# IP AND VIRTUAL ASSISTANTS[1]

## *PI e Assistentes Virtuais*

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**RESUMO:**

Este artigo considera as implicações dos assistentes virtuais para a lei de propriedade intelectual. A Quarta Revolução Industrial e as consequências da pandemia da COVID-19 foram caracterizada por um aumento no comércio eletrônico por meio do uso de assistentes virtuais ("VAs"). Chatbots como o ChatGPT ou o Bard do Google e alto-falantes inteligentes como a ALEXA, Siri ou Google Assistant podem ser muito úteis para os usuários, aumentando os ganhos de eficiência, economizando tempo e custos. No entanto, os chatbots baseados em IA generativa são alimentados com conjuntos de dados em massa que

*ABSTRACT:*

*This paper considers the implications of virtual assistants for intellectual property law. The Fourth Industrial Revolution and the aftermath of the COVID-19 pandemic has been characterised by a rise in e-commerce through the use of virtual assistants ('***VAs***'). Chatbots such as ChatGPT or Google's Bard and smart speakers such as ALEXA, Siri or Google Assistant can be very useful for users by increasing efficiency gains, saving time and costs. However, the chatbots that are based on generative AI, are fed on mass data sets that can increase the risk of IP rights infringement and challenge fundamental concepts within IP rights relating to copyright, trade marks, patents and designs.*

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1 Trabalho elaborado para o IP Campus 2023 do Pan-European Seal Professional Traineeship Programme do EUIPO – Instituto de Propriedade Intelectual da União Europeia (Alicante, Espanha), sob orientação do Prof. Doutor Alexandre Dias Pereira (Universidade de Coimbra).

2 Pan-European Seal / Young Professional Trainees, European Union Intellectual Property Office. IP Campus 2023 Group IP & Virtual Assistants. Winners of first award at the EUIPO IP Campus 2023. All opinions and views expressed in this article are those of the authors and do not represent nor reflect the views and opinions of the EUIPO or its staff. The EUIPO does not warrant this article's accuracy, nor the accuracy of the views expressed concerning the legal status of the subject matter explored by the authors.

podem aumentar o risco de violação dos direitos de PI e desafiar os conceitos fundamentais dos direitos de PI relacionados a direitos autorais, marcas registradas, patentes e designs. Constata-se que a lei de PI deve continuar a desenvolver à medida que os VAs desafiam a dinâmica tradicional do mercado.

*It is found that IP law must continue to develop as VAs challenge traditional market dynamics.*

**Palavras-chave**: Virtual assistants. Generative artificial intelligence. ChatGPT. Trade marks. Patents. Copyright. Designs. Black box.

***Keywords:*** *Virtual assistants. Generative artificial intelligence. ChatGPT. Trade marks. Patents, copyright. Designs. Black box.*

## SUMMARY



# A CONTENT DESCRIPTION

## 1 General introduction

Siri, Google Assistant and Alexa are just some examples of VAs that form part of everyday life. VAs can be accessed through a variety of devices, including smartphones, smart speakers, and other connected devices. The VAs market is largely divided into chatbots and smart speakers.[3] According to research, the business market for chatbots will grow by 15% to be worth more than $7 billion.[4]

There is a new player in the VAs market dominating headlines around the globe. It is a chatbot which can answer almost all your questions, and which drafted almost the entire 'introduction' with a simple instruc-

[3] Dimitrios Rafailidis and Yannis Manolopoulos 'Can Virtual Assistants Produce Recommendations?' (**Conference: the 9th International Conference on Web Intelligence, Mining and Semantics**, 26 June 2019). https://www.researchgate.net/publication/333224988_Can_Virtual_Assistants_Produce_Recommendations. Accessed 13/02/2023.

[4] LOHR, Steve, 'Ending the Chatbots Spiral of Misery' **The New York Times** (3 March 2022).

tion: ChatGPT! ChatGPT is a chatbot developed by OpenAI. It is based on GPT-3.5, a deep learning model for natural language processing and has been trained on a massive amount of text data to understand and generate human-like responses to a wide variety of questions. The primary function is to generate text that is coherent and relevant to the input provided by users so it can hold natural conversations with people.

## 2 Virtual assistants

### *2.1 How do VAs work?*

While a detailed and extensive explanation of how VAs work is beyond the scope of this paper, this section provides a simple explanation based on two concepts:

#### *(i) Natural language processing ('NLP')*

VAs use NLP to understand and respond to user commands in natural language. In simple terms, NLP makes it possible for humans to 'talk' to machines. NLP is the branch of artificial intelligence that deals with the ability of computers to understand text and spoken words in much the same way that humans can. It allows VAs to understand human language and interpret the user's intent, meaning, and sentiment. NLP algorithms work by breaking down the user's input into smaller components such as words, phrases, and sentences, and analysing them to extract meaning.[5] It is important to emphasise that NLP consists of natural language generation ('**NLG**') which is used to transform data into words understood by humans and natural language understanding ('**NLU**') which concerns machine reading comprehension.[6]

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[5] OVERBY, Stephanie, 'Artificial intelligence (AI) vs. natural language processing (NLP): What are the differences?' (**The enterprisers project**, 6 February 2020), https://enterprisersproject.com/article/2020/2/artificial-intelligence-ai-vs-natural-language-processing-nlp-differences. Accessed on 7 February 2023.

[6] EUIPO, 'Study on the impact of artificial intelligence on the infringement and enforcement of copyrights and designs' (March 2022). https://euipo.europa.eu/

By using NLP, VAs can provide users with personalised and helpful responses to their commands, making it easier to access information, perform tasks, and control their devices. As NLP technology improves, VAs are becoming more accurate and reliable, making them an essential part of our daily lives.

### *(ii) Generative artificial intelligence (generative AI)*

VAs, especially chatbots, also use generative AI. This is a type of AI that is capable of creating new data or content based on patterns and trends learned from existing data. VAs use generative AI to generate responses to user requests, based on the information they have learned through their training data. Three main steps are involved in this process.[7]

1. **Forming a database:** First, there is a neural network which consists of billions of data, information, text, sounds, files etc. This network forms the basis of the artificial intelligence.
2. **User input:** Secondly, the user provides the AI system with a description or sample of the desired content. This could include words and numbers but also pictures.
3. **Generating content:** Finally, the AI will use its neural network to generate new examples that are similar to the ones it has trained from.

In conclusion, VAs are based on software programs that use NLP and generative AI to interact with users through text or speech. When a user interacts with a VA, the VA analyses the user's input, recognises the

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tunnel-web/secure/webdav/guest/document_library/observatory/documents/reports/2022_Impact_AI_on_the_Infringe ment_and_Enforcement_CR_Designs/2022_Impact_AI_on_the_Infringement_and_Enforcement_CR_Designs_ FullR_en.pdf. Accessed on 7 February 2023; OVERBY, Stephanie, 'Artificial intelligence (AI) vs. natural language processing (NLP): What are the differences?' (**The enterprisers project**, 6 February 2020), https://enterprisersproject.com/article/2020/2/artificial-intelligence-ai-vs-natural-language-processing-nlp- differences. Accessed on 7 February 2023.

7 ROUTLEY, Nick, 'What is generative AI? An AI explains' (**World Economic Forum – artificial intelligence**, 6 February 2023). https://www.weforum.org/agenda/2023/02/generative-ai-explain-algorithms-work/. Accessed on 15 February 2023.

intent behind the request (NLP), and generates an appropriate response (with the help of generative AI).

## 2.2 Chatbots

The fastest-growing consumer application in history is the chatbot ChatGPT.[8] Given the prevalence of ChatGPT in the media and at the EUIPO - from webinars to Tech Watch working groups on this technology -, this part of the paper explains how ChatGPT works and the heightened risk it creates for intellectual property.

ChatGPT is the name of the chatbot is itself. A chatbot is a computer program designed to simulate a conversation with human users, especially over the Internet.[9] GPT 3.5 is the large language model ('**LLM**') behind the chatbot. An LLM is an algorithm that can recognise, summarise, translate, predict and generate text and other content based on the knowledge gained from massive datasets. GPT 3.5 extracts data from textbooks, newspapers, websites and different articles. It collects this enormous amount of data **(input)** and processes it using NLP, to make it understandable and to stimulate a human conversation. By using NLP and generative AI, ChatGPT can summarise large amounts of data and respond **(output)** to questions quickly.

ChatGPT is unique because it uses reinforcement learning with human feedback ('**RLHF**'). This means that ChatGPT not only learns from the data it collects but also from human feedback. The human feedback is used in order to limit harmful output. A disadvantage of using RLHF is that the output will be more general. The source of the output is also unclear, this raises concerns for trade mark law, designs, copyright and patent which this paper examines. ChatGPT-driven voice assistants

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8 HU, Krystal, 'ChatGPT sets record for fastest-growing user base' (**Reuters – technology**, 2 February 2023). https://www.reuters.com/technology/chatgpt-sets-record-fastest-growing-user-base-analyst-note-2023-02-01/. Accessed on 24 February 2023.

9 NUSEIBEH, Rajai, 'What is a chatbot?' (**Chatbots Magazine**, 11 May 2018). https://chatbotsmagazine.com/what-is-a-chatbot-6dfff005bb34. Accessed on 24 February 2023.

(for example: Alexa with ChatGPT software) are expected to be released soon.[10]

## 2.3 Black box operations and web scraping

VAs under analysis use black box AI, and therefore it is important to understand the challenges of the black box phenomenon. This refers to a situation where an algorithm or machine learning model is used to make predictions or decisions, but the inner workings of the algorithm are not transparent or explainable for the users. As *Figure 1* below shows, the input is converted into output but there is a lack of transparency as it is not completely clear how the algorithm came to a particular output in any given case.

All of the input is collected (via a crawler) by web scraping shown in *Figure 2*. This is a process where bots automatically extract data from websites. In generative AI, this method is used to train the models. Web scraping is also controversial since EU law does not prevent Big Tech companies from extracting data without having permission from copyright owners and creating a model with it.[11] Currently, the EU regulators are considering addressing these issues with the draft AI Regulation.[12]

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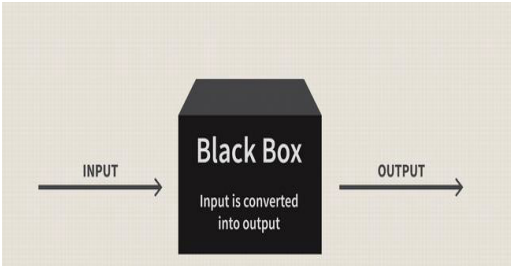
10 X, 'ChatGPT-driven smart home voice assistant coming soon' **The Economic Times** (Mumbai, 25 February 2023). https://economictimes.indiatimes.com/tech/technology/chatgpt-driven-smart-home-voice-assistant-coming-soon/articleshow/98227786.cms. Accessed on 5 March 2023.

11 POIREAULT, Kevin 'ChatGPT's Data-Scraping Model Under Scrutiny From Privacy Experts' (**Infosecurity Magazine** 27 January 2023). https://www.infosecurity-magazine.com/news-features/chatgpts-datascraping-scrutiny/. Accessed on 25 March 2023.

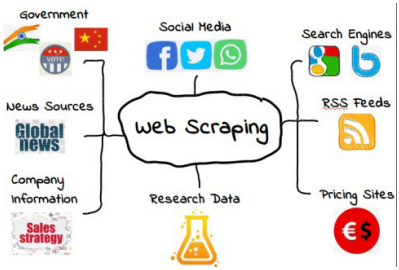
12 COM (2021) 206: Proposal for a Regulation of the European Parliament and of the Council laying down harmonised rules on artificial intelligence (Artificial Intelligence Act) and amending certain Union legislative acts. https://eur-lex.europa.eu/procedure/EN/2021_106.

**FIGURE 1**: The black box problem




*Source: Investopedia, What is a Black Box Model?*[13]

**FIGURE 2**: Web Scrapping




*Source: Kinsta, What Is Web Scraping?*[14]

## 2.4 Data protection issues

There are some data privacy concerns with VAs. For example, Amazon came under scrutiny when it was discovered that it employs thousands of people to listen to voice recordings captures in Echo owner's homes and offices. These recordings are 'transcribed, annotated and then fed back into the software as part of an effort to eliminate gaps in Alexa's understanding of human speech'.[15] This example shows that VAs have access to a mass amount of personal data including all user's commands and answers. The European Data Protection Board has issued guidelines on virtual voice assistants.[16] ChatGPT and other LLMs are also raising data privacy concerns since it's unclear where the input data is coming

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13 KENTON, Will, 'What Is a Black Box Model? Definition, Uses, and Examples' (**Investopedia**, 6 March 2022). https://www.investopedia.com/terms/b/blackbox.asp. Accessed on 26 March 2023.

14 Kinsta, "What is webscraping" (**Kinsta**, 15 September 2022). https://kinsta.com/knowledgebase/what-is-web-scraping/#what-is-web-scraping. Accessed on 25 March 2023.

15 DAY, Matt, TURNER, Giles and DROZDIAK, Natalia, 'Thousands of Amazon Workers Listen to Alexa Users' Conversations' **Time Magazine** (New York, 11 April 2019). https://time.com/5568815/amazon-workers-listen-to-alexa/. Accessed on 25 March 2023.

16 EDPB, Guidelines 02/2021 on **Virtual Voice Assistants** (7 July 2021). https://edpb.europa.eu/our-work-tools/documents/public-consultations/2021/guidelines-022021-virtual-voice-assistants_en.

from.[17] Notably, Italy has become the first European country to temporarily ban ChatGPT due to privacy concerns.[18] Clearly, employees should be careful never to put confidential information into ChatGPT.[19]

## 3 Intellectual property rights

Intellectual property ('**IP**') rights protect creations of the human mind and reward people for their creativity and inventiveness. They encourage investment in technology and promote art and culture. However, given the challenging technological features of VAs discussed in Part II of this paper, the relationship between IP rights and VAs raises several questions. Should IP rights protect the creations of VAs? Who would own those creations? Who would be liable for IP infringement if VAs use the creations of others? Is the law developing fast enough to respond to the challenge of VAs?

### *3.1 Copyright*

As new technologies like VAs become more prevalent in daily lives, issues regarding eligibility, ownership and infringement are raised. In this context, it is important to understand the principles of EU copyright law, and how they apply to these emerging technologies to ensure that authors' and users' rights are properly protected.

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17 POIREAULT, Kevin, 'ChatGPT's Data-Scraping Model Under Scrutiny From Privacy Experts' (**Infosecurity Magazine** 27 January 2023). https://www.infosecurity-magazine.com/news-features/chatgpts-datascraping-scrutiny/. Accessed on 25 March 2023.

18 MCCALLUM, Shiona, 'ChatGPT banned in Italy over privacy concerns' **BBC** (London, 1 April 2023). https://www.bbc.com/news/technology-65139406. Accessed on 5 April 2023.

19 OCELOT, Liquid, 'Don't Chat With ChatGPT: Amazon's Warning To Employees' (**Medium** 27 january 2023). https://medium.com/inkwater-atlas/dont-chat-with-chatgpt--amazon-s-warning-to-employees-ce1dc2236a40. Accessed on 25 March 2023.

### 3.1.1 The eligibility of AI works for copyright protection

Although there is no registration requirement for a work to be protected by copyright, it only subsists in works that meet two cumulative conditions under EU law:

1. The work must be original: it must reflect the 'author's own intellectual creation' (16/07/2009, C-5/08, Infopaq International A/S v Danske Dagbaldes Forening, EU:C:2009:465, § 37). This means the work must reflect the author's personality, as an expression of their free and creative choices. This suggests the need to show a certain degree of human involvement.
2. The subject matter must constitute a 'work', meaning, it is must be original and identifiable with sufficient precision and objectivity (12/09/2019, C-683/17, Cofemel – Sociedade de Vestuário SA v G-Star Raw CV, EU:C:2019:721).

Clearly, originality and the element of human intervention are cornerstones of the EU copyright protection legal system. The next section considers how these elements impact the relationship between copyright law and VAs.

#### *(i) Do VAs qualify for copyright protection?*

EU law provides copyright protection for software as "literary works". Ownership is generally vested in the creator of the work, that is the writer of the source code (developers). As AI software, VAs could be eligible for copyright protection provided they are original.

#### *(ii) Do works generated by VAs qualify for copyright protection? In addition, should they be protected?*

Since VAs using generative AI, such as ChatGPT, can generate human-like text on a wide range of topics, it is doubtful whether this human-like text could be protected by copyright law. Having in mind the general principles of EU copyright law, it is arguable that AI-generated

works could be protected by copyright if: (1) there is substantive human intervention and (2) those works are original.

However, the application of the above general rule on VAs, using generative AI is complicated in practice. Since VAs are trained on a corpus of pre-existing data (which may include copyrighted works as demonstrated by the black box operations explanation in section 2.4) to generate output, it may be more difficult to show that the resulting work is original. Also, VAs are no longer regarded as simply tools used by humans to help humans, on the contrary, they are now advanced enough to make many decisions involved in the creative process without substantial human intervention.

Therefore, when an artist uses VAs as a tool and is heavily involved in the creation of the work, thereby reflecting the author's own intellectual creation, it seems likely that traditional copyright law will grant protection to the resulting work. However, when the work is solely generated by VAs, it is doubtful that the EU originality threshold will be met due to the lack of substantial human creative input.

For instance, the US Copyright Office has denied copyright protection to a work entirely generated by a machine on the basis that copyright law only protects 'the fruits of intellectual labor [that] are founded in the creative powers of the [human] mind' (Feist Publications v Rural Telephone Service Company, Inc. 499 U.S. 340 (1991)).[20] The crucial question being 'whether the work is basically one of human authorship, with the computer [or other device like VAs] merely being an assisting instrument, or whether the traditional elements of authorship in the work were actually conceived and executed not by a man but by a machine'.[21] This issue has not yet been fully clarified by the EU courts. It is suggested

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[20] GUADAMUZ, Andres, 'Artificial intelligence and copyright' (**WIPO Magazine**, October 2017), Issue 5/2017. https://www.wipo.int/wipo_magazine/en/2017/05/article_0003.html. Accessed on 20 March 2023.

[21] Final Report of the National Commission on New Technology Uses of Copyrighted Works (July 31, 1978), Chapter 3: Computers and Copyright, New Works, Library of Congress/Washington (1979). http://digital-law-online.info/CONTU/contu17.html#_ftn142.

that copyrighting a VA-generated work will likely depend on the degree of human intervention.

### 3.1.2 Ownership of works generated by VAs

Under EU copyright law, copyright ownership generally vests with the author of the work, except in specific cases such as employees' works or commissioned works. It is therefore paramount to determine who the author of a work is. In the context of AI-generated works by VAs, ownership of copyright is as debatable as the eligibility for protection.

Is the AI-assisted artist (user of the VA) or the AI model's developer (author of the VA) the owner of the work? As Andres Guadamuz observes 'In the analogue world, this is like asking whether copyright should be conferred on the maker of a pen or the writer. Why, then, could the existing ambiguity prove problematic in the digital world?'[22]

Although it is the user that requests the VA to generate a specific content based on specific instructions, it is the AI-system developers that have created and written the source code that generates said-content. In this way, the work does not result from the human user's inputs alone, but also from complex algorithms trained on enormous amounts of data. This suggests that co- ownership could also be justified and depending on the degree of contribution of the user and the AI-system developers, both parties could be regarded as copyright owners.

Currently, it is not clear who, if anyone, should own the copyright in works generated by VAs. This suggests that this matter will be resolved case-by-case having consideration to the specific facts and circumstances surrounding the creation of the work.

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[22] Andres Guadamuz, 'Artificial intelligence and copyright' (**WIPO Magazine**, October 2017), Issue 5/2017. https://www.wipo.int/wipo_magazine/en/2017/05/article_0003.html. Accessed on 20 March 2023.

### 3.1.3 Can VAs be involved in copyright infringements?

Another question that arises from the above discussion is whether it is possible for VAs to be involved in copyright infringement. This arises, in particular, in cases where the data used to feed the AI systems infringe copyright or the output of the AI systems infringes existing works.

#### *(i) General remarks about copyright infringement*

EU copyright legislation does not define copyright infringement. The EU copyright regime consists of thirteen directives and two regulations. Significantly, Directive 2001/29/EC on the Harmonisation of Certain Aspects of Copyright and Related Rights in the Information Society[23] harmonises the essential rights of authors, performers, producers and broadcasters.

However, it is widely accepted that copyright infringement is any act that interferes with the moral and/or economic rights of the author of a protected work, without prior authorisation (e.g. a licence) or without the application of the exceptions and limitations foreseen in the law (e.g. reproducing and communicating parts of a work for the purpose of research, news reporting, criticism or review, study, instruction, quotation, parody, or text and data mining, which are the equivalent of fair use as it is known in the USA).[24]

#### *(ii) Copyright infringement and VAs*

VAs are conversational AI models that, usually, only respond verbally or in writing to human queries/instructions. They do not generate

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[23] Directive 2001/29/EC of the European Parliament and of the Council of 22 May 2001 on the Harmonisation of Certain Aspects of Copyright and Related. rights in the information society. https://eur-lex.europa.eu/legalcontent/EN/TXT/?uri=OJ%3AL%3A2001%3A167%3ATOC.

[24] HAßDENTEUFEL Stefan, 'In brief: copyright infringement and remedies in European Union' (**Lexology**, 25 May 2022). https://www.lexology.com/library/detail.aspx?g=45bc2f60-4cb7-4b3e-b1f8-0876d593b366. Accessed on 25 March 2023.

copyright-protected works. Therefore, their potential to be part of a copyright infringement issue is limited, but in no way non-existent.

An example of copyright infringement involving VAs such as Alexa and Siri is when they dictate copyright-protected works (e.g. books, articles etc.). When the VA dictates a book for its user, this behaviour is no different to that of a person and is considered reproduction for private use which causes no copyright issues. However, when a VA reads out loud a copyright- protected work to an audience, then this behaviour might be considered an infringement of the right of communication to the public, if the relevant license was not obtained.

The situation is even more interesting when it comes to VAs using generative AI, such as ChatGPT. This is because they can actually generate works that can be copyright-protected under certain conditions (i.e. existence of substantive human intervention and originality). As a result, we have identified two main concerns with ChatGPT and copyright infringement.

**a) The input concerns**

The first concern relates to whether copyright-protected data can be used to train ChatGPT. The chatbot is trained on a huge amount of text data, including textbooks, newspapers, websites and different articles, which are often considered works protected by copyright law. Therefore, the involvement of ChatGPT in copyright infringement issues is almost inevitable. If these data sets are used without a licence or without a legal exception applying, then the company behind ChatGPT, OpenAI, could be considered to be infringing on the copyright holders' rights. If ChatGPT were to present the text of its training data as its own or to modify it in a way that distorts the original meaning or message, ChatGPT could be infringing on the author's moral rights of attribution and integrity respectively.

Notably, in Europe text and data mining is allowed and does not constitute copyright infringement if performed within the legal framework in place. In any case, a useful asset for copyright holders is the fact that, except where TDM is carried out for research purposes by rsearch institutions, they maintain their right to opt out of it and refuse text

and data mining on their works (Article 3 and 4 of Directive 2019/790). However, it will be interesting to observe how this opt-out option is used and whether AI businesses genuinely adhere to it.[25]

**b) The output concerns**

The second concern that arises relates to the output of ChatGPT, namely the content generated by ChatGPT. The use of the VAs generated content apparently raises no issues as long as the conditions of private use apply. However, in terms of using the content for wider public communication, it is important to note that content created by ChatGPT is derived from content that has been previously generated by others. Hence, it is unclear what the copyright repercussions of reusing this content will be: when is the output 'inspired' from existing works and when is it actually infringing them? A ChatGPT user may unintentionally infringe on someone's copyright if he/she publishes output that is too similar to an existing copyrighted work.[26]

If ChatGPT were to use its training data in a way to generate output that is a reproduction or a derivative of a copyrighted work, such as a book, song, or movie (for ex. in the same style as the original one), this reproduction or derivative work would likely be considered an infringement of the copyright holder's exclusive right to reproduce the work and to create derivative works, especially in case of absence of a licence and/or of a statutory exception or limitation.[27]

If copyright infringement is established in the abovementioned situations, liability is the next concept to be explored and questions regarding who will be directly or indirectly liable for these infringements will

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[25] European Commission IP Helpdesk, 'Intellectual Property in ChatGPT'. https://intellectual-property-helpdesk.ec.europa.eu/news-events/news/intellectual-property-chatgpt-2023-02-20_en.

[26] European Commission IP Helpdesk, Intellectual Property in ChatGPT. https://intellectual-property-helpdesk.ec.europa.eu/news-events/news/intellectual-property-chatgpt-2023-02-20_en.

[27] SCANNELL, Barry, MOORE, Leo & CULLEN, David, 'Generative AI Generates Infringement Litigation' (**Lexology**, 19 January 2023). https://www.lexology.com/library/detail.aspx?g=076d0a94-503d-447f-b350-ecd4f37788e4. Accessed on 24 March 2023.

arise. However, since the subject is still quite novel, the answer to these questions will develop with future case-law.

## 3.2 Trade marks

Trade mark protection is rationalised by the search cost function. The law preserves the distinctiveness of marks as a way for consumers to identify a product or service. The General Court has recognised that in addition to the origin function, trade marks can perform quality, advertising, investment and communication functions.[28] The purchasing habits of consumers change over time, raising important questions about these functions and the allocation of trade mark rights in the digital economy. According to some reports, voice commerce ('v- commerce') is set to become the third key online channel for shopping.[29]

### 3.2.1 VAs at the EUIPO

The foregoing discussion has demonstrated that VAs are a major part of simplifying everyday life. As AI technology becomes widespread, it is important that trade mark law remains relevant and effective. The EUIPO uses AI-assisted tools widely. For example, in translation revision, prior art searches, letter analysis and workload distribution. The EUIPO's Strategic Plan 2025 envisages the further implementation of AI-assisted tools including multi-lingual chatbots, validation of content, image recognition for design registration and enforcement. All departments recently gave input on the use of ChatGPT, with the Operations Department already testing AI-assisted drafting tools.

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[28] Case C-487/07, **L'Oréal SA v Bellure NV**, [2009] EU:C:2009:378.

[29] KINSELLA, Bret & MUTCHLER, Ava, 'Voice Shopping Consumer Adoption Report' (**Voicebot.ai** June 2018). https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKEwia-ca8-4_-AhUNVaQEHSFgC7UQFnoECAgQAQ&url=https%3A%2F%2Fvoicebot.ai%2Fwp-content%2Fuploads%2F2018%2F06%2Fvoice-shopping-consumer-adoption-report-june-2018-voicebot-voysis.pdf&usg=AOvVaw2CD0sqPe-3KsajtVoNnfNM. Accessed on 22 March 2023.

### 3.2.2 Advancements in VA technology: a challenge to trade mark law?

These developments show that on the one hand, IP institutions such as the EUIPO are embracing innovation surrounding VA technology. They can improve quality, assist the completion of tasks, save costs and time. On the other hand, it is not clear whether the legal framework underpinning trade mark law has sufficiently kept pace with these developments. According to the *Financial Times*, more than 50 % of Alexa customers are now using it for shopping,[30] while the European Data Protection Board highlights that there are currently more than 3 billion smartphones and all of them have integrated virtual voice assistants, most of them switched on by default.[31]

V-commerce affects the information available to the consumer and the extent of consumer autonomy in executing the purchase.[32] It is argued that this creates a tension for the search cost theory underpinning trade mark law.[33]

### 3.2.3 Case study: Product recommendation systems and VAs

The case-study is a VA shopping scenario using ChatGPT and Alexa to make recommendations for a 'good orange juice to buy'. The first case study shows how AI technology can be the primary purchaser of products without affording much prominence to a brand name. From the outset,

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30 LEE, Dave, 'Amazons Big Dreams for Alexa Fall Short' **The Financial Times** (London, 4 March 2023).

31 EDPB, Guidelines 02/2021 on Virtual Voice Assistants (7 July 2021). https://edpb.europa.eu/our-work-tools/documents/public-consultations/2021/guidelines-022021-virtual-voice-assistants_en.

32 CURTIS, Lee and PLATTS, Rachel, 'Trademark law playing catch-up with Artificial Intelligence?' (**WIPO Magazine**, June 2020). https://www.wipo.int/wipo_magazine_digital/en/2020/article_0001.html. Accessed on 26 March 2023.

33 CURTIS, Lee and PLATTS, Rachel, 'Trademark law playing catch-up with Artificial Intelligence?' (**WIPO Magazine**, June 2020). https://www.wipo.int/wipo_magazine_digital/en/2020/article_0001.html. Accessed on 26 March 2023.

AI purchasing decisions are data driven rather than emotive.[34] One commentator observes that even in highly relevant search results, a trade mark right may not hold any significance.[35] This shows that AI mechanisms should affect the way European trade mark law defines the average consumer. In addition, v-commerce reduces brand visibility since Table 1 shows only a few options are listed. Table 1 below shows the results of Alexa and ChatGPT suggestions of 'good orange juices to buy':

**Table 1**: 'Recommend me a good orange juice to buy'

| ChatGPT | Alexa |
|---|---|
| Tropicana | Minute Maid |
| Minute Maid | Tropicana |
| Simply Orange | Simply Orange Juice |
| Florida's Natural | Florida's Orange Juice |

### Liability of VAs for trade mark infringement

In the case of Amazon's Alexa, its algorithm can suggest products based on a buyers personal shopping history and execute the purchase. ChatGPT, in contrast, cannot execute a purchase. While VAs are unlikely to fully replace humans in purchasing decisions in the immediate future,[36] the case study shows the ease at which purchasing power can

[34] WHITE, Marie, MOGYOROS, Alexandara, GANGJEE, Prof. Dev. 'IPO Artificial Intelligence and Intellectual Property: call for views Trade Marks' (**SSRN**, 1 December 2020). https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3740271. Accessed on 25 March 2023.

[35] OUELLETTE, Lisa Larrimore, 'Response, Does Running Out of (Some) Trademarks Matter?', (**Harvard Law Review**, 2018), https://harvardlawreview.org/2018/02/does-running-out-of-some-trademarks-matter/. Accessed on 30 April 2023; SEVASTIANOVA, Vera, '**Trademark Functions in the Age of Voice Shopping**: A Search Costs Perspective' (Thesis, Hanken School of Economics 2020), https://ecta.org/ECTA/documents/Sevastianova3517.pdf. Accessed 30 April 2023.

[36] The United Kingdom Government Consultation Outcome, **Artificial intelligence call for views: trade marks** (23 March 2021), https://www.gov.uk/government/con-

be delegated to VAs. It marks the beginning of less brand interaction between the consumer and businesses. This raises a dilemma given the potential for VAs to recommend a trade mark infringing product. While the decision in *L'Oréal* confirms that companies can be liable for trade mark infringement as a result of their user's postings, it is not clear if this principle could extend, for example, to an infringement committed by eBay's ShopBot.

**Average consumer**

According to the EUIPO's Guidelines, the average consumer is 'deemed to be reasonably well informed and reasonably observant and circumspect'.[37] However, VAs possess an almost perfect recollection, and thus are not similar to the average consumer as described by the EUIPO Guidelines. Yet, recent studies show that VAs like ChatGPT can suffer from a phenomenon termed 'AI hallucinations'. This occurs when an 'AI model generates output that deviates from what would be expected based on its training data'.[38] At its worst, this can result in consumers being fed disinformation. These trends suggest that decision-makers should distinguish purchases with or without AI mechanisms, consider the level of sophistication of an AI tool, whether the data could be subjected to an AI hallucination and adapt existing principles. For example, the concept of phonetic similarity may need to have an enhanced importance in the examination of a trade mark for infringement or in opposition decisions.

## 3.3 Designs

sultations/artificial-intelligence-and-intellectual-property- call-for-views/artificial-intelligence-call-for-views-trade-marks. Accessed on 20 March 2023.

[37] See EUIPO Trade mark guidelines 2023, C.2.3.

[38] PETKAUSKAS, Vilius 'ChatGPT's answers could be nothing but a hallucination' (**Cybernews**, 6 March 2023) https://cybernews.com/tech/chatgpts-bard-ai-answers--hallucination/. Accessed on 25 March 2023.

With the development of AI technologies, VAs have increasingly become valuable tools for designers. They are used in a variety of ways to streamline their workflows, increase their productivity, and enhance their creativity. Be it through voice commands or text inputs, VAs like Google Assistant can assist designers in a multitude of tasks, such as searching for specific design examples, images, or articles, scheduling meetings, but also generating colour palettes, creating simple designs, or providing design inspiration and recommendations. Furthermore, specialised VAs, like Logojoy, are designed specifically for graphic designers to help them create, inter alia, logos for their clients. Similarly, to copyright and trademarks, in the field of EU design law, the rise of AI and VAs have brought new legal challenges. The use of VAs in the conception and creation of product designs still raises important IP law issues.

### 3.3.1 The eligibility for Design registration

EU design law is governed by the Community Design Regulation[39] ('**CDR**') as well as national laws of each EU member state which provides protection generally through registration or unregistered rights. Designs specify how products look; they protect the appearance of a product. Indeed, the CDR defines a design as the appearance of the whole or a part of a product resulting from the features of, in particular, the lines, contours, colours, shape, texture and/or materials of the product itself and/or its ornamentation (Article 3(a) CDR). Apart from computer programs, any industrial or handicraft item is eligible for design protection insofar as they are new and have an individual character (Article 3(b) and Article 4(1) CDR). Parts of products that can be taken apart and reassembled can also be protected.

[39] Council Regulation (EC) No 6/2002 of 12 December 2001 on Community designs, https://eur- lex.europa.eu/eli/dir/2019/790/oj.

### (I) Do VAs qualify for EU design registration?

Whilst VAs like Google Assistant, Alexa, Siri, and others are software-based products that do not have a physical appearance or form that can be registered for design protection, there nonetheless exist elements that can be registered as designs under EU design law. In fact, in such a highly competitive market, the recognisable designs of VAs play a significant role in providing companies with a competitive advantage since they constitute an important aspect of users' experience and usability; they help users identify and interact with them.

The design of a VA includes various elements such as the user interface, voice and sound design,[40] and the physical device (in cases where the VA is housed in a physical device). These elements need to be designed in a way that is both visually appealing and functional.

For example, the Community design (RCD n° 3 556 257-0001) for the 'graphical user interfaces' (Locarno classification 14-04) of the VA Google Assistant @google is fully registered and valid in the EU since 29 December 2016. In any case, the elements that do not qualify for design protection may nevertheless qualify for trade mark protection.

### (II) Do works generated by VAs qualify for design registration?

To register a design generated by VAs, the output must be new and have individual character. In other terms, the design must not be predated by an identical disclosed design nor produce the same overall impression on the informed user than the one produced on such a user by any design that has been made available to the public before the date of filing of the application for registration or, if a priority is claimed, the

[40] Note however that music and sounds per so do not constitute the appearance of a product and thus do not comply with the definition of a design. Nonetheless, the graphical representation of a musical composition, in the form of musical notation, would qualify as a design, if applied for as, for example, other printed matter in Class 19-08 or graphic symbols in Class 32 of the Locarno Classification (See EUIPO Design Guidelines 2023, 4.1.5)

date of priority.[41] Since VAs which use generative AI are trained on a large amount of pre-existing data (which may include earlier designs as well as earlier IP rights like copyrights or trademarks as demonstrated by the black box operations explanation in section 2.3) to generate output, it may be more difficult to show that the resulting design is new and has individual character.

However, it must be noted that novelty and individual character of an RCD cannot be defeated by combining features taken in isolation and drawn from a number of earlier designs; a comparison is to be made between, on the one hand, the overall impression produced by the contested Community design and, on the other, the overall impression produced by each of the earlier designs legitimately relied on by the party seeking a declaration of invalidity (22/06/2010, T-153/08, Communications equipment, EU:T:2010:248, § 23-24). Therefore, a combination of already disclosed features is eligible for protection as an RCD, provided the combination, as a whole, is novel and has individual character. As such, VA-generated designs could qualify for design registration provided they meet the above-mentioned requirements.

### 3.3.2 Ownership of works generated by VAs

EU design law grants protection to the creator of a design, but, as previously seen with copyright law, it is sometimes difficult to determine who the legal owner of the design is when the design is generated by a VA. This indeed raises questions as to who can register the design and enjoy the subsequent exclusive rights: the designer who uses the VA? The developer of the VA's algorithms and programming? The owner of the data used to train the AI? The VA itself? This will probably be assessed on a case-by-case basis having regard to the level of involvement of the different parties in the creation of the design. Moreover, it is doubtful that a VA will ever be considered to be the creator and legal owner of a design as it is not a legal person.

41 See EUIPO Design guidelines 2023, 5.7.2.2.

### 3.3.3 Can VAs be involved in IP infringements?

Under EU design law, an infringement occurs when a design is considered to be too similar to a prior design. Likewise, any unauthorised use or reproduction of prior trade marks' features may constitute trade mark infringement. By using VAs to generate new designs, designers are more susceptible of infringing existing IP rights since those AI assistants rely on pre-existing data to generate content. The use of VAs in design also raises questions of liability as it may be more difficult to determine who is responsible for any infringement. Indeed, whilst VAs may be capable of carrying out some infringing acts, most infringing acts will require the involvement of an individual and so are incapable of being done by the VA on its own. Therefore, rather than being the infringer, VAs should be regarded as a tool for IP rights infringement by users so that liability lies with an individual or corporation.

## *3.4 Patents*

### 3.4.1 Do VAs qualify for patent protection?

Since a comprehensive discussion of patents is beyond the scope of this paper, a very brief discussion is held in this paragraph. VAs can potentially be protected as patents if they meet the requirements for patentability. For registering an invention as a patent, there needs to be novelty, inventive step as well as a technical effect. The inventive step must be non-obvious and it can't be something that already exists or is an obvious combination of existing technologies. It must be underlined that the patentability of computer programs is not harmonised across jurisdictions.[42] Siri, Alexa and Google Assistant are protected by multiple patents, mostly for their advanced machine learning and speech pattern analysis. ChatGPT is based on a creation of software and algorithms. Sof-

[42] WIPO Conversation on intellectual property (IP) and artificial intelligence (AI), **WIPO**, Geneva, 27/09/2019. https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fwww.wipo.int%2Fedocs%2Fmdocs%2Fmdocs%2Fen%2Fwipo_ip_ai_ge_19%2Fwipo_ip_ai_ge_19_inf_4.docx&wdOrigin=BROWSELINK.

tware and algorithms are generally not eligible for patent protection under most jurisdictions.[43] On the other hand, it is important to emphasize that if patent protection were available for AI-generated works, it would incentivize innovation. The prospect of a patent will not directly motivate VAs (that use generative AI), but it will encourage some people who develop, own and use those VAs.[44]

### 3.4.2 Do inventions generated by VAs qualify for patent protection?

VAs answer the questions users ask. If the user asks a question about an invention, could the VA be the inventor and can the invention be protected as a patent? Notably, the definition of inventorship is not harmonised across various jurisdictions. However, the underlying theme seems to be that AI cannot be an inventor. The main reason is that for an invention to be patented there should be a human inventor. This is because machines have no rights, duties or responsibilities.[45] The European Patent Office ('**EPO**') held that AI cannot be an inventor.[46] In addition, for an invention to be patentable the details of the AI algorithms, data used to train the algorithm and the human expertise to select the data have to be disclosed. Innovations are frequently the result of black box

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43 JEDRUSIK, Ania, 'Patent protection for software-implemented inventions' (**WIPO Magazine**, February 2017). https://www.wipo.int/wipo_magazine/en/2017/01/article_0002.html. Accessed on 25 February 2023.

44 ABBOTT, Ryan, 'The Artificial Inventor Project' (**WIPO Magazine**, December 2019). https://www.wipo.int/wipo_magazine/en/2019/06/article_0002.html. Accessed on 25 February 2023.

45 JACCHIA, Roberto A. and BENEDUCI, Giulia, 'The EPO explains why the inventor has to be a human being, not a machine' (**Lexology**, 6 February 2020). https://www.lexology.com/library/detail.aspx?g=899c6115-2e48-44b9-b794-6d46f466f48b. Accessed on 26 February 2023.

46 Boards of Appeal EPO, 21/12/2021, J 0008/20, Designation of inventor/DABUS, ECLI:EP:BA:2021; EPO "AI cannot be named as inventor on patent applications" (**EPO news**, 6 July 2022). https://www.epo.org/news- events/news/2022/20220706.html. Accessed on 26 February 2023.

operations by the VA identified in section 2.3. This could be a disadvantage for the creators of the AI.[47]

## 4 Conclusion

The relationship between VAs and intellectual property rights is a double-edged sword. On the one hand, IP rights such as patents, trademarks and designs are important for the protection of the VA itself. On the other hand, VAs can easily infringe IP rights. This was shown in the analysis of ChatGPT. VAs can even challenge their conceptual framework, such as the meaning of authorship in copyright law or who is the average consumer in trade mark law when a purchase is carried out by a VA.

Given the fast pace at which VAs are developing, it is crucial that IP law develops alongside the evolution of VA technology because the technology behind VAs itself is not evil, it depends on how you use it. It is vital to use VAs only as a tool and never rely on it alone.[48]

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Directive (EU) 2019/790 of the European Parliament and of the Council of 17 April 2019 on copyright and related rights in the Digital Single Market and

47 WHITE, Marie, MOGYOROS, Alexandara, GANGJEE, Prof. Dev. 'IPO Artificial Intelligence and Intellectual Property: call for views Trade Marks' (**SSRN**, 1 December 2020). https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3740271. Accessed on 25 March 2023.

48 European Commission IP Helpdesk, 'Intellectual Property in ChatGPT'. https://intellectual-property-helpdesk.ec.europa.eu/news-events/news/intellectual-property-chatgpt-2023-02-20_en.

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Directive 2001/29/EC of the European Parliament and of the Council of 22 May 2001 on the harmonisation of certain aspects of copyright and related rights in the information society. https://eur-lex.europa.eu/legalcontent/EN/TXT/?uri=OJ%3AL%3A2001%3A167%3ATOC.

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**Recebido:** 30/06/2023