brand reputation.
- Automated Trademark Enforcement: Courts evaluate the role of AI in identifying trademark violations and whether automated enforcement meets due process requirements.

AI and Inventorship in Court Decisions

Patent law grants protection to inventors, but judicial interpretations of AI-generated innovations remain complex.

Key Judicial Rulings

- Thaler v. USPTO (2020, U.S.): The court ruled that AI cannot be named as an inventor on patent applications.
- EPO's AI Patent Decision: The European Patent Office upheld that patent applications require human inventors.
- China's AI Patent Rulings: Chinese courts have reviewed AI-assisted patent applications, focusing on human oversight.

Judicial Challenges in AI Patent Law

- Determining Inventorship: Courts must decide if AI can be credited as an inventor.
- Patentability of AI Innovations: Judges assess whether AI-assisted discoveries meet novelty and non-obviousness criteria.
- AI and Prior Art Analysis: Courts determine AI's role in analyzing prior patents and avoiding infringement.[21]

Emerging Legal Precedents

- AI-Specific Copyright and Trademark Rulings: Courts are shaping new standards for AI-generated content protection.
- Regulatory Influence on Judicial Decisions: Judges apply evolving AI regulations to IP disputes.
- International Judicial Cooperation on AI IP Law: Courts are aligning rulings across jurisdictions to ensure consistency.

Judicial Recommendations for AI and IP Law

- Developing AI-Specific Legal Tests: Courts may create new tests to evaluate AI-generated content.
- Enhancing Legal Clarity on AI Ownership: Judicial precedents can guide future AI copyright and trademark cases.

[21] Aaron Hayward, *The IP in AI: Can Patents Protect AI Generated Inventions* (2023).

- Encouraging Legislative Reforms: Judges can influence policymakers by highlighting gaps in AI IP laws.

Future of AI and IP Litigation

Emerging Legal Precedents

- AI-Specific Copyright and Trademark Rulings: Courts are shaping new standards for AI-generated content protection.[22]
- Regulatory Influence on Judicial Decisions: Judges apply evolving AI regulations to IP disputes.
- International Judicial Cooperation on AI IP Law: Courts are aligning rulings across jurisdictions to ensure consistency.

Role of AI in Judicial Decision-Making

- Use of AI in IP Case Analysis: Courts are exploring AI's potential in analyzing past rulings and predicting case outcomes.
- AI-Generated Legal Precedents: Judges must determine whether AI-assisted legal research can influence judicial decisions.
- Ethical Concerns in AI-Assisted Judgments: Courts are reviewing guidelines on the responsible use of AI in judicial decision-making.

Strengthening Judicial Frameworks for AI and IP

- Developing AI-Specific Legal Tests: Courts may create new tests to evaluate AI-generated content.
- Enhancing Legal Clarity on AI Ownership: Judicial precedents can guide future AI copyright and trademark cases.
- Encouraging Legislative Reforms: Judges can influence policymakers by highlighting gaps in AI IP laws.

The Future of AI-Related IP Disputes

Artificial Intelligence (AI) is significantly influencing intellectual property (IP) law, particularly in trademarks and copyright. Courts play a crucial role in interpreting and applying legal principles to address AI-generated content, automated brand creation, and digital infringement issues. The judiciary is responsible for determining how existing legal frameworks accommodate technological advancements while ensuring fairness and compliance. This document examines judicial decisions, key legal precedents, and emerging judicial interpretations regarding AI's role in trademarks and

[22] Picht, P. G., & Thouvenin, F. (2023). AI and IP: Theory to Policy and Back Again – Policy and Research Recommendations at the Intersection of Artificial Intelligence and Intellectual Property.

copyright.[23]

The judiciary plays a vital role in defining the legal landscape for AI, trademarks, and copyright. Courts are at the forefront of interpreting existing laws to address the complexities of AI-generated content, brand protection, and innovation. As technology evolves, judicial rulings will continue to shape intellectual property law, ensuring that AI advancements align with established legal principles.

Comparison of Trademark law

USA

In the United States, the Lanham Act regulates the trademark Act and does not contain explicit provisions concerning AI in creating trademarks. The Patents and Trademarks of the United States (USPTO) provides instructions for the registration of the trademark, but it does not concern whether the trademarks are generated by AI eligible for protection. The general requirement to register a trademark in the US is that it must be characteristic, unsurpassed and unsurpassed with existing stamps.

1. Creating AI and trademarks: In the case of trademarks generated by AI, USPTO is consistent in that the ownership of the trademark is attributed to a person or business entity. For example, the AI program may generate a logo or name, but the registration must be credited to a human entity or a legal entity that controls AI. This is in accordance with the traditional principle in the US trademark Act that only people (or corporations that are considered legal "persons") may have rights over trademarks.
2. Calls in registration of trademark AI: One of the problems is the authorship or creator of the brand generated by AI. Since AI is essentially a person used by a person, the identity of a person or entity responsible for AI programming or the final proposal would probably be the one who is responsible for the registration of the trademark. [24]This raises the questions whether the purely autonomous AI system could ever keep a trademark that remains unanswered by the current law.

India

The Indian trademark Act of 1999 regulates the trademark Act and, like the United States, has no explicit provisions concerning the involvement of AI in creating trademarks. Indian law requires that the trademark registration applicant be a human or legal entity and the mark must be significant and not misleading.

1. Creating AI and trademarks: AI generated trademarks can be registered in India, but the registration must be attributed to a human or legal entity. The trademark register in India is governed by similar

[23] Suebsiri Tawepoon (2018) Challenges of Future Intellectual Property Issues for Artificial Intelligence
[24] Nike Vs. AI Generated Knockoff Logos (2024, USA)

rules as in the US to require a person to be the owner of the mark or to be owned by a corporation or other legal entity. This could be particularly important for businesses that use AI technologies to generate unique logos or names.

2. Scope for innovation: Although there are no specific provisions in the Indian AI trademark Act, the general interpretation is that if the human or business entity owns AI and its outputs, there is no obstacle to registration of the trademarks generated by the AI. In cases of breach of trademark, however, there could be challenges where the determination of the "creator" of the production of AI could become complex, especially if it is deeply involved in the creative process.

EU

In the European Union, the Regulation on the European Union (EUTMR) Regulation regulates the trademark Act, which does not similarly contain explicit references to the AI generated brands. The European Union (EUIPO) Office oversees the registration process and the general rule is that the trademarks must be characteristic, unsubscribing and must not be contrary to existing trademarks.

1. Creating AI and trademarks: As in the US and India, the EU law requires that the trademark be attributed to a human or legal entity, even if the mark is generated by AI. EUIPO considers trademarks as creations of a human or business entity, not artificial intelligence itself. AI, AI, as an instrument, cannot be the legal owner of the trademark and the human or business entity who controls AI, has the rights to the mark.
2. AI calls in the trademark Act: Like India and the US, there is a potential challenge to demonstrate ownership or authorship in trademark disputes concerning AI. For example, if AI generates a logo that is later charged with violations on another trademark, it may be more complicated to determine who should be responsible for violations.

Comparison of Copyright Law

USA

The US Copyright Acts are governed by the 1976 Copyright Act and the US Copyright Authority has created instructions on the capacity of AI generated works for protection. Under US law, it requires the protection of copyright to make work "original" and "created by a human author". The US Copyright Office explicitly stated that the work created by AI is not eligible for copyrights unless the human author is involved.

1. AI and Copyright: The Copyright Office claimed that the works generated by AI, without the involvement of man, are not eligible for copyright. [25]For example, if AI independently creates a work of art or writing, work will not be eligible for copyright protection. However, if a person

[25] Naruto v. Slater (USA, 2018)

provides a significant creative input into the process (eg AI programming, selection of outputs or substantial modifications), work may be eligible for copyright.

2. Key case -law: One of the key legal cases concerning AI and copyright is Thaler v. The United States (2021), where Dr. Stephen Thaler, the inventor of the AI called Dabus, tried to owe copyright created by dabus. The US Copyright Authority rejected this application and confirmed that the copyright law requires human authorship and AI cannot have the ownership of copyright. The case has strengthened the principle that human authorship is the basic requirement for copyright protection in the US[26]

India:

In India, the Copyright Act is governed by the 1957 copyright Act and, like the US, the law does not recognize AI as a creator. The protection of copyright in India is only available "authorship" created by people. The Indian Copyright Office does not recognize AI as the author, and therefore the work generated purely AI cannot receive copyright protection.

1. AI and Copyright: Like the US law, Indian law treats the parts generated by AI as ineligible for copyright protection unless there is human intervention. [27] For example, a song composed exclusively AI or a picture created by AI would not be copyright if there was no human entry in the creative process.
2. AI as an instrument: However, if AI is used as an instrument of a human author to create a work, such as generating the design options or helping to fold music, the resulting work can be protected if the human contribution is sufficiently significant.
3. Legal gaps: India, like other countries, lacks specific legal regulations concerning the growing role of AI in copyright. Since AI continues to play a larger role in creative sectors, the legal framework of Indian development may develop in order to develop these emerging challenges.

EU

In the European Union, copyrights are governed by the EU Copyright Directive (2019/790) and, like the US, India, the EU recognizes that the protection of copyright requires human authorship. The works created by AI do not meet the requirement for human authorship and are therefore not eligible for copyright protection.

1. AI and Copyright: Under the EU law, the work must be the result of human creativity to be eligible for copyright. The work generated by AI, if it was not created with a significant human entry, would not be protected under the Copyright Act. The EU Directive has strengthened the principle that the "author" of the work must be a natural person and the AI itself cannot be the author.

[26] Thaler v. The United States (2021 USA).
[27] Microsoft v. AI Content Scrapers (USA, 2023)

2. AI as an instrument: If a person uses AI as an instrument in a creative process, the human creator will be considered the author of the resulting work, assuming that AI did not only dictate the result.
3. Key legal issues: The growing roles of AI in the creative industries cause problems on who should own copyrights to the cannons generated by AI, especially if human intervention is minimal. The EU examines these issues and future legal regulations may explicitly deal with AI status in copyright.

Conclusion

While the Copyright Act deals with the protection of creative work, the law of the trademark protects the characteristics that identify the source of goods or services in the store. Wiring AI in the trademark space is equally transformative. Companies are now used by AI systems to generate log, brands and other distinctive trademarks. These AI tools are able to analyze existing trademarks, identify market trends and create innovative proposals that adhere to branding requirements. As a result, the AI has the potential to speed up the processing process of creating trademarks, reducing the cost of enterprises and allowing more efficient brand development.

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