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Artificial Intelligence and Trademark Infringement: Legal Interpretation of "Use" of AI-Generated signs in The European Union

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Abstract: Organizations are increasingly utilizing AI-powered tools to design signs and build brand identities. Technologies such as text-based generators Copy.AI and WriteSonic, along with image-based tools like MidJourney, LogoJoy, and HatchFul, are transforming the way signs are created. Trademark as an intellectual property right (IPR) essentially enables business owners to use their marks as a signal to consumers. These rights become exercisable when a third party's use affects the functions of the mark, particularly its essential function of guaranteeing the origin of goods, services, quality and serving as a commercial communication tool. As more businesses adopt AI to create signs, recommend or make purchases for consumers, and promote competing offers, the traditional functions of trademarks are increasingly being challenged. AI platforms leverage algorithms trained on extensive datasets including registered trademarks to generate new designs for signs, sometimes successfully imitating or even duplicating registered trademarks owned by others. More infringing signs can be generated at a rapid speed, and its challenging to trace accountable entity in this situation. AI platforms for logo and sign generation are built to reproduce logos and signs as its service and the users only instruct the AI through prompts and keywords that the machine can recognize because it already has the protected data inputted in it. Third party users do not even know in advance the exact design the platform will produce, as this relies on mechanical processing of data patterns. It is therefore challenging to attribute ownership of the generated output solely to the user who provides the prompt. It is important to re-evaluate the role of AI platforms and provide a clear guideline for what constitutes use and who will bear responsibility for such use. This research investigates the evolving definition of "use" under European trademark law and analyzes how legal liability for trademark infringements involving AI-generated content may be allocated; among the AI developer, the user, and the platform hosting the tool.

Keywords: trademark infringement; AI platforms; AI-Generated signs; intellectual property rights

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1. Introduction

Contrary to what most people believe, AI is not a new technology. In fact, it existed as far back as the 1960s with the ELIZA chatbot which was developed in 1966 (Dormehl 2017). This Chatbot, just like modern day AI, was created to explore communications between humans and machines. Although AI is not a new technology, it was not previously used by the average person for making marketing decisions or for product consumption (O'Brien 2023; Biesmann 2024). Advanced chatbots such as OpenAI's ChatGPT in 2022 marked a pivotal moment, igniting the rapid integration of AI technologies into everyday life and business operations. Classification of AI use by economic activity (NACE) reports that 34.08% of enterprises employing AI technologies utilize them for marketing or sales, and 27.51% for business administration and management (EU Eurostat 2024). South Korea has introduced targeted policy initiatives and funding programs to accelerate its adoption, particularly among businesses yet to embrace these technologies. The adoption of AI in branding and trademark development accelerated by over 70% in 2024 (IAB Europe & Microsoft Advertising 2024). AI-powered tools are now widely used by businesses to create, monitor, and protect trademarks, streamlining processes such as trademark searches (Bao Tran 2025), registration, and real-time enforcement (WIPO 2024). As AI becomes more integrated into marketing functions, its role in shaping and safeguarding trademarks continues to expand (Curtis and Platts 2020).

Traditionally, trademarks protect brand identity by legally recognizing the owner's exclusive right to use that mark in commerce, preventing competitors from using similar signs that could

cause confusion among consumers.[1,2] This protection helps maintain the uniqueness and reputation of a brand, and any unauthorized use or appropriation of a similar mark will be regarded as Trademark infringement. Article 9(3) of the EUTMR provides a non-exhaustive list of actions that may be regarded as trademark infringement, including affixing a sign, offering goods for sale,[3] taking unfair advantage of, or damaging the reputation of a well-known trademark.[4]

Internet service providers provide mere storage services, with limited liability, provided they do not play an active role in the content they host. With AI platforms, the storage of marks is done for the purpose of reproduction, revealing two distinct stages of use, i.e., the pre-output phase and the post-output phase. While the prompts may be inputted by users, the outputs are generated by algorithms using data previously stored by platform providers. This demonstrates that depending on what is regarded as use, AI platforms can infringe upon or enable the infringement of existing trademark rights. When this happens, it is difficult to ascertain who 'used' the mark for the purpose of assigning liability in trademark infringement. There is consequently a need to clarify the legal standards of what constitutes 'use' of AI generated signs in trademark infringement. Current EU legal frameworks, including the EUTMR, do not explicitly address this unique question posed by AI involvement in trademark use, leaving gaps in both protection and enforcement.

To answer how the EU trademark law should define the use of AI generated signs this, the current definition of "use" under European Union trademark law needs to be explored and applied in the context of AI-generated signs, identifying the gaps in the current state and providing policy recommendations. Current research advocates for the introduction of transparency obligations for parties deploying AI in trademark-related activities, including requirements for record-keeping and traceability of AI-generated signs. It argues for updating the definition of 'use in the course of trade' to explicitly encompass scenarios where signs are created, selected, or applied by AI, thereby ensuring that liability and rights are clearly attributed to the natural or legal person directing or benefiting from the AI's action.

2. Background

According to article 4 of the EUTMR, trademarks are a type of intangible property that help consumers recognize and associate products or services with a specific company.[5] A trademark in the EU can be a word, name, symbol, or device (or a combination of these) used by a company to identify its goods or services and distinguish them from others. Trademarks help consumers identify the source of a product and trust its quality based on the company's reputation (Visconti 2020). Trademarks are valuable tools that help businesses build trust and simplify consumer decisions. Trademarks serve as a guidepost for consumers to identify the source of the marked goods. This signpost helps consumers by allowing them to make repeat purchases based on the standard or quality of the product and brings goodwill to the trademark owner. (Biesmann 2024). It also helps the right owner to prevent unauthorized third-party use that may cause confusion or dilute the distinctive character or reputation of the mark.

AI platforms are systems or machines that operate in a manner that mimic human intelligence to perform tasks. Minsky and McCarthy (Melendez 2019) describe it as any task a machine performs that would require intelligence if done by a human. In the EU, the AI Act[6] regards AI as a '*machine-based system that is designed to operate with varying levels of autonomy and that may exhibit adaptiveness after deployment…''.* AI encompasses a broad range of technologies characterized by their capacity to perform tasks that traditionally require human cognitive functions.

Businesses increasingly integrate AI across operations, including generating signs potentially eligible for trademark protection. With advancements in AI, enterprise adoption surged by 270% as of 2019 (Melendez 2019). While specific EU data on AI use in sign creation is unavailable, broader statistics show that by 2025, 13.3% of EU enterprises with 10 or more employees had adopted AI up to 5.5% since 2023 (Euronews 2025). Adoption among larger firms (250+ employees) exceeds 42%, with growth consistent across member states. The advanced capabilities of AI and the integration of text-to-image generators into popular platforms like Adobe Photoshop, enabled this widespread adoption of AI across various industries. AI models may memorize parts of their training data and, when prompted, reproduce them verbatim or nearly so (Rosati, 2024) enabling the reproduction of photorealistic images nearly indistinguishable from actual photographs (Wang Chen et al. 2024). This widespread adoption of AI raises significant implications for trademark law (Biesmann 2024), particularly concerning the definition of "use" in relation to AI-generated signs.

Article 9 of the EUTMR gives trademark holders the right to prevent third parties from using identical or similar signs without consent. However, the Court of Justice of the European Union has consistently held that mere hosting or storage by a service provider, when carried out neutrally and passively, does not constitute "use" from which liability for trademark infringement would arise.[7]

Kur and Senftleben (2023) support the European Court of Justice's position that service providers should not be considered as "users" within the meaning of "use in the course of trade" when they merely offer platforms or technical infrastructure for others to display signs, without themselves engaging in commercial exploitation. However, AI introduces novel challenges as AI platforms can generate signs that resemble or incorporate existing trademarks using algorithms not within the control of users. In the input

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1 Article 4 of the European Union Trade Mark Regulation (EUTMR) Regulation (EU) 2017/100

2 Article 3 of the EU Trademark Directive (EUTMD)

3 Court of Justice of the European Union (CJEU). (2007). *Céline v. Céline Sarl*, Case C-17/06, ECLI:EU:C:2007:497.

4 Court of Justice of the European Union (CJEU). (2002). *Arsenal Football Club plc v. Reed*, Case C-206/01, ECLI:EU:C:2002:651.

5 Article 4 EU Trademark Regulation (EU) 2017/1001 (EUTMR), also in Case 102/77, Hoffmann-La Roche v Centrafarm; Case C-206/01, Arsenal Football Club)

6 Article 3 Regulation (EU) 2024/1689 of 13 June 2024 on artificial intelligence (Artificial Intelligence Act), 12 July 2024.

7 In L'Oréal v. eBay, eBay was not considered a trademark user because it acted as a neutral intermediary and did not play an active role in the transactions.

phase, these platforms are trained using large datasets that include protected marks which enables the generation of similar signs. Arcidiacono (2025) also analyzed the court's decisions and examined the legal issues surrounding the use of third-party marks by online marketplaces in advertising and search result displays. He highlights how such uses may harm the distinctive and advertising functions of marks, it does not address the complexities of use in AI-generated signs. As AI-generated content becomes more prevalent in digital commerce and media, existing legal frameworks for assessing trademark use will need to evolve to address questions of accountability and liability in AI-generated outputs.

Biesmann (2024) emphasizes that while much scholarly focus has centered on AI's impact on patent inventorship and copyright authorship, the influence of AI on trademarks is both immediate and expanding. Considering this topic is therefore important because the reproduction of AI-generated signs heightens the risk of trademark dilution, particularly for large companies that have invested heavily in building and safeguarding their brands. Senftleben reported (Senftleben, 2022) that the Digital Services Act (DSA), while proposing new transparency obligations for AI-driven behavioral advertising, currently prioritizes consumer-facing transparency and neglects the legitimate interests of trademark owners and competitors. He argues that platforms should also have a transparency obligation to brand owners, allowing them to understand how brand-related data is used in computational advertising and targeted messaging. Biesmann highlights the urgent need for legal intervention, warning that AI-generated signs could expose businesses to substantial financial and legal challenges and exposes limitations within the current trademark enforcement frameworks.

Rosati (2024) from a copyright perspective identifies that liability issues surrounding AI have been largely overlooked. While debates on authorship and ownership are important, the core concern lies in the reproduction of protected works, which constitutes infringement regardless of who or what creates the output. Therefore, it is crucial to address how liability for such infringements will be assigned and what defenses, if any, might be available. Rosati argues that for AI to develop in a balanced and sustainable manner, greater attention must be paid to the legal treatment of its outputs. Although the criteria for what constitutes actionable reproduction vary across different intellectual property rights, policymakers must establish clear benchmarks for infringement and extend liability not only to users but also to AI developers and service providers. Intermediaries are often shielded from liability under the assumption that they merely store content. However, this exemption has significant implications for trademark law, where one of the core rights of the trademark owner is the ability to prevent unauthorized reproduction of the mark.

Trademarks may no longer be useful for their traditional role of identifying and distinguishing goods and services in response to buyer's needs (International Trademark Association 2022). Grynberg (2019) express the same concern wondering what will happen to trademarks if consumers fully outsource their consumption decisions to AI. Curtis, Lee, & Platts, Rachel (2019) consider the phonetic comparisons of trademark using AI. They envisage that AI Assistants will introduce new issues regarding not just the generating of protected images but also the pronunciation of brand names. To solve the issue of liability in such situations, they propose creating a separate legal regime for AI. This study presents a new opportunity to revisit and potentially address these new issues.

3. Legal Framework for Trademarks in EU

Trademark rights are private and territorial, enforceable only within the jurisdiction of registration. In some jurisdictions, Trademark rights may arise through use. Article 6bis of the Paris Convention requires member countries to protect "well-known" marks even when they are not registered, by refusing or invalidating registrations and prohibiting unauthorized use that would create confusion with the well-known mark. This mandates recognition and enforcement of rights based solely on reputation, not registration, for well-known marks in those jurisdictions. However, in the European Union, trademark protection is based primarily on registration (Pila and Torremans 2019).

The EU operates a harmonized trademark system which was created to simplify protection for businesses operating across multiple member states. Before this harmonization, trademark holders needed separate registrations in each state. However, with the adoption of the 1988 Directive (89/104/EEC) national laws were harmonized to coordinate between national and regional (EU-wide) trademark systems, and address disparities that could hinder internal market functioning. The Community Trademark Council Regulation (EC) No 40/94 of 20 December 1993 (currently in force as regulation (EU) 2017/1001) was enacted, consequently establishing the EU Trademark (EUTM) that provides a single registration system across all member states, alongside harmonized provisions for national trademarks. These combined legislations have enabled large corporations to manage their trademarks efficiently throughout the single market (Pila and Torremans, 2019). In essence, in the EU, trademarks can be registered at national level as a national trademark or at EU-level as a European Union trademark. Trademark registration enables the proprietor of a mark to prevent all third parties not having the proprietor's consent from using the mark in the course of trade.[8] Article 10(3) of the trademark directive also provides a non-exhaustive list of acts that are prohibited to include;

a. affixing the sign to the goods or to the packaging,[9]
b. offering the goods or putting them on the market or stocking them for those purposes, under the sign, or offering or supplying services thereunder[10]
c. importing or exporting goods under the sign[11]
d. using the sign as a trade or company name or part of a trade or company name[12]

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8 Article 10 (1) of the TMD
9 Article 10(3) (a) TMD
10 Article 10(3)(b) TMD
11 Article 10(3)© TMD
12 Article 10(3)(d) TMD

e. using the sign on business papers and in advertising[13]
f. using the sign in comparative advertising in a manner that is contrary to Directive 2006/114/EC[14]

These rights enable trademark proprietors to prevent third parties from using identical or similar signs without authorization.[15] Thus, once a mark is registered, infringement may occur in three principal situations. Firstly, as double identity when the contested sign is identical to the registered trademark and used for goods or services that are likewise identical. This represents the most straightforward form of infringement. In *LTJ Diffusion SA v Sadas Vertbaudet SA* (C-291/00), LTJ Diffusion, a French clothing company owned the trademark "Arthur", registered in a distinctive handwritten form for clothing, footwear, and headgear. Another company SADAS, also used the mark "Arthur et Félicie" for children's clothing and LTJ Diffusion objected to this use, arguing that it infringed its own rights in "Arthur." LTJ Diffusion claimed that even when a trademark is reproduced with additions or modifications, infringement can occur if the distinctive element of the original mark remains recognizable. The Court of Justice through a reference for a preliminary ruling on how to interpret "identity" under Article 5(1)(a) held that identity requires exact reproduction of a mark, with only differences that are minute or wholly insignificant. Any additions or modifications that are more than trivial mean the marks are not identical but rather similar, which would then fall under Article 5(1)(b). Based on this ruling, we can say that infringements under Article 5(1)(a) covers only identical reproductions, while cases involving additions or reproductions of a distinctive element can be assessed as matters of similarity under Article 5(1)(b).

The second way of infringement is where the sign is identical or similar to the trademark and is used for identical or similar goods or services, provided that such use creates a likelihood of confusion on the part of the public, including the likelihood of association with the proprietor's mark. In *Canon Kabushiki Kaisha (Canon) V Metro Goldwyn Mayer Inc*[16] (MGM), MGM sought to register the word 'CANNON' for films and related services in Germany, but Canon opposed based on its earlier mark 'Canon' which covered cameras, projectors, and related recording. The Court held that Article 4(1)(b) now Article 5(1)(b) prevents the registration of marks where it is identical or similar with an earlier mark and used for identical or similar goods and services where such use will create a likelihood of confusion. The Court of Justice ruled that a likelihood of confusion may exist even if the public believes the goods or services originate from different places, provided that consumers could think they come from the same or are economically linked undertakings.

Thirdly, where a trademark enjoys a reputation, protection extends more broadly, infringement can occur. In such cases, infringement may be established even if the goods or services are not identical or similar, so long as the use of the sign is identical or similar to the trademark and results in unfair advantage being taken of, or detriment being caused to, the distinctive character or repute of the mark. Under this provision, the protection can be against blurring, tarnishing or against free riding. In *L'Oréal SA and others v Bellure NV and others*[17], Bellure marketed perfumes designed to smell like well-known L'Oréal fragrances, selling them under similar packaging at a much lower price. The Court of Justice held that the use of a trademark for identical goods in comparative advertising, as well as imitation or replica products, could infringe trademark rights even if there is no confusion or detriment to the mark's reputation, provided the third party takes unfair advantage of the mark's distinctive character or repute.

In assessing whether infringement has occurred under any of the three categories, courts apply a global assessment of the likelihood of confusion[18], viewed from the perspective of the so-called "average consumer." As clarified by the CJEU in Case C-342/97, this notional consumer is deemed reasonably well-informed, observant, and circumspect, but is also guided by an imperfect recollection of trademarks rather than a direct side-by-side comparison. Beyond confusion, infringement also requires that the contested use to have occurred "in the course of trade."

4. Interpretation of "Use in The Course of Trade"

To successfully invoke trademark rights under harmonized EU law, among other requirements, it must also be shown that the use of a conflicting sign occurred "in the course of trade". Although the EUTMR and the TMD do not explicitly define the concept of "use," the legislation has given a non-exhaustive list of acts that could be regarded as use. These include affixing the mark to goods or their packaging, offering the goods for sale, selling or stocking them under the sign, importing goods labeled with the sign, and using the mark on business papers or in advertisements.[19] The Court of Justice of the European Union (CJEU) has also offered direction regarding the definition of use that can be enforced by a trademark proprietor. These decisions highlight that the concept of use can be broad and adaptable to different circumstances, consistently holding that trademark use is actionable only when it occurs in the context of commercial activity aimed at economic advantage, not as a purely private matter.

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13 Article 10(3)(e) TMD

14 Article 10(3)(f) TMD

15 Article 9(2) TMD

16 C-39/97 29 September 1998- accessible at https://curia.europa.eu/juris/document/document.jsf?text=&docid=44123&pageIndex=0&doclang=en&mode=lst&dir=&occ=first&part=1&cid=19693 see also Case C-251/95 (SABEL v. Puma)

17 C-487/07- L'Oréal SA and others v Bellure NV and others accessible at https://curia.europa.eu/juris/document/document.jsf?text=&docid=77303&pageIndex=0&doclang=EN&mode=lst&dir=&occ=first&part=1&cid=3352502

18 Court of Justice of the European Union. (1999). Lloyd Schuhfabrik Meyer & Co. GmbH v. Klijsen Handel BV (Case C-342/97, ECLI:EU:C:1999:323). European Court Reports, I-3819.

19 Article 10(3) of TDM

In *Arsenal Football Club plc v Matthew Reed*[20] the Court in deciding whether the sale of branded Arsenal memorabilia by Mr. Reed was infringing clarified that "use" of a trademark under EU law primarily refers to use that serves to distinguish goods or services, while also encompassing third-party uses that undermine the proprietor's legitimate interests, such as the guarantee of origin or the mark's reputation. The Court further stated that the use of a sign identical to a registered trademark constitutes "use in the course of trade" when it occurs in a commercial context with a view to economic advantage, rather than in a purely private setting. Such conduct falls within Article 5(1)(a) of the Directive, as it involves applying an identical sign to goods identical to those for which the mark is protected, creating the impression of a material link between the goods and the trademark proprietor. The requirement for use in the course of trade would be sufficiently demonstrated when it is shown to have occurred in a commercial context and for profit. It is also immaterial that the use shows support, loyalty or any form of affiliation to the trade mark proprietor.

Trademark use may also arise where a third party incorporates another proprietor's mark into its company, trade, or shop name. Although a trademark is legally distinct from a company name, the CJEU has recognized that such use can amount to infringement where it establishes a link between the third party's business identity and the goods or services it offers, thereby encroaching upon the proprietor's exclusive rights. In *Céline SARL v Céline SA*, (Case C-17/06) Céline SA, a fashion company incorporated in 1928, registered the word mark CÉLINE in 1948 for goods including clothing and shoes. In parallel, Mr. Grynfogel had been operating a clothing business under the name Céline since 1950, a right later transferred to Céline SARL, which was formally registered in 1992 to trade in garments and accessories under that name. Céline SA sued Céline SARL for trademark infringement and unfair competition, claiming that the use of "Céline" as a company and shop name infringed its trademark rights. The Nancy Regional Court agreed, prohibiting Céline SARL from using the name, ordering a change of company name, and awarding damages. On appeal, Céline SARL argued that use of a mark as a company or shop name does not constitute trademark use since such names do not function to distinguish goods or services, and that confusion was unlikely given Céline SA's focus on the luxury market. The Nancy Court of Appeal referred the matter to the CJEU, asking whether Article 5(1) of the Trade Marks Directive allows a proprietor to prohibit a third party from adopting a registered word mark as a company, trade, or shop name in relation to identical goods. The CJEU clarified that trademark use may be inferred where a third party uses a sign in a way that establishes a link between the trademark proprietor's company, trade, or shop name and the goods or services marketed by the third party.

The EU courts have differentiated situations in which such use adversely affects the proprietor's ability to exploit its mark. The Court has confirmed that when a company, trade, or shop name is used in a way that establishes a link with the third party's goods or services, such conduct falls within the ambit of exclusive trademark rights.[21]

Significantly, even a mere reference to a trademark can trigger infringement proceedings. For example, the use of a mark to inform the public about repair and maintenance services for trademarked products has been recognized as constituting trademark use.[22] In *BMW v. Deenik*, the Court of Justice was asked to decide whether an independent repairer and reseller of BMW cars could lawfully use the BMW trademark in his advertising. Deenik, a garage owner, advertised his services as specializing in BMW repairs and as selling second-hand BMW vehicles. BMW objected, arguing that such use amounted to trademark infringement because it suggested an affiliation with its authorized dealer network. The Court, however, took a more balanced view. It recognized that Deenik's use of the BMW mark was indeed "use in the course of trade," since it appeared in advertising and related directly to the goods and services offered. But the Court also held that the trademark owner's rights are not absolute. While BMW was entitled to prevent misleading use that created the impression of an official connection, it could not prohibit all use of the mark. In particular, Deenik had a legitimate interest in informing consumers truthfully about the nature of his business. When use relates to passing information, it may not be regarded as use in the course of trade even if the user benefits financially from such use.

However, the CJEU has held that use in comparative advertising qualifies as trademark use, since the competitor's mark is invoked to distinguish the advertiser's products from those of the rights holder[23]. This expansive interpretation has brought several forms of referential use within the scope of trademark protection, extending even to embellishment or parody. EU trademark law demonstrates a highly elastic conception of trademark use, extending protection beyond traditional commercial exploitation to encompass referential, comparative, and even parodic uses. While the general requirements of "use in the course of trade" and "use in relation to goods or services" remain central, additional infringement criteria such as protection against confusion and dilution ensure that the scope of protection remains wide-reaching.

The scope of trademark use has continued to evolve, giving rise to new forms of trademark exploitation. For instance, the emergence of e-commerce transformed the ways in which traders communicate and signal their goods to consumers. One significant development was the introduction of "AdWords" by internet service providers such as Google, which enabled traders to purchase specific keywords to promote their products. When a consumer searches for a purchased keyword, the trader's website and advertisement appear alongside the search results as a sponsored link. The trader is only charged if a user clicks on the advert, operating under a pay-per-click auction model that prioritizes ad relevance and bid amount in placement.

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20 Court of Justice of the European Union. (2002, November 12). *Arsenal Football Club plc v Matthew Reed* (Case C-206/01). https://eur-lex.europa.eu/

21 See CJEU, judgment of 11 September 2007, case C-17/06, Céline, para. 23. See also CJEU, 19 February 2009, case C-62/08, UDV/Brandtraders, para. 47. The emphasis on the criterion of a mere link with the goods or services offered under a conflicting sign was particularly confirmed in cases dealing with keyword advertising. See CJEU, 23 March 2010, cases C-236/08-238/08, Google/Louis Vuitton et al., para. 72; 12 July 2011, case C324/09, L'Oréal/eBay, para. 92

22 See CJEU, judgment of February 23, 1999, case C-63/97, BMW/Deenik, para. 42.

23 See CJEU, 12 June 2008, case C-533/06, O2/Hutchison, para. 35-36; CJEU, 23 March 2010, cases C-236/08- 238/08, Google/Louis Vuitton et al., para. 7

The Court of Justice of the European Union had an opportunity to provide direction regarding this in the case of *Google France Sarl V Louis Vuitton Matellier*.[24] In this case, Louis Vuitton alleged that Google's sale of advertising keywords including registered trademarks such as "Louis Vuitton" to third parties through its AdWords service constituted trademark infringement. Louis Vuitton had discovered that Google's AdWords allowed advertisers (including those selling imitation or counterfeit products) to purchase the keyword "Louis Vuitton," so that advertisements for such products would appear when users searched for those terms. The core question became whether a search engine operator infringes trademark rights simply by allowing third parties to select keywords identical or similar to protected marks, which will trigger sponsored links for competitor or counterfeit goods. Interestingly, the CJEU held that Google did not itself "use" the trademark within the meaning of EU law by permitting keyword purchases; only the advertisers using the marks in their ad content and links could potentially infringe.

Similarly, in the case of L'Oréal v eBay (C-324/09), the concern was whether eBay, as an operator of an online marketplace, could be held liable for trademark infringements committed by its users specifically the sale of counterfeit, unboxed, or "grey market" L'Oréal goods via eBay's platform. The Court recognized that brand owners are entitled to prevent others from selling goods under their trademarks but also held that if an online marketplace is aware of illegal sales or receives information and fails to act quickly to remove or disable access, it loses the safe harbor immunity and can be liable for trade mark infringement. This decision essentially states that internet service providers may not be held liable for online trademark infringement unless they are aware of illegal sales. This view is in line with the provision of Article 12 of the E-Commerce Directive (2000/31/EC**)** which provides that information service providers are a mere conduit and the service provider is not liable for the information transmitted, on condition that the provider:

a) does not initiate the transmission;
b) does not select the receiver of the transmission; and
c) does not select or modify the information contained in the transmission.

In *Christian Louboutin v Amazon Europe Core Sàrl*, the CJEU examined the potential liability of online intermediaries for the sale of counterfeit goods by third-party sellers on their platforms. The Court acknowledged that, from a trademark proprietor's perspective, it is often more practical to pursue the platform operator rather than multiple individual sellers. The intermediary makes the infringement technically possible, exercises control over the platform, and can, at least in principle, bring the infringement to an end. Accordingly, trademark proprietors have an interest in establishing either the direct liability of intermediaries as infringers or their indirect liability for third parties' actions. However, the Court emphasized that the interests of trademark proprietors must be balanced against those of intermediaries. Holding online platforms directly liable for all infringements could effectively impose a general duty to monitor content, which EU law prohibits, and may also discourage innovation and the development of new internet-based activities.

This balancing exercise underpins the E-Commerce Directive (Directive 2000/31/EC), which provides safe harbors for intermediaries when they act merely as conduits, engage in caching, or host third-party content. Under the Directive, Member States must ensure that such intermediaries are not held liable for users' unlawful conduct within these activities, nor placed under a general obligation to monitor the information they transmit or store or proactively seek illegal content. Ultimately, the CJEU held that the concept of "use" of a trademark involves active conduct such as offering, marketing or stocking infringing goods. An intermediary is liable under trademark law only if it itself engages in commercial communication that constitutes such use. In reaffirming its approach in the Google case, the Court confirmed that search engines and online platforms do not "use" third-party trademarks merely by allowing their selection as keywords or by operating a business model based on those choices.

5. Artificial Intelligence and The Creation of Signs

Article 3(1) of the European Union Artificial Intelligence Act (EU AI Act[25]) defines AI systems as a machine-based system that is designed to operate with varying levels of autonomy and that may exhibit adaptiveness after deployment, and that, for explicit or implicit objectives, infers, from the input it receives, how to generate outputs such as predictions, content, recommendations, or decisions that can influence physical or virtual environments. Drawing on this definition, this paper regards AI-generated signs as brand identifiers; logos, names, slogans or trade dress that are produced entirely or partially by AI systems, often using generative models trained on existing designs, words and styles. AI Platforms can access this existing data because the Copyright in the Digital Single Market (CDSM Directive)[26], provides exceptions to copyright restrictions for certain text and data mining but not trademark. AI platforms have access to this data is by obtaining a license or permission from the rights holders.

Generative AI encompasses a variety of model types and operational modes. Unimodal models (e.g. text-to-text) accept and produce the same type of input and output, while multimodal models can combine or switch between modalities, such as text, image and audio. Popular examples include Midjourney and Stable Diffusion (Rombach et al. 2022) (text-to-image), MusicLM (Agostinelli et al. 2023) (text-to-music), Codex and AlphaCode (text-to-code) (Chen et al. 2021), and GPT-4(OpenAI 2023a; OpenAI, 2023b) (text-to-text as well as image-to-text).

While generative AI models share the ability to produce new content, their training methods and degree of human involvement differ significantly. *Generative adversarial networks (GANs)*, for example, are largely human-automated: after initial set-up, a generator and a discriminator train each other in a self-adversarial loop until the synthetic output closely matches the training data (Goodfellow et al. 2014). By contrast, conversational systems such as *ChatGPT* are human-assisted: they learn from human feedback. Here, humans first supply demonstration data, then rank alternative outputs, and finally guide the model toward producing

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24 Case C-236/08 Google France Sarl V Louis Vuitton Malletier (2011)

25 *Regulation (EU) 2024/1689*

26 Directive (EU) 2019/790 on Copyright in the Digital Single Market

responses that align with human preferences (Ziegler et al. 2019). These systems are already deployed across industries as applications that solve specific business problems ranging from SEO content creation (Reisenbichler et al. 2022) and synthetic media production (Metz 2023; Garcia 2023) to natural-language-based software development (Chen et al. 2021).

Because AI platforms are trained on vast datasets containing existing marks and designs, their outputs can inadvertently incorporate elements of protected trademarks when generating new signs. Consequently, AI-generated signs may imitate or even replicate registered marks owned by others. When such outputs are used in a commercial context, they raise the risk of unauthorized use and trademark infringement, posing significant legal questions about the allocation of liability. According to Wang Chen et al. (Wang et al. 2024), "As powerful visual generative AI models are integrated into business platforms and made widely accessible, they now reach billions of users worldwide. This accessibility is reshaping industries from digital art and media production to advertising and branding by enabling the creation of highly realistic and diverse visual content at unprecedented scale and low cost. Recent estimates suggest that more than 18 billion AI-generated images were produced in a single year, and this number continues to grow rapidly. With this rapid adoption, however, significant legal challenges come. The ability of visual generative AI systems to produce vast quantities of original-looking images raises pressing questions about intellectual property (IP) infringement, including trademark concerns. As these tools become more sophisticated and widespread, their potential to create content that inadvertently resembles or reproduces IP-protected characters, logos or other brand identifiers owned by third parties is drawing increased scrutiny."

6. EU Trademark Principles and AI-generated signs

One of the acts prohibited by the EU Trade Marks Regulation (EUTMR) is affixing a sign to goods or their packaging. Users can easily produce content such as text, images, audio, and video that may resemble word marks, figurative marks, three-dimensional marks, color marks, sound marks, motion marks, or position marks. As Wang and Chen et al. observe, state-of-the-art visual generative models such as DALL-E 3 and Midjourney can generate images that closely mimic famous characters (e.g. Spider-Man) either upon request or even without explicit reference to the name of the character. In their study, Wang, Chen et al. demonstrate examples of such potential IP infringement by state-of-the-art visual generative AI models, including DALL-E 3 and Midjourney. As they show, these models can generate images highly similar to well-known characters (e.g., "Spider-Man") simply by using prompts such as "Generate an image of the Spider-Man" and can even produce those images without directly mentioning the character's name.

7. The Basic Rule Under Article 9 of The EUTMR

Under Article 9 EUTMR, trademark infringement normally requires "use in the course of trade." In *Arsenal Football Club plc v Matthew Reed* the Court of Justice emphasized that such "use" must occur in a commercial context. On this basis, liability would ordinarily rest with the party who benefits commercially from applying the AI-generated sign to goods or services. Thus, when an AI-generated sign is actually used in commerce, for example, affixed to goods or packaging, such use may constitute infringement.

7.1 Platform Liability

This raises a further question: where platforms such as MidJourney, Looka (formerly LogoJoy) or Tailor Brands charge third parties to generate logos, can the platform itself be regarded as a "user" of the infringing sign? In *Google France SARL & Google Inc. v Louis Vuitton Malletier SA*, the Court held that Google's sale of AdWords containing trademarks did not amount to "use" of the marks by Google itself; only the advertiser bore primary liability, although a hosting provider may lose safe-harbor protection if it plays an "active role."

In *L'Oréal v eBay* and subsequent cases interpreting Article 14 of the former E-Commerce Directive (now largely replaced by the Digital Services Act), the Court held that intermediary immunity does not apply where the provider knows of specific infringements and fails to act. The CJEU explained that a service provider plays an "active role" where it gives assistance that entails, in particular, optimizing the presentation of offers for sale or promoting them. Examples from the case law include giving sellers advice or boosting visibility of infringing products (C-324/09 *L'Oréal v eBay*); optimizing the presentation of the offers for sale in question or promoting them**.** (C-324/09 *L'Oréal v eBay*); exercising economic control over infringing goods or their dispatch (C-567/18 *Coty v Amazon*); and failing to take expeditious action after notice.

AI platforms arguably go even further. They are not merely passive hosts but are trained on data that may contain protected marks, enabling them to generate infringing signs themselves and to monetize that output. This could be characterized as active participation in the creation and commercialization of infringing content, bringing them closer to direct or contributory infringement under EU trademark law. Accordingly, the more an AI platform controls, curates or profits specifically from infringing outputs, the more likely it is to be treated as a direct or at least a contributory infringer under the evolving CJEU "active role" doctrine.

7.2 User Liability

A parallel situation arises where the third party prompting the AI platform subsequently uses the generated sign in commerce. Under Article 9 EUTMR and CJEU case law, such a party may itself be liable for trademark infringement, notwithstanding that the sign originated from an AI model. If a *third party* (e.g., a company or individual) uses an AI platform to generate a sign and then uses that sign commercially (places it on goods, packaging, advertising, etc.), that party can satisfy the "use" requirement. In other words, even though the AI model created the sign, the person or entity that prompted the model and then deploys the output in trade will generally be treated as the "user" of the mark for infringement purposes. The CJEU's role in cases such as Google France v. Louis Vuitton was to clarify that the advertisers, not Google as an intermediary, were considered the ones "using" the marks in advertisements; the national courts then applied this legal interpretation to determine liability. Similarly, in Arsenal v. Reed, the reseller affixing the mark to goods was determined to be liable. Thus, if a third party (e.g., a company or individual) uses an AI platform to generate a sign and then uses that sign commercially (placing it on goods, packaging, advertising, etc.), that party can satisfy the "use" requirement and may be treated as the "user" of the mark for infringement purposes.

But sometimes it does happen that a third-party user imputes prompts and the mark generates an infringing material which is not the intention of the user. The EU trademark infringement is not fault-based; intention is largely irrelevant consequently, a party can infringe even without intending to do so, provided there is "use in the course of trade."

7.3 Developer Liability

The ongoing *Getty Images v Stability AI* proceedings demonstrate that there is still a possibility that AI developers rather than end-users may be liable for infringement. The ongoing *Getty Images v. Stability AI* litigation illustrates the significant risk that AI developers rather than end-users or even platform users may be directly liable for infringement. In this case, Getty alleges that millions of its protected images, many bearing distinct Getty watermarks, were ingested without permission to train the Stable Diffusion AI system. Getty's claims are twofold: Stability AI unlawfully copied Getty's images to create its model, violating copyright and database rights; and, crucially, the model's output sometimes reproduces Getty's watermarks or other signs, indicating a direct link between training data and generated content.

Unlike most trademark cases where infringement hinges on a third party's commercial use of a mark Getty is targeting the AI developer itself for importing, possessing, and distributing outputs alleged to be infringing copies of its protected signs. By standard definitions this activity could amount to "use," but the analysis becomes complex when the element of commercial gain is considered. One could argue, for instance, that the developer merely built the system and utilized data provided by a service provider. Moreover, because the developer does not directly profit from end users' deployment of the allegedly infringing signs, attributing liability to it is a far more difficult task.

The next step would be to consider the handler of the utilized data. In the European Union, the legal framework for text and data mining (TDM) is governed by the 2019 Directive on Copyright in the Digital Single Market (DSM Directive), which establishes exceptions for both non-commercial (Article 3) and commercial (Article 4) TDM. These allow data mining activities provided the rightsholder has not opted out appropriately and the access to data is lawful. However, neither copyright nor database exceptions extend to trademark law. EU trademark law lacks an analogous TDM defense, and doctrines such as "fair use" or "substantial non-infringing use" common in US jurisprudence do not exist in this context. Thus, even if a training set is lawfully mined under Article 4 of the DSM Directive, any output that systematically reproduces or creates confusion with a registered mark may still incur liability for trademark infringement if placed in the stream of commerce. The key question to consider therefore is whether this constitutes "use in the course of trade" of Getty's trademarks. During training, the images are not displayed publicly or sold, they are processed internally to teach the AI how to generate images. Under EU law, mere internal use typically does not constitute trademark use, because it is not commercially exploiting the mark to indicate origin of goods or services. Stability AI charges users for access to outputs generated by the model. If outputs reproduce or closely resemble Getty's trademarks (watermarks), and these outputs are delivered to paying users, one could argue that Stability AI indirectly exploits the trademarks commercially, since it profits from outputs derived from protected marks.

In *Google France v. Louis Vuitton*, Google was not liable for AdWords even though ads contained trademarks; the advertisers were the ones "using" the marks. The Court focused on who commercially exploits the mark. By analogy, Stability AI's training alone may be like Google hosting the data, it is not "using" the trademark publicly. But the platform provides outputs that may reproduce trademarks to paying users, which brings it closer to commercial use.

While training only would probably not be classified as "use in the course of trade" under current EU law, delivering of infringing outputs to paying customers could be argued as a form of commercial exploitation, potentially satisfying the "use in the course of trade" requirement, particularly if the outputs reproduce or confuse with protected signs.

8. Gaps in The Current Legal Framework

Significant gaps remain in the EU legal framework regarding trademark protection in the context of AI-driven uses. Existing regulations predominantly emphasize consumer protection, aiming to enhance transparency in advertising and information for consumers. The function of trademarks depends on the perspective adopted. When trademarks are viewed primarily as identifiers that enable consumers to recognize products and make repeat purchases, regulatory measures naturally focus on transparency and consumer empowerment. This focus is reflected in provisions of the Digital Services Act, particularly those regulating keyword advertising. Trademarks serve as valuable commercial assets for proprietors, whose protection extends beyond consumer transparency. The unchecked use of trademarks by AI platforms risks diluting distinctiveness and undermining their core function as indicators of origin and quality. A key challenge lies in the persistent ambiguity surrounding what constitutes "use" of a trademark in AI-generated contexts. Without clear attribution of use, it is difficult to identify liable parties whether developers, platforms, or end-users thereby complicating enforcement and weakening legal safeguards.

Another regulatory gap exists regarding the use of trademarks in AI training datasets. Unlike copyright law, current EU rules, including Articles 3 and 4 of the DSM Directive and Article 53 of the AI Act, do not explicitly protect trademark proprietors against unauthorized use in AI model training. While trademarks can be licensed for authorized use, such as in franchise agreements, there is no mechanism to regulate or control AI-driven reproductions of marks. Consequently, AI models may generate content featuring trademarks without any connection to the proprietor, diluting the mark's distinctiveness and undermining its commercial value. AI facilitates the creation of near-identical reproductions, increasing the risk of counterfeit goods that are difficult for consumers to distinguish from genuine products.

Ambiguities in defining "use" in AI contexts further exacerbate enforcement challenges. Minimal transparency obligations may be met by platforms in ways that are difficult for proprietors to verify, leaving rights holders uncertain about who has used a mark, when, and in what manner. This creates a dual risk of over-protection, where liability is attributed too broadly and may stifle innovation, and under-protection, where proprietors cannot enforce their rights effectively due to evidentiary gaps.

Addressing these gaps requires a more balanced approach that equally safeguards the interests of trademark proprietors. It is imperative that when the opportunity arises, the judiciary should provide clear and consistent interpretations of "use" in the context of AI training applications. Coupled with robust liability frameworks and enhanced traceability and accountability mechanisms,

such judicial guidance will be critical to safeguarding trademark value, protecting consumers, and ensuring market integrity in an increasingly AI-driven digital environment.

9. Recommendations

Courts can clarify the definition of "use" to allocate responsibility and to adopt an interpretative approach that recognises the technological realities of trademark use in the AI era. Under Article 9 of the EU Trade Mark Regulation (EUTMR), proprietors already have the right to prevent "use in the course of trade" of an identical or similar sign, and CJEU case law (for example *Google France* and *L'Oréal v eBay*) shows that this concept has been interpreted broadly to capture online intermediaries. Building on this flexibility, the definition of "use in the course of trade" could be further developed whether through case law or legislative amendment to expressly include scenarios in which AI systems create, select or apply signs. Such clarification would ensure that liability and rights are attributed to the natural or legal person who directs or benefits from the AI's operations, thereby preventing gaps in accountability and safeguarding trademark owners' interests.

To complement judicial interpretation, EU institutions could introduce legislative or soft-law measures specifically addressing the complexities of AI-driven trademark use. This could involve amending the EU Trade Mark Regulation, updating EUIPO Guidelines (Parts C and E), or issuing Commission Communications to clarify how "use" by or through AI systems should be assessed. It may also entail instituting transparency obligations for parties deploying AI in trademark activities obligations that would echo traceability and "know-your-business-customer" duties already found in the Digital Services Act such as mandatory record-keeping of training datasets, system inputs and outputs, and mechanisms for traceability; requiring disclosure when a sign has been created or applied by an AI to inform consumers and market participants; and establishing compliance frameworks for cooperation among platforms, AI developers, right holders and regulators, thereby clarifying roles and procedural duties.

Pending legislative reform, businesses and platforms utilizing AI for trademark generation or application are encouraged to adopt voluntary standards and risk-mitigation practices. These include defining internal policies that clarify ownership, "use" and liability allocations regarding AI-generated signs; maintaining auditable logs of all relevant AI development and deployment steps; undertaking robust trademark clearance processes for all AI-generated outputs before they are used in commerce; and embedding clear contractual provisions in platform terms of service to allocate liability among platforms, developers and end-users.

These doctrinal, legislative and practical recommendations grounded in existing provisions such as Article 9 EUTMR, the EUIPO Guidelines and the Digital Services Act's transparency obligations offer a roadmap for adapting EU trademark law to the rapid integration of AI technologies. By clarifying the notion of "use in the course of trade," instituting robust transparency and traceability obligations, and promoting best practices across the commercial sector, the EU can ensure legal certainty and equitable allocation of rights and responsibilities as the digital landscape evolves.

10. Conclusions

This research has examined the challenges that AI poses to the existing framework of EU trademark law, with particular focus on the definition of "use in the course of trade" and the allocation of responsibility for AI-generated signs. While EU trademark law especially Article 9 EUTMR, the EUIPO Guidelines, and the transparency provisions of the Digital Services Act already provides a flexible basis for addressing some of these challenges, gaps remain in attributing liability and safeguarding trademark owners' interests when AI systems autonomously create, select or apply signs. The EU framework can be adapted without undermining innovation. Judicial clarification of "use," legislative or soft-law measures introducing transparency and traceability obligations, and the adoption of voluntary best practices by businesses and platforms together form a coherent blueprint for reform. With targeted interpretative and regulatory adjustments, the EU can preserve the balance between protecting intellectual property rights and fostering innovation, thereby equipping its trademark regime for the age of AI.

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