MARQUES

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The Impact of Artificial Intelligence on Trademark Law

María Delfina Momeño

Universidad Autónoma de Madrid

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I. Introduction

We are witnessing a digital transformation and the establishment of disrupting technologies that affect our daily life and alter all sectors of the economy. The world is becoming digital, and artificial intelligence is a concept that carries a huge revolution to all kind of areas.

Artificial intelligence (hereafter referred to as "AI") systems are developing at high speeds, modifying how people interact with technology. Nowadays, almost every part of our lives is affected by AI, and this term brings a revolution: humans are being replaced by machines when performing cognitive tasks.

AI is a term that refers to intelligence; however, considering intelligence is a vague concept, we must talk about rationality in this field. Rationality denotes the ability of choosing the best action to achieve a specific goal.[1] AI is a union of diverse technologies working together to allow machines to perceive, comprehend, execute actions, and learn with human-like levels of intelligence. These technologies can perceive data, interpret the data collected, and transform it into information to identify a problem. They analyze the past, study different alternatives to predict a future result, and provide the most feasible solution.

AI systems act in the physical or digital world by perceiving their environment and performing activities that until now were just the domain of humans. In other words, these mechanisms that are based on algorithms, can make decisions independently of human intervention and by simulating the thinking of human beings. As a scientific discipline, AI includes several techniques, such as machine learning, machine reasoning, and robotics.

The European Commission defines it as "Artificial intelligence (AI) refers to systems that display intelligent behaviour by analysing their environment and taking actions – with some degree of autonomy – to achieve specific goals. AI-based systems can be purely software-based, acting in the virtual world (e.g. voice assistants, image analysis software, search engines, speech and face recognition systems) or AI can be

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[1] EUROPEAN COMMISSION - High Level Expert Group on Artificial Intelligence, *A definition of AI: Main Capabilities And Disciplines*, (April 2019), p.1 (*available at:* https://www.aepd.es/sites/default/files/2019-12/ai-definition.pdf)

[2] Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions, *Artificial Intelligence for Europe*, (April 2018), p.1 (*available at:* https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52018DC0237&from=EN)

embedded in hardware devices (e.g. advanced robots, autonomous cars, drones or Internet of things applications)."[2]

The WIPO describes it as a "discipline of computer science that is aimed at developing machines and systems that can carry out tasks considered to require human intelligence, with limited or no human intervention."[3] In such a way, the concept of AI includes the ability to understand and solve problems, capturing the reality of what is happening.

AI systems are becoming increasingly available to the public, and they offer diverse forms of applications. They assist applicants when registering marks (advising ways to streamline applications, increasing their chances of success), or trademark examiners to establish whether a sign can be registered. AI is also used to assist consumers in making their purchases; assist sellers in targeting consumers by obtaining behavioural data; for judges to decide trademark infringement, or it is also used to identify unauthorized uses of trademarks online, including on social media. [4] Henceforth, it is essential to analyze how AI systems can harmonize with industrial property, as they not only enrich social governance but are also expected to disrupt the basic features of trademark law.

II. Trademark's definition

A trademark is considered a sign capable of distinguishing a company's goods and/or services from those of other enterprises. Trademarks basically identify the source of the products and services in the marketplace. In this way, consumers are protected as they can easily associate a brand with an identity and quality and thus, save time and efficiency when looking for trademarks.

For a brand to exist, it must be registered before a Trademark's Office. The trademark registration aims to confer an exclusive right to the owner to use its trademark or to license it to another party for use. Trademarks are also being used as an effective corporate and social communication tool. Yet, using trademarks over the

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[2] Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions, *Artificial Intelligence for Europe*, (April 2018), p.1 (*available at:* https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52018DC0237&from=EN)

[3] WIPO, *Revised Issues Paper on Intellectual Property Policy and Artificial Intelligence,* (May, 2020), p.3 (*available at:* https://www.wipo.int/edocs/mdocs/mdocs/en/wipo_ip_ai_2_ge_20/wipo_ip_ai_2_ge_20_1_rev.pdf)

[4] GANGJEE D., *A Quotidian Revolution: Artificial Intelligence and Trademark Law,* (April, 2022), p.1 (*available at:* https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4081317)

Internet has increased infringements, the likelihood of confusion among consumers, and it has brought difficulties related to search engines and advertising.

The development of new technologies has challenged the fundamental structures of trademark law. Traditionally, consumers mainly depended on shop assistants and their advice when buying a product. Nowadays, shop assistants are replaced, and purchasing is primarily done online (this is known as e-commerce).

Whereas AI reduces human involvement in product suggestion and the purchasing process, the legitimacy of traditional trademark law is currently being questioned. The emergence of AI especially triggers questions about registering trademarks and establishing infringements, and hence it calls for reconsidering key concepts of trademark law.

III. Key notions of trademark law

The essential purpose of a trademark is its distinctiveness: a brand must identify the origin or provenance of the business, distinguishing in that way the goods from that of another entrepreneur. Additionally, they commonly comply with an informative purpose about the product's characteristics.

Trademark law is generally upheld by key principles: (a) likelihood of confusion; (b) phonetic, visual, and conceptual similarity; and (c) the average consumer and imperfect recollection.

(a) Likelihood of confusion

According to article 9 from the Regulation 2017/1001 of the European Parliament and the Council, from June 14, 2017, a trademark registration gives its owner an exclusive right to use its sign, and, simultaneously, a ius prohibendi right to prevent third parties from using in trade any sign related to the goods and services without his consent, when: (1) the sign is identical, and for identical goods or services – this is known as double identity-, (2) the sign is identical or similar, for identical or similar goods or services, if there is a likelihood of confusion for consumers -this includes a risk of confusion and association-, (3) the sign is identical or similar, irrespective of whether the goods or services are similar if the trademark has a reputation and if an unfair advantage is taken from the distinctiveness, or it is detrimental to such distinctiveness or reputation.

The Court of Justice of the European Union (CJEU) determined that likelihood of confusion occurs when the public can be mistaken as to the origin of the goods or services in question[5] or mistakes one product for another.[6] Direct confusion comes into play when the public confuses one trademark for another. In contrast, the risk of association occurs when the public mistakenly assumes that the goods or services come from the same business or from economic-related companies. Moreover, confusion can arise at different stages of a purchasing process: before purchasing (initial interest confusion) or after purchasing (post-purchase confusion).

Initial interest confusion can take place over the Internet when the non-trademark holder uses a registered trademark as meta-tags for example. On the other hand, the post-purchase confusion generally appears when there is inadequate use of a protected trademark on a lower quality product, which diminishes the reputation of the holder of the rights of that prior mark. For example, on counterfeit products where the trademark or the product were copied and sold as originals.

(b) Phonetic, visual, and conceptual similarity

Consumers regularly get confused between trademarks because of their similarities. In these cases, a comparison study of the similarity of signs is conducted. The assessment of similarity will be done between the previous trademark and the new one, and it must be performed in the form they enjoy protection and in relation to the territory where the earlier mark is protected. This means that if the earlier mark is for example, a Spanish national mark, the relevant criteria will be analyzed in relation to the relevant public in Spain. This exposes that similarity may differ from country to country because of variances in significance and pronunciation. Moreover, it is not required that the mark indeed generates confusion, but a likelihood of confusion.

The comparative analysis between both signs is carried out from three points of view: visual, phonetic, and/or conceptual. The visual criterion logically refers to analyzing the structure of the sign (the words, colours, or their figure); the phonetic is related to the pronunciation, and the conceptual standard is associated to what the public perceives (in cases where there is a likelihood of confusion, the public will perceive the two signs as having the same or similar semantic content). It is not required that similarity exists in all three aspects; one can be enough.

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[5] Case C-39/97, EU:C:1998:442
[6] Case C-251/95, EU:C:1997:528

Moreover, the likelihood of confusion must be assessed globally. The CJEU determined in *Sabel BV v Puma AG* (case C-251/95) of November 11, 1997, that the global appreciation of visual, phonetic, or conceptual similarity must be based on the overall impression given by the marks, bearing in mind their distinctive and dominant components. Relevant factors must be considered, in particular, the similarity of goods and services; the target of the public and the level of attention; similarity of signs; and the unique character of the earlier mark. Hence, signs are analyzed in their protected form and entirety (overall assessment of similarity).

(c) The average consumer

It has been determined by the European Court of Justice that when addressing different assessments such as distinctiveness, confusion, or dilution, the average consumer doctrine must be applied.

The average consumer brings the idea that it is not required that all consumers are likely to be confused, but yes the "reasonably observant and reasonably well informed and circumspect person."[7] The degree of attention required from the average consumer will depend on the nature of the products or services in question and the targeted audience's knowledge, experience, and involvement in the purchasing.

Although it is required that the average consumer is reasonably well informed and reasonably observant and circumspect, they rarely have the opportunity to compare the different signs simultaneously and, thus, must rely on an imperfect recollection stored in their mind. This is because consumers usually perceive a mark as a whole and do not analyze its details. Human perceptions and recollection are essential for determining if a trademark is registrable and also, when analyzing infringement.

IV. AI's impact on trademarks

IV.1. AI's impact on online purchasing processes

Trademark law is linked with how goods and services are bought, and AI is impacting the purchasing process, so by definition, it is also affecting trademark law. Internet and new technologies opened a variety of products offered to consumers, prompted an increase of information about goods, and thus, provided a higher

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[7] Case C-251/95, EU:C:1997:528

knowledge to consumers before buying. The traditional way in which consumers bought has changed.

Nowadays, many online marketplaces use AI technologies: search engines, AI personal shopping assistants, product recommendations, or AI based on machine learning, which can predict consumers' choices. These technologies are involved in different degrees, and operate at diverse stages of the purchasing process. They can have a low influence by proposing product recommendations (these are engine recommendations or virtual assistants such as chatbots), or a high degree of participation through automated ordering (for example, the Amazon Dash Replenishment Service), where consumers delegate the purchase decision to the AI application, known as the "automatic execution model."[8] Besides, AI interfere at diverse stages: these systems can participate in determining consumer's preferences (first stage); comparing the purchasing options in light of the purchaser's preferences (second stage); in the buying decision (third stage), and/or finally, by completing the transaction.[9]

Product recommendations are suggestions offered when consumers navigate through a marketplace by using phrases such as 'other clients have also viewed', 'recommendations based on your previous purchases', or similar ones, that guide consumers to a personalized collection of products picked from a large variety. This shows that AI technologies are mainly based on machine learning. This is "a method of data analysis that automates analytical model building. It is a branch of artificial intelligence based on the idea that systems can learn from data, identify patterns and make decisions with minimal human intervention."[10] The objective of machine learning is to detect patterns in data through algorithms, and to apply that knowledge to new data, improving their own performance over time.[11]

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[8] SIGGELKOW N. and TERWIESCH C., Harvard Business Review, *The Age of Continuous Connection*, (May-June 2019), (*available at*: https://hbr.org/2019/05/the-age-of-continuous-connection)
[9] GAL M. and ELKIN-KOREN N., Harvard Journal of Law & Technology, *Algorithmic Consumers*, (April 2017), p.315-317, (*available at:* https://jolt.law.harvard.edu/assets/articlePDFs/v30/30HarvJLTech309.pdf)
[10] Definition given by SaS, *available a*t: https://www.sas.com/en_us/insights/analytics/machine-learning.html#:~:text=Machine%20learning%20is%20a%20method,Importance
[11] SURDEN H. *Machine Learning and Law: An Overview,* (June, 2019), p.1 (*available at:* https://deliverypdf.ssrn.com/delivery.php?ID=7050090060210241080020650770040761100330430050000580700280251061250040271190110910240190490320150101260550870291260071120300990550710110650530910051250220021140070000120081040760241021161230131040781220200740100050270040290281040170310640051130690968&EXT=pdf&INDEX=TRUE)

In this way, AI systems have access to all available information about the products on sale in online shopping, but they select products by collecting pre-existing data based on consumers' previous searches or purchases (known as content-based analysis), by focusing on the purchases carried out by consumers with similar profiles (collaborative-filtering technique), or, using a method that combines both. Product suggestions also take into account the product availability, market trends, and users' reviews, to predict and suggest which products the consumer will want or like, even before the consumers know it themselves.

Furthermore, social media has introduced new ways of influencing buyers. The 'likes' given by them and those provided by the consumer's connections (family or friends) to products or services over the internet, allow AI systems to create a profile of the consumer and know what they are interested in. AI systems use behavioural data, affecting in this way buyer's purchasing decisions, "either by providing them with better quality information or else by unfairly shaping (or entirely displacing) consumer decision making."[12]

We can observe that AI applications work as a filter between the consumer and the trademark. As a result, consumers are unaware of the wide range of products available on the market because they are faced with a moderately reduced set of products to buy, bringing an exponential change in who is the one that decides what to buy. Before, it was the consumer who entirely decided what to buy and where. Now, that decision has become biased by AI systems, and hence, it has been replaced by technology's choices. We currently have a 'ship and buy' model, as selling is no longer responsive to consumers' demands but has become predictive.

Product recommendations often operate at the first two stages of the purchasing process, by determining consumers' preferences and comparing purchasing options. They work on the user's choice, but the final purchasing decision and completion of the transaction (stages three and four) are left to the buyer.

Another AI tool are the personal assistants. They work through voice (such as Amazon Alexa, Google Home, or Siri) or text (the customer service bots). They interact with humans naturally and respond to customers' questions in real-time at any given moment of the purchasing process.[13] Personal assistants can get involved during the

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[12] GANGJEE, D. Op. Cit. 2
[13] RANDAKEVICIUTE-ALPMAN, J., GRUR International, Volume 70, Issue 7, *The Role of Trademarks on Online Retail Platforms: An EU Trademark Law Perspective*, (July 2021), p.639

four stages of the buying process, depending on the customer's needs. For example, a consumer can make a shopping request by simply saying, 'Alexa order x product.' The application will then identify the product from a website at a particular price, and will ask the customer if that option is OK to order. The purchaser will have to respond orally and confirm to buy it.[14] Oral virtual assistants increase the importance of phonetic impact on trademarks. When voice search overtakes text search, the balance between the phonetic, visual, and conceptual comparison of brands will change, as visual aspects will lose importance, and a greater accent will be placed on the phonetic and conceptual comparison.

On the other hand, AI systems have a high degree of participation through automated ordering. These are carried out when customers enter data once, and authorize AI technologies to submit the purchase automatically and periodically, without their recurring participation. It is clear that in those cases, AI systems have a severe influence on consumers' purchasing decision as they take over the four steps of the buying process.

The use of AI and algorithms increase exponentially, and consequently, the way consumers interact with online marketplaces is altered. It may result in the presentation of only a limited number of brands to the buyers or other alterations in the way that algorithms make product selections.[15] Hence, questions arise on whether trademarks can still accomplish the purposes they were set out to meet.

IV.2. AI's impact on trademarks' principles

The purpose of a trademark is to create a transparent market that offers the conditions for undistorted competition. As previously mentioned, trademarks are indicators of the trade origin of goods and services, and their nature and qualities. They guarantee that the information about a product or service is reliable, facilitating the purchasing transaction for consumers, as they do not have to waste time and effort in ensuring that they are not deceived into buying a good or service they do not want.

With new technologies and the establishment of AI, these key principles related to trademark law are interrogated. First, the orthodox function of a trademark indicating information about the origin, nature, and quality of products is disrupted. We have now

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[14] REISINGER, D., Tom's Guide, *What is Alexa Voice Shopping, and How Do You Use it?*, (May 2019), (*available at:* https://www.tomsguide.com/us/alexa-voice-shopping-tutorial,news-25370.html)
[15] WIPO, *Revised Issues Paper on Intellectual Property Policy and Artificial Intelligence,* Op.Cit. 12

consumer's product reviews online, questions asked to sellers that provide information, and reviews on social media about the transactions and quality of the products. AI can search and gather data from those sources more efficiently than a human, which puts this primary function of trademarks at stake.

Having so much information online demonstrates that a consumer would perhaps no longer need to rely on a trademark to obtain information about the nature of a product. In other words, shorthand indicators to facilitate efficient purchasing seem to be not needed anymore. However, trademarks still communicate essential information to consumers. Certain aspects, such as sensory qualities, are beyond the scope of AI and cannot be moved through recommendations made by AI technologies because they depend on human interactions.

Secondly, it has been proven that AI technologies can detect confusing product indications or counterfeit products. Recently, a new AI application named 'Entrupy' was launched for verifying physical goods, particularly to detect fake bags. Through the application, the person interested has to select the bag's trademark, model, and type of material of the product and upload pictures of both, from the exterior and interior (with the trademark's label). The application takes approximately 30 seconds to detect whether a bag is fake. In contradiction, a human can take hours to notice it. The more data stored, AI algorithms would learn more and improve their capacity to detect counterfeit products from those that are not.[16] Even though this application is still new, this could bring unthinkable advantages to promote a transparent market. Yet, this does not reduce the need for a market based on undistorted competition.

Trademarks have also additional functions: communication, investment, and advertising. Signs communicate values and brand image: trademark proprietors invest in conferring values to the mark and advertising to inform and attract consumers. When a trademark acquires a particular reputation, they not only communicate information about the origin and quality, but also engage consumers on a psychological and emotional level.

So, how does AI technology affect trademarks' additional functions? Are trademarks that transfer values to consumers still needed in an online marketplace? As previously explained, AI gathers information and presents a set of choices for shoppers based on their behavioural data. AI systems can undoubtedly give information in a

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[16] Article from "El Pais", April 10, 2022 found in: https://smoda.elpais.com/moda/el-fascinante-dispositivo-de-inteligencia-artificial-que-detecta-los-bolsos-falsificados/

superior and broader way than humans can. Nonetheless, feelings and values do not matter to AI, and these systems do not look to engage buyers emotionally. Humans purchase decisions are not always rational, and reaching them on a psychological level plays and will still play an important role.

On the other hand, the average consumer concept will need to be examined for trademarks to continue executing their functions. The average consumer plays a significant role when assessing oppositions and infringements in trademark law. In such cases, examiners analyze if the average consumer is likely to be confused about the origin of the goods or services, or on whether it exists a link between the registered trademark and the infringing sign.

AI is not yet developed enough to have an impact on this legal concept. Nowadays, the average consumer is still human as AI is not a consumer in its own right, but a technology tool that assists humans to make purchase decisions. Nevertheless, in the future, this concept may need to be reassessed to a new one: the AI-assisted consumer, which will depend on the nature of the AI technology and to what degree the buyer will be involved in the purchasing decision.

Moreover, we saw that the average human consumer generally concentrates on the overall impression of a trademark, paying attention to the dominant and distinctive elements, and hence stores an 'imperfect recollection' of the sign. Unlike, AI visual search technologies use image recognition, for example, in determining whether a sign in a trade application is similar to one already registered. AI can access and interpret large volumes of data and evaluate multiple trademarks. When AI assistants take complete control over a purchase, they "do not get confused, and have a perfect memory." [17] Hence, AI tools would make consumer's recollection almost perfect. However, when the purchases are made by the combination of human and AI interaction, this concept would be shifted back to the consumer.

As previously mentioned, AI systems are replacing humans and consumers are now provided with better quality information. Thus, the concept of likelihood of confusion would also need to be re-examined. When a person buys through AI systems, (meaning he does not get involved in the purchase of a product) the consumer could only confuse trademarks at the stage of receiving the product and not during the sale, as

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[17] CURTIS, L., PLATTS, R., 281 Managing Intellectual Property 43, *Alexa, 'what's the impact of AI on trademark law?'* (2019), p. 45.

traditionally occurred. This demonstrates that AI also changes the timing of the likelihood of confusion.

Post-sale confusion occurs when consumers get confused after a product has been purchased, and "it hinges on a subsequent, oftentimes casual encounter with a product, when consumer decision making is not engaged. It collapses into a wonderment ('maybe there's a connection but I'm not sure') standard."[18] Predictive selling under AI technology brings a new form of post-sale confusion that affects the consumer, as they may trust on AI to advise and/or purchase a product and then notice that the product delivered is not what they wished.

The High Court of Justice of England studied the aspect of post-sale confusion in the case *Datacard Corporation v Eagle Technologies Ltd,* of February 14, 2011.[19] Datacard Corporation was a supplier of printers and owned the trademark "Datacard." Meanwhile, Eagle Technologies Ltd sold card printers and ribbons, and used Datacard's trademark on labels applied to the packaging of the sold products. Consequently, Datacard Corporation sued for infringement of trademark. The Court determined that consumers might not, when buying the printer, have any belief that the printer is connected to Datacard, but when it arrives with the "Datacard" label customers may believe that Eagle Technologies Ltd is connected to Datacard Corporation. Therefore, even if the buyer is not confused about the origin when purchasing goods on website, it may be confused later when receiving the goods, and consequently, post-sale confusion suits to show infringement.

Still, this does not mean that using AI technologies would not bring claims related to initial interest confusion. Considering AI applications understand and illustrate results for consumers, it can happen that the search results initially confuse the shopper about the product's origin, or they can show incorrect goods to the consumer.

In the retail context, we can see that even though a consumer makes the purchase decision himself, AI applications influence that decision. So, we may get questioned if the regulatory framework of influencers' promotional practices could govern AI applications. For that to happen, product recommendations by AI systems would have to comply with the requirements to be considered influencers. In that case, product suggestions would have to be identified as some type of promotion, and they should be based on criteria that benefit the AI provider instead of being based on criteria

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[18] GANGJEE, D., Op. Cit. 4
[19] Case No. HC09C04263, HC10C0081

directly linked to the consumer's previous preferences. Hence, this option would be rejected.

Furthermore, with AI systems personalized advertisements are created. This affects not only the product availability and the decisions of consumers' that would only have access to a smaller offer, but also competition. Subsequently it can bring problems, as it can be a way of promoting unfair competition.

IV.3. AI's impact on trademarks' registration process

AI technologies are also influencing the registration process of trademarks, as algorithms are efficiently and comprehensively reading trademark's registers. AI systems can also measure the similarity between marks as well as goods and services, diminishing potential conflicts.

There are previous steps for filing a trademark application before a Trademark Office. First, and based on the fact that trademark rights are granted on a first-come, first-served basis, a search for clearing a potential new mark must be conducted, to establish whether a sign is vacant for use and likely to be registered or not. In this respect, two tools based on AI systems are used for registration processes: International Classification of Goods and Services (ICGS) Autochecker software tool and TMview's Classification Assistance TMclass. They give way to applicants to search for their selected terms of goods and services before applying for a trademark, and compare them with a pre-approved list to avoid rejections based on terminology errors. The EUIPO, for example, uses machine translation technology to classify goods and services in diverse languages. The UK IPO for instance, has developed a Pre-Apply tool that offers the application form and shows the chances of success in the registration by checking against absolute and relative grounds of refusal.[20]

Moreover, the USTPO has included fraud detection algorithms to attest the veracity of the proof sent by the applicants when declaring the use of a mark in commerce.[21] They have also developed virtual assistant tools to assist applicants during the entire registration process.

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[20] UK IPO Press Release, *IPO's First AI-Powered Tool Improves Quality of TM Applications*. (November 2021), (*available at:* https://www.gov.uk/government/news/ipos-first-ai-powered-tool-improves-quality-of-tm-applications)
[21] HIRSHFELD D., USPTO Director's Forum Blog, *Artificial Intelligence Tools at the USPTO,* (March 2021), (*available at:* https://www.uspto.gov/blog/director/entry/artificial-intelligence-tools-at-the?utm_campaign=subscriptioncenter&utm_content=&utm_medium=email&utm_name=&utm_source=govdelivery&utm_term)

Assessing the similarity of trademarks is essential for determining the relative grounds of opposition and trademark infringement. The relative grounds for refusal of a trademark refer to the collision of a sign with pre-existing rights. Thus, when this registry-level problem happens, the previous owner of a sign would be enabled to file an opposition against that similar trademark application. On the other hand, when trademark infringement occurs, the mark's owner can go against the similar or identical sign used in commerce.

In this regard, Trademark Offices also use AI applications for predicting outcomes when marks are at risk of conflict. One of them is 'Rocketeer', which uses a database of thousands of trademark's cases to provide a probability of an outcome with over 90% accuracy, and shares the data on which it has made the prediction.[22] AI tools use the decisions of past examiners to learn and measure similarity. Algorithms evaluate the conceptual similarity between trademarks by analyzing if they have shared or contradictory meanings. The aim is to mimic the evaluation of a human examiner, who analyzes visual, auditory, and conceptual similarity and arrive to a decision on whether the subsequent sign should be registered or not. When considering if the similarity of signs combined with the likeness of goods or services confuses consumers, the evaluation will be different based on the type of marks being compared.

The Trademark Offices, for example, the EUIPO and WIPO, also use AI algorithms to perform mainly image recognition and comparison: an applicant can upload an image, and the technology searches for similar images within the office database. There are also attempts to "develop AI algorithms that can combine different measures of similarity, words, and images in the two marks being compared, to arrive at an integrative assessment."[23]

The likelihood of confusion is generally analyzed through the overall impression the relevant public gets when perceiving a trademark in a specific context, particularly by focusing on the most dominant features of the sign. Hence, assessment should be reasoned from the perspective of the relevant public, and it is questioned if AI technology can reproduce this human approach. To assess confusion, different factual circumstances, such as who the relevant consumer is, who the competitors are, and knowledge of the products on the market, are currently analyzed. Nonetheless, AI is

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[22] CURRELL D., *Legal's AI Rocket Ship Will Be Manned*, Legal Evolution (May, 2021), (*available at:* https://www.legalevolution.org/2021/05/legals-ai-rocket-ship-will-be-manned-book-review-232/)
[23] GANGJEE, D., Op. Cit. 13

unlikely to obtain this information from databases by itself because balancing all these elements does not follow strict rules but a case-by-case assessment.

Additionally, even though AI postulate good results when searching for similar signs, it cannot yet identify unregistered prior rights. To accomplish this, algorithms should gain access to specific predefined databases that are stored in a private way by companies and learn from it, so it won't be easy for AI to identify signs in use but not registered.

It is evident that obtaining perfect and accurate information is unrealistic. Yet, results given by algorithms are delivered in a fraction of the time humans need for it, and they have a high level of accuracy. Humans may even miss more information than AI; hence, data resulted from AI technologies are considered valuable information. Still, none of AI systems have been set up to assume more difficult tasks in trademark law. Trademark law is subjective, and predicting the level of distinctiveness of a mark, the possibility of confusion, unfair advantage, or reputation detriment is complex, as they depend on the context and diverse circumstances. It is clear that AI tools provide benefits, however, their use is still limited.

Identifying the distinctiveness of a trademark is another challenge for AI. AI systems can access case law and learn rules to categorize how the dominant element of a brand is found, but these rules are not straightforward and must be examined on a case-to-case basis too. On the other hand, studying unfair advantages or detriments to distinctive character and reputation involves a high degree of subjectivity. Unfair advantage refers to a third company using a trademark's reputation to launch a product and attract more consumers for its business, taking advantage of the efforts assumed by the mark owner to gain such a reputation. These notions are inconsistent among the CJEU's cases, so how could an AI tool learn from this?

The digitalization of cases facilitates practical trademark assessment, examination decisions, oppositions, and invalidity proceedings for lawyers, trademark officers, and judges, as AI technology is instructed with data that reproduces case law and legal concepts. Nevertheless, Courts often have different outcomes for the same cases, which would bring biased information that will be then replicated by AI technology, as they cannot filter wrong decisions. Also, Trademark Offices from diverse jurisdictions deal differently with the administrative registration of trademarks. Therefore, considering data needs to be structured in a similar way to use it for training

purposes, collecting this information from different jurisdictions would be a challenging task, and Trademark Offices must cooperate by sharing legal knowledge.

To conclude, AI's main limitation in this field is the obtainability of accurate and organized data and its exchange among Trademark Offices. Consequently, it is unlikely that they would execute human tasks autonomously. AI is clearly impacting positively by speeding up legal search and helping lawyers, trademark examiners, and judges to be more efficient and save time by performing large amounts of data in a short time frame. AI is ideally suited for the administrative tasks involved in the trademark registration process. However, they are not yet intended to replace humans' assessment and their advice in these fields, and complex analysis and decisions should be left to them. Consequently, this exhibits that collaboration between artificial abilities and individuals must be preserved, and they should work together to obtain the proposed outcome. In this sense, AI actually plays an important role, but they are intended to complement and not replace human analysis.

V. Trademark infringement in the context of AI

We are witnessing the prevalence of counterfeit and infringing signs on online platforms. As a result, AI tools for online trademark enforcement have emerged. According to the USTPO, a trademark infringement is "the unauthorized use of a trademark or service mark on or in connection with goods and/or services in a manner that is likely to cause confusion, deception, or mistake about the source of the goods and/or services."[24] For infringements to take place, breaches must be done in commerce or the course of trade, meaning it must be related to the sale, distribution, or advertising of the goods or services.[25]

Online marketplaces such as Ebay or Amazon, or social media's platforms that use AI technology are intermediary service providers. Thus, the Directive 2000/31/CE of the European Parliament and of the Council of June 8, 2000, on certain legal aspects of information society services, in particular electronic commerce in the Internal Market (hereafter referred to as "E-Commerce Directive") would be applied.

The rule for these platforms is the non-liability as long as their behaviour does not go beyond that of an intermediary. The E-Commerce Directive introduces a safe

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[24] USTPO United States Patent and Trademark Office, *About Trademark Infringement (available at:* https://www.uspto.gov/page/about-trademark-infringement)
[25] Lanham Act § 45, 15 U.S.C. § 1114

harbour principle, under which the service providers that host or transmit content provided by third parties are exempt from responsibility under certain conditions determined in articles 12, 13 and 14.

Social media offers anonymity and this facilitates the selling of counterfeit products. Activities and identities behind usernames are harder to track, and the effortless to create new accounts prevails. Amazon, Ebay or social media platforms are intermediaries hosting providers, and thus, article 14 would be applied. They permanently store content on their servers connected to the Internet - sales offers provided by their users - so that other users can have access to them. Amazon, Ebay or Instagram, then act as intermediary platforms between the seller of the product and the consumer.

Hosting providers are exempt from liability when they have no participation in the creation, distribution or communication of content. Also, when they store illegal data for users and do not know that it is illegal, or they act expeditiously to remove or disable access to that illegal information. [26] These activities are considered to be "technical, automatic and of a passive nature which implies that the information society service provider has neither knowledge of nor control over the information which is transmitted or stored" [27], and thus would become responsible if they maintain an active role.

Nonetheless these platforms have included AI tools to fight against trademark's infringement, for customer's to receive original products. Amazon for example, offers a self-service counterfeit removal option relying on algorithmic filtering[28], before items are added to Amazons' stores. Through it, the registered right holders will be able to provide marks, keywords, photographs, or information about the brand, and a list of suspected counterfeits will appear. Once these results are obtained, they can remove by themselves the ones they consider fake, and this information would be stored in the machine learning to progress in its recognition skills. [29] Nonetheless, for a transparent marketplace, it is also essential to get information such as "contact details, physical

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[26] MINNERO ALEJANDRE, G., Revista CESCO de Derecho de Consumo, *Has Amazon liability in respect of products supplied by a third-party in Amazon's marketplace? Current legal framework and future perspectives,* (January 26, 2021), (*available at:* https://revista.uclm.es/index.php/cesco/article/view/2662/2007)

[27] MADIEGA, T., *Reform of the EU liability regime for online intermediaries,* (May, 2020), p.6 (*available at*: https://www.europarl.europa.eu/RegData/etudes/IDAN/2020/649404/EPRS_IDA(2020)649404_EN.pdf)

[28] Amazon Project Zero (*available at:* https://brandservices.amazon.com/projectzero)

[29] GANGJEE, D., Op. Cit. 19

addresses, bank accounts and IP addresses" [30] to identify the seller, and the platform would warn those with a negative file.

Other potential abuses against trademark owners are "the misrepresentation as to source, affiliation or sponsorship; false or misleading advertising; and dilution by blurring or tarnishment." [31] Comparative advertising has increased with the exponential growth of the Internet and AI applications. Now, online keyword advertising is typical, and through it a brand can suggest a product offered by another provider, which may give birth to infractions. The changes described to the shopping process also disclosures the concern of who should endure the responsibility if algorithms dishonestly distort consumer's decisions by artificially limiting their choice or prioritising sponsored results without revealing they are doing it; the possibility of biased recommendations is an actual alarm.

Many cases are already taking place in this regard, for example, *Cosmetic Warriors Ltd and Lush Ltd v Amazon.co.uk Ltd and Amazon EU*, solved by the High Court of UK in 2014. In this case, the company Lush initiated a complaint against Amazon after realizing that Amazon created sponsored advertisements using 'Lush' as an adword when instead no Lush products were sold on that platform. Everyone knows that Amazon sells a wide range of products from diverse brands; hence, after perceiving those advertisements, a consumer would expect to find Lush products on the platform. Nevertheless, the products offered by Amazon had a similar appearance, and nothing was affirming that they were not Lush goods. Thus, it was not easy for consumers to determine whether the products were from the company Lush or not. The Court decided to hold Amazon liable for infringement because it used other trademarks with hyperlinks that redirected consumers to its own website but did not show the mentioned product. Furthermore, Amazon was taking advantage of Lush's reputation to attract more customers by means of confusion.[32] Therefore, we can affirm that through AI actions trademarks can be infringed. However, it will clearly depend on the role AI has during the buying activity, and how the online search of products are offered to consumers.

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[30] SENG D., *Detecting and Prosecuting IP Infringement with AI: Can the AI Genie Repulse the Forty Counterfeit Thieves of Alibaba?,* p.16 (September, 2020), (*available at:* https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3686469)

[31] SLOANE P., Fordham Intellectual Property, Media & Entertainment Law Journal, *Trademark Vigilance in the Twenty-First Century: An Update,* Vol.XXX:1197, p.1221 (2020)

[32] THOMSON REUTERS Publication, Practical Law IP&IT, *High Courts finds that Amazon infringed LUSH trademark,* (February 2014), (*available at:* https://uk.practicallaw.thomsonreuters.com/8-557-4305?transitionType=Default&contextData=(sc.Default)&firstPage=true)

Going further to the digital AI assistants, for example Alexa, -which works with voice recognition software-, we can wonder what would happen if we ask to order something from a specific brand, and instead, we are given an alternative suggestion or a similar product from another seller which may be an Amazon's one. Algorithms influence decisions. But, are algorithms programmed to push Amazon's products, for example, over those of other vendors? If they are, it would definitely cause violations on trademark law, but who would be responsible? "The operator or user of the AI; the provider of data or brand owners." [33]

The Trade Marks Act of 1994 refers to 'a person' who commits trademark infringement[34] so, first, we must inquire whether AI are considered persons or not. They are not considered legal entities and thus, cannot be accountable. It is understood that "algorithms lack legal personhood, they cannot be directly held liable, and an appropriate defendant should be identified."[35]

If the algorithm is controlled by the platform (Amazon for example), liability will be on that platform. Still, if a developer creates it, it would lie on him, and the platform would not be responsible if it only works as a search engine that shows results with products. However, the platform may be accountable as a secondary infringer if it acts as an intermediary, and if it is aware of the infringement and does not make efforts to prevent it. This encompasses the doctrine of intermediary or accessory liability. Therefore, the responsible party should be the one creating the algorithm, as he chooses which items will be exhibited to the customer.

Yet, most of the time the injured party won't be able to determine which of these scenarios is the case. Therefore, in such instances, the joint liability of the involved parties should be considered the most suitable outcome. This shows that human influence remains leading, as liability lies with a legal person[36], and AI is regarded as an instrument (under human direction) for infringement, but it is not the infringer. Liability will then be analyzed on a case-to-case basis, depending on specific circumstances like

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[33] UK IPO, *Government response to call for views on artificial intelligence and intellectual property* (March 2021), (*available at:* https://www.gov.uk/government/consultations/artificial-intelligence-and-intellectual-property-call-for-views/government-response-to-call-for-views-on-artificial-intelligence-and-intellectual-property#trade-marks)
[34] UK IPO, *Government response to call for views on artificial intelligence and intellectual property* (March 2021)
[35] GANGJEE, D., Op. Cit. 4
[36] UK IPO, *Government response to call for views on artificial intelligence and intellectual property* (March 2021)

who is the owner of the AI; how was the AI used, and whether the providers and owners have responded and acted to notices of infringement or not.

VI. Conclusion

We are witnessing how technology is ahead of us and how AI systems are transforming our daily lives. It has been proven that the combination of humans and the capacity of AI provide more accurate and efficient systems.

Trademark laws were made for human interaction with products, services, and brands. On the other hand, AI's objective is to reduce or remove the human component of such interactions. However, in the field of trademark law, as explained throughout the essay, AI won't be able to substitute humans totally, and they must join efforts. This is because trademark infringements or confusion evaluations, for example, are analyzed on a case-to-case basis and by considering different circumstances. Assessing the contextual use of a sign remains challenging, as there are no specific rules or automatic data that would apply to all cases. Consequently, making complex decisions is not, at least today, beyond AI's capabilities.

Additionally, Courts will have to adjust to the new realities of AI concerning trademark law. Trademark law will eventually need to adapt to these technological changes. Nevertheless, as previously exposed, trademark law will not be discarded, as one of the principles of a trademark's existence is the emotional link between the consumer and the brand, which clearly cannot be provided by AI systems.

Technology and AI systems are here to stay. We cannot ignore that we are in constant change and continuous adaptations because of technology, so legislation should catch up with these exponential developments. Countries' authorities must become active in creating a fully harmonised, updated, and functioning regulatory framework in the field of AI technologies. In October 2020, the European Parliament adopted proposals for governing artificial intelligence in the European Union and suggested that the new framework should be a Regulation rather than a Directive to avoid fragmentation of the European Digital Single Market and conflicts between national laws and European guidelines. A unified regulation will provide legal

transparency, certainty and will contribute to technological development, as citizens would have legal support and would gain trust on these new systems.[37]

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[37] European Parliament News, October 2020, available at: https://www.europarl.europa.eu/news/es/press-room/20201016IPR89544/el-parlamento-muestra-el-camino-para-la-normativa-sobre-inteligencia-artificial

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