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A Guideline to Artificial Intelligence, Machine Learning and Intellectual Property

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Abstract:

This guide has been developed to help businesses understand the basic tenets of artificial intelligence (AI), and the main steps necessary to ensure the protection of creations generated by AI.

AI is developing fast due to the growth in computing power and connectivity, which enables the systematic collection and sharing of a large volume of data. The role of AI in the functioning of businesses and in the consumers' daily life is increasing. Therefore, it is important that companies make AI and machine learning (ML) a core competence and adopt an appropriate IP strategy to protect them.

The AI systems are heavily dependent on data, but the access and use of data to feed the system can raise IP issues when they are images, songs, or texts protected by copyright. Notably, while copyright and the *sui generis* database right protect the structure of the training dataset, it is important to note that they do not protect its content. Then the implementation of contracts or technical protection measures to restrict access to the training dataset, or its protection by Trade Secrets (TS), becomes important.

Furthermore, companies need to know how to protect the different elements that constitute the AI systems, which requires a combination of patents, copyrights, TS, industrial designs, and contracts. In addition, they must also decide whether to participate in open source communities for the development of their AI technology, always bearing in mind that the use of this model may also have drawbacks if they choose a license that does not fit their business model and needs.

Finally, it is relevant to bear in mind that works, data, and inventions created by AI systems cannot be covered by IP rights. Only when AI is used as a tool by a natural person to achieve a result, and provided that all the necessary requirements are met, can then they be protected by copyright or patents.

Keywords: Artificial intelligence and data, Business models, Industry 4.0, IP Enforcement, Open Source software, Student Contribution.

1. What AI is and how it works

Many observers claim that the current AI boom began in 2013, after a series of ups and downs known as "*AI summers and winters*". This is due to the growth in computing power and connectivity, which allows for the systematic collection and sharing of the large volume of data that is becoming increasingly available¹.

Although there is no universal definition of AI, it is generally considered to be "*a discipline of computer science that is aimed at developing machines and systems that can carry out tasks considered to require human intelligence*".² There are many ways in which AI can be achieved, machine learning (ML) and deep learning (DL) being two of them.

ML uses examples of input and expected output, called training data, to continually improve and make decisions, without being programmed how to do so in a step-by-step sequence of instructions. DL is a subset of ML which, through a plurality of algorithms called neural networks, recognizes patterns and is able to group and classify unlabelled data. The most significant advance in DL has been achieved by the Generative Adversarial Networks (GANs)³.

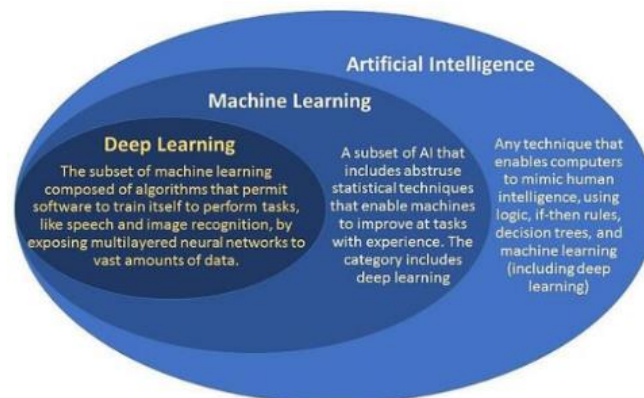


Figure 1: Source [DevAcademy](https://www.devacademy.com/en/ai/ml/deep-learning/)

Nowadays there are some well-known common applications of AI/ML, such as object and speech recognition and detection, prediction, language translation, or spam identification. However, the important role that AI/ML systems play in the functioning of companies and the daily life of consumers will progressively increase, since more

¹ WIPO (2019), *WIPO Technology Trends 2019: Artificial Intelligence*, available at: https://www.wipo.int/edocs/pubdocs/en/wipo_pub_1055.pdf

² WIPO, Artificial Intelligence and Intellectual Property, available at: https://www.wipo.int/about-ip/en/artificial_intelligence/; C. Kumar (2018), "Artificial Intelligence: Definition, Types, Examples, Technologies", *Medium*, available at: <https://medium.com/@chethankumargn/artificial-intelligence-definition-types-examples-technologies-962ea75c7b9b>

³ V. MAINI (2017), "Machine Learning for Humans", *Medium*, available at: <https://medium.com/machine-learning-for-humans/why-machine-learning-matters-6164faf1df12>; WIPO Frequently Asked Questions: AI and IP Policy, Basics, available at: https://www.wipo.int/about-ip/en/artificial_intelligence/faq.html; J. ROCCA (2019), "Understanding Generative Adversarial Networks (GANs)", *Towards Data Science*, available at: <https://towardsdatascience.com/understanding-generative-adversarial-networks-gans-cd6e4651a29>

applications of AI are being researched⁴. Therefore, it is essential that all companies, be it a software or SaaS provider, or an internal IT department, make AI/ML a core competency.

2. Why it is important to have an adequate IP strategy

To reap the rewards of the economic and research investment made in AI, it is very important that companies adopt an appropriate IP strategy for the AI/ML system. This will allow companies to establish a competitive advantage over their current or future competitors and demonstrate a strong innovation groundwork, which makes them attractive options for investors or acquirers⁵.

The assets that must be primarily protected in this field are:

- training datasets;
- AI algorithms;
- software in which the algorithms are embedded;
- ML method; and
- outputs.

A proper strategy requires a combination of the protection offered by patents, copyright, trade secrets, trademarks, and contract law.

3. Phases of the AI working process and IP

3.1. Access to Data, constitution, and use of the Training Dataset

3.1.1. Conflict with copyright and the *sui generis* right of databases

As we have seen, AI training is heavily reliant on data. Data has great economic value, and while it is true that there is no IP right which protects raw data, some companies restrict access to it through trade secrets, contract law, or technical protection measures (factual control). Therefore, an exclusive / non-exclusive data licensing or transfer agreement is needed to access and use such data in the AI training⁶.

On the other hand, the training dataset may consist of images, videos, audios, or texts that, although publicly accessible and freely available on websites, are protected by copyright or neighbouring rights⁷. The use of such data in the feeding of the AI

⁴ G. PRESS (2019), “AI In 2019 According To Recent Surveys And Analysts' Predictions”, *Forbes*, available at: <https://www.forbes.com/sites/gilpress/2018/12/15/ai-in-2019-according-to-recent-surveys-and-analysts-predictions/#4254765714c3> ; *White Paper on Artificial Intelligence: a European approach to excellence and trust* (2020), available at: https://ec.europa.eu/info/publications/white-paper-artificial-intelligence-european-approach-excellence-and-trust_en

⁵ S. S. KHAN, and N. T. PRADHAN (2020), “Remodelling your Artificial Intelligence IP Strategy: Top 3 reasons to invest in your IP”, *FOLEY*, available at: <https://www.foley.com/en/insights/publications/2020/02/remodeling-artificial-intelligence-ip-strategy>

⁶ D. GERVAIS (2019), “Exploring the Interfaces Between Big Data and Intellectual Property Law”, *JIPITEC – Journal of Intellectual Property, Information Technology and E-Commerce Law*, available at: <https://www.jipitec.eu/issues/jipitec-10-1-2019/4875>

⁷ E. ROSATI (2018), *The Exception for Text and Data Mining (TDM) in the Proposed Directive on Copyright in the Digital Single Market - Technical Aspects*, requested by the Policy Department for Citizens' Rights and Constitutional Affairs European Parliament, available at: [https://www.europarl.europa.eu/RegData/etudes/BRIE/2018/604942/IPOL_BRI\(2018\)604942_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/BRIE/2018/604942/IPOL_BRI(2018)604942_EN.pdf)

algorithms qualifies as acts of reproduction and adaptation. It could also qualify as extraction and re-utilisation of a substantial part of the data contained in a database protected by the *sui generis* right⁸. Then, unless an exception applies, a licence or assignment contract must be concluded with the right holder in order to avoid an infringement⁹.

In the European Union (EU), the Digital Single Market (DSM) Directive¹⁰ provides for two new mandatory exemptions from Text and Data Mining (TDM), which is essential for the development of AI and ML¹¹. TDM is described as “*any automated analytical technique aimed at analysing text and data in digital form in order to generate information which includes but is not limited to patterns, trends and correlations*”¹².

The first exception benefits research organisations or universities using TDM for research purposes only. Therefore, an SME or any business acting for non-commercial purposes will not be covered¹³.

The second exception applies to any entity wishing to do TDM, and for all uses, commercial and non-commercial¹⁴. Hence, SMEs could benefit from this exception if they previously have legitimate access to the works. However, the legislator introduced an “opt-out” mechanism, which means that if the right holders have expressly reserved their right, for example, by adding robot.txt type metadata to their content online, consent will be needed for the use of these data in the AI training¹⁵.

⁸ Directive 96/9/EC of the European Parliament and of the Council of 11 March 1996 on the legal protection of databases, (Database Directive), ELI: <http://data.europa.eu/eli/dir/1996/9/oj>;

⁹ C. GEIGER, and G. FROSIO (2018), *The Exception for Text and Data Mining (TDM) in the Proposed Directive on Copyright in the Digital Single Market - Legal Aspects*, requested by the European Parliament's Committee on Legal Affairs and commissioned, pp. 5-7, available at: [https://www.europarl.europa.eu/RegData/etudes/IDAN/2018/604941/IPOI_IDA\(2018\)604941_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/IDAN/2018/604941/IPOI_IDA(2018)604941_EN.pdf)

¹⁰ Art. 7 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 amending Directives 96/9/EC and 2001/29/EC, ELI: <http://data.europa.eu/eli/dir/2019/790/oj>

¹¹ European IP Helpdesk (2019), *New Directive on Copyright and Related Rights in the Digital Single Market*, available at:

http://www.iprhelpdesk.eu/sites/default/files/newsdocuments/European%20IP%20HD_Fact_Sheet_Copyright_final_0.pdf; C. GERRISH and A. MOLANDER SKAVLAN (2019), European copyright law and the text and data mining exceptions and limitations In light of the recent DSM Directive, is the EU approach a hindrance or facilitator to innovation in the region?, *Stockholm Intellectual Property Law Review*, Volume 2, Issue 2, pp. 58-67, available at: http://www.stockholmiplawreview.com/wp-content/uploads/2019/12/Tryck_IP_nr-2_2019_A4_European-copyright-law.pdf

¹² Art. 2. a) DSM Directive.

¹³ Art. 3 DSM Directive.

¹⁴ Art. 4. DSM Directive.

¹⁵ B. HUGENHOLTZ (2019), “The New Copyright Directive: Text and Data Mining (Articles 3 and 4)”, Kluwer Copyright Blog, available at: <http://copyrightblog.kluweriplaw.com/2019/07/24/the-new-copyright-directive-text-and-data-mining-articles-3-and-4/>

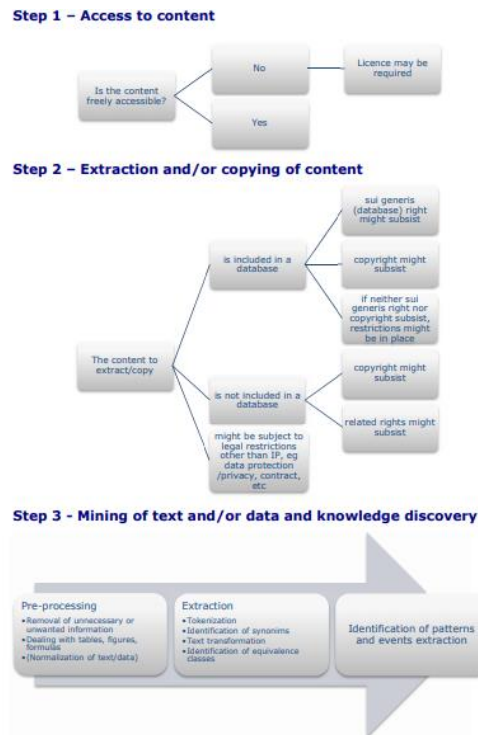


Figure 2: Source [European Parliament](#)

In the United States, albeit the Courts have not expressly ruled on the legality of TDM without a license, this technique could be considered lawful under the doctrine of Fair Use. In this sense we find some cases, such as the one concerning the Google Books Library Project¹⁶, which suggests that the use of copyrighted works for the non-expressive purpose of forming AI models, such as for TDM, amounts to fair use¹⁷.

3.1.2. Protecting the Training Dataset

There are different ML techniques. In supervised learning the data is labelled with input and the desired output. This results in the creation of hand-labelled training datasets which, in both the US and the EU, are protected by copyright as long as their structure (i.e. the selection or arrangement of content) is original¹⁸.

In the EU, the training dataset can also be protected by the *sui generis* right of databases, which is triggered when a substantial investment, quantitative or qualitative, has been made in obtaining, verifying or presenting their content¹⁹. It is important to note that

¹⁶ Authors Guild v Google, Inc, No. 13-4829 (2d Cir. 2015), affirming Authors Guild v Google, Inc, 954 F.Supp.2d 282 (2013).

¹⁷ E. ROSATI (2019), “Copyright as an Obstacle or an Enabler? A European Perspective on Text and Data Mining and Its Role in the Development of AI Creativity”, *Asia Pacific Law Review*, pp. 15-16, available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3452376; M. DUQUE (2020), “Upstream problems in the realm of AI and Copyright”, *MediaLaws*, available at: <http://www.medialaws.eu/upstream-problems-in-the-realm-of-ai-and-copyright/>; D. SCHÖNBERGER (2018), Deep Copyright: Up- and Downstream- Questions Related to Artificial Intelligence (AI) and Machine Learning (ML), *Droit d’auteur 4.0 / Copyright 4.0*, DE WERRA Jacques (ed.), Geneva / Zurich (Schulthess Editions Romandes, pp.158-161, available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3098315

¹⁸ Art. 2.5, Berne Convention for the Protection of Literary and Artistic Works, 1886; Art. 10 T TRIPS Agreement, 1994; Art. 5 WIPO Copyright Treaty, 1996; Art. 3. Database Directive; CJEU, Football Association Premier League Ltd and Others v QC Leisure and Others;

¹⁹ Art. 7 Database Directive.

this right does not apply when the investment is made in the creation of the data. Thus, only the resources used to search for existing materials and to collect them in the database will count as a "substantial investment". In the case of annotated datasets, the investment could be considered not in the creation but in the verification of the data²⁰.

However, it should be noted that both copyright and *sui generis* rights protect the structure of the databases, but not their content. Therefore, when the structure of the database does not comply with the requirements to be protected by these rights, or when companies want to protect the data itself, they must rely on TS. To do so, the training dataset must be secret, and must have commercial value because of it. In addition, reasonable measures must be taken to preserve its secrecy²¹. The protection of the training dataset by trade secrets is important in unsupervised machine learning, where unlabelled data sets are used as inputs to form the algorithm²².

Finally, as we have seen above, implementing contracts or technical protection measures to restrict access to the training dataset is also an effective measure.

3.2. Protecting the elements that constitute the AI system

3.2.1. The software code protection by copyright

Software and its preparatory design material are considered literary works under both US and EU copyright law²³. Nevertheless, what is protected by copyright is the way in which the ideas and principles underlying the software are expressed, but not these in themselves. The expression of a computer programme refers to the arrangement of the instructions that configure it, its sequence, structure, and the relationship between the parts, i.e. the software's architecture or code, either at the source, object, or machine level²⁴.

Copyright protection is granted from the sole fact of the creation of the computer programme, and no registration or other formality is required. However, its registration is highly recommended because it establishes a *prima facie* appearance of ownership in the case of copyright infringement. In addition, registration is a pre-requisite to

²⁰ M. IGLESIAS, S. SHAMUILIA and A. ANDERBERG (2019), "Intellectual Property and Artificial Intelligence – A literature review", *EUR 30017 EN, Publications Office of the European Union, Luxembourg*, p. 9, available at:

https://publications.jrc.ec.europa.eu/repository/bitstream/JRC119102/intellectual_property_and_artificial_intelligence_jrc_template_final.pdf

²¹ R. KEMP (2020), "Algo IP: Intellectual Property in AI Datasets, Insights and Outputs – the Growing Importance of Trade Secrets", *KEMP IT LAW, IT Law at the Apex*, available at: <https://www.kempitlaw.com/algo-ip-intellectual-property-in-ai-datasets-insights-and-outputs-the-growing-importance-of-trade-secrets/>

²² M. IGLESIAS, S. SHAMUILIA and A. ANDERBERG (2019), "Intellectual Property...*Supra*.

²³ Art. 4 WIPO Copyright Treaty, (WCT), 1996; Art. 1 Directive 2009/24/EC of The European Parliament and of The Council, of 23 April 2009, on the legal protection of computer programs (Software Directive), DOUE-L-2009-80808; 17 U.S.C. §§ 101-103.

²⁴ European IP Helpdesk, *Copyright or Patent – how to protect my software?*, *Helpline / Sample Case*, available at: <http://www.iprhelpdesk.eu/news/copyright-or-patent-how-protect-my-software>; WIPO, *Copyright Protection of Computer Software*, available at: <https://www.wipo.int/copyright/en/activities/software.html>

obtaining statutory damages and attorneys' fees for infringement of the copyright in the U.S.²⁵.

3.2.2. Software, AI algorithms, and ML protection by patents

3.2.2.1. EU

The European Patent Convention (EPC) states that European patents "*shall be granted for any inventions, in all fields of technology, provided that they are new, involve an inventive step and are susceptible of industrial application*"²⁶. However, the EPC excludes the patentability of software when it is claimed as such²⁷. In order to be patentable, the software, as all the inventions, must have a technical character, i.e. produce a "further technical effect", going beyond the normal physical interactions between the software and the hardware on which it is run²⁸.

- For example: the control of a technical process or of the internal functioning of the computer itself or its interfaces²⁹.

Therefore, it is not possible to patent software if it is not in the context of a specific use to solve a specific technical problem.

On the other hand, the EPO indicates that AI and ML are based on computational models and algorithms that are of an abstract mathematical nature³⁰. Thus, the guidance provided for the mathematical methods applies, and the examination approach for AI/ML inventions is similar to the "two-hurdle approach" for patentability of CII³¹:

²⁵ Protecting Software in the Post-Alice World—Copyright as an Option (2018), *Nutter*, available at: <https://www.nutter.com/ip-law-bulletin/protecting-software-in-the-post-alice-world>; United States Copyright Office (2017), *Circular 61, Copyright Registration of Computer Programs*, available at: <https://www.copyright.gov/circs/circ61.pdf>

²⁶ Art. 52.1 EPC.

²⁷ Art. 52.2.(c) and 3 EPC.

²⁸ EPO, *Guidelines for Examination, Programs for computers*, available at: https://www.epo.org/law-practice/legal-texts/html/guidelines/e_g_ii_3_6.htm

²⁹ EPO, *Guidelines for Examination, Examples of further technical effects*, available at: https://www.epo.org/law-practice/legal-texts/html/guidelines/e_g_ii_3_6_1.htm

³⁰ EPO, *Guidelines for Examination, Artificial Intelligence and machine learning*, available at: <https://www.epo.org/news-events/in-focus/ict/artificial-intelligence.html>

³¹ EPO, *Guidelines for Examination, Mathematical methods*, available at: https://www.epo.org/law-practice/legal-texts/html/guidelines2018/e_g_ii_3_3.htm

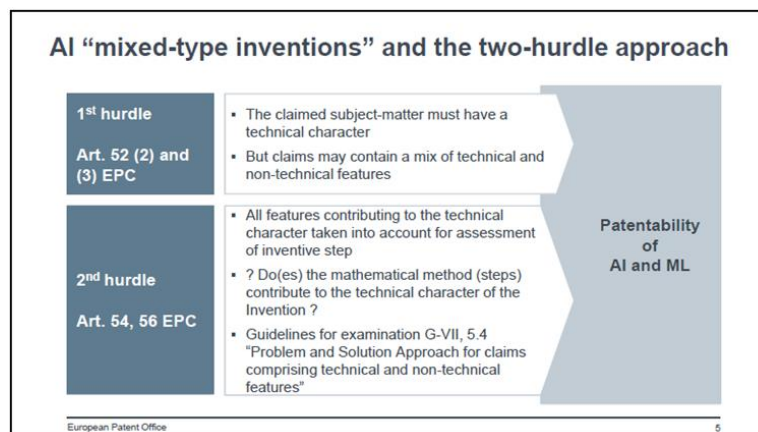


Figure 3: Source [European Patent Office](#)

The EPC also excludes the patentability of mathematical methods when claimed as such³². Hence, to obtain a patent, the patent claim must not be directed to purely abstract objects or models, but either to a method involving the use of technical means, or to a device, which confers a technical character of the subject matter as a whole³³. Then, expressions such as “support vector machine”, “reasoning engine”, “deep learning” or “neural network” must be avoided³⁴.

- For example: a claim only defining a method of classification using machine learning would be considered abstract³⁵.

Once the patentability of the subject-matter has been established, the AI inventions must meet the fundamental requirements of novelty, inventive step and industrial application. Only the features that contribute to the technical character of the invention are taken into account in the evaluation of the inventive step³⁶. An AI method step can only contribute to the technical character of the invention if it serves a technical purpose, or if it is specifically adapted to the internal functioning of a computer³⁷. The EPO has given some examples on this matter:

- The use of a neural network in a heart-monitoring apparatus for the purpose of identifying irregular heartbeats makes a technical contribution³⁸.
- The classification of digital images, videos, audio or speech signals based on low-level features are further typical technical applications of classification algorithms³⁹.

³² Arts. 52.2.a) and Art. 52.3 EPC.

³³ EPO, *Guidelines for Examination, Mathematical...* *Supra*.

³⁴ EPO, *Guidelines for Examination, Artificial Intelligence...* *Supra*.

³⁵ EPO, *Guidelines for Examination, Mathematical...* *Supra*.

³⁶ EPO, *Guidelines for Examination, Artificial Intelligence...* *Supra*.

³⁷ EPO, *Patents for software? European law and practice*, available at: <https://ciencias.ulisboa.pt/sites/default/files/fcul/inovacao/PI-Pack-INPI-E-Patents-for-Software-EPO.pdf>; EPO, *Guidelines for Examination, Artificial Intelligence...* *Supra*.

³⁸ *Ibid*.

³⁹ *Ibid*.

- Classifying text documents solely in respect of their textual content is not regarded to be *per se* a technical purpose but a linguistic one⁴⁰.

Consequently, it may not be difficult to patent inventions involving AI, but claims must be drafted very carefully, since a ML algorithm which is new, and non-obvious, could seem to lack an inventive step for being considered an abstract mathematical method⁴¹. In order to avoid this, these inventions must be described and claimed in the context of an operation in a technical system, or in control of a technical process⁴².

Finally, the EPO states in its guidance that “*where a classification method serves a technical purpose, the steps of generating the training set and training the classifier may also contribute to the technical character of the invention if they support achieving that technical purpose*”⁴³. Hence, the EPO will grant patents to a method of training an AI or ML algorithm, and to a method of generating training datasets for these purposes, as long as they are linked to a technical effect⁴⁴.

- For example: a training method that causes a neural network to converge more rapidly, or using a smaller dataset, may be patentable⁴⁵.

3.2.2.2. U.S.

In the US, the patentability of software, and of AI and ML inventions, is more an issue than in the EU. Patents should be granted to “*any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof*”⁴⁶. Nevertheless, Courts have excluded abstract ideas, laws of nature, and natural phenomena from patent-eligible subject matter⁴⁷.

Software patents have been denied or invalidated for being considered abstract ideas after the US Supreme Court’s decision in *Alice v. CLS Bank*⁴⁸. To prevent this from happening, the patent claim of software or of an invention involving AI must not be directed to an abstract idea, such as an algorithm, or a method of computation. However, even if the claim is directed to an abstract idea, the invention can still be patentable if the claim includes an inventive concept that goes beyond it⁴⁹. For example:

⁴⁰ *Ibid.*

⁴¹ P. CUPITT (2019), “Patenting Artificial Intelligence at the European Patent Office”, *Mrks&Clerk*, available at: <https://www.marks-clerk.com/Home/Knowledge-News/Articles/Patenting-Artificial-Intelligence-at-the-European.aspx#XzUGaKdxflU>

⁴² J.M. DELTORN, A. THEAN, and M. VOLKMER (2019), “The examination of computer implemented inventions and artificial intelligence inventions at the European Patent Office”, *4iP Council*, pp. 4-6, available at: https://www.4ipcouncil.com/application/files/6515/4927/8537/The_examination_of_computer_implemented_inventions_and_artificial_intelligence_inventions.pdf

⁴³ EPO, *Guidelines for Examination, Artificial Intelligence...* *Supra.*

⁴⁴ S. JONES (2018), “Patentability of AI and machine learning at the EPO”, *Kluwer Patent Blog*, available at: http://patentblog.kluweriplaw.com/2018/12/21/patentability-of-ai-and-machine-learning-at-the-epo/?doing_wp_cron=1595800284.9012520313262939453125

⁴⁵ *Ibid.*

⁴⁶ 35 U.S.C. Code §101.

⁴⁷ *Assoc. for Molecular Pathology v. Myriad Genetics, Inc.*, 569 U.S. 576 (2013).

⁴⁸ *Alice Corp. v. CIS Bank International*, 573 U.S. 208 (2014).

⁴⁹ USPTO, *2106 Patent Subject Matter Eligibility [R-10.2019]*, available at: <https://www.uspto.gov/web/offices/pac/mpep/s2106.html>

- An algorithm that is implemented on a computer would be considered an abstract idea⁵⁰.
- A claim directed to the features that improve the operation of the computers running the AI system, has an inventive element⁵¹.
- A new way of training an AI system which may reduce the amount of memory required while determining the model, has an inventive element⁵².
- The identification of salient parameters, features, or thresholds that are more important to decision making than others, which improve the processing speed or reduce network latency of the AI technology, has an inventive element⁵³.

3.2.3. Using trade secrets to protect algorithms, underlying AI code and ML.

Ideas or principles implicit in the software, the computer logic, the programming language, the algorithms, and the ML methods, may be protected by trade secrets (TS), if the requirements mentioned above are met⁵⁴.

As has been seen, although registration is not a constitutive requirement for the protection granted by TS, companies must take “reasonable measures” to maintain secrecy. The reasonable measures, which may be physical or technical, vary depending on the company’s size and resources⁵⁵. Some of them, without this being an exhaustive list, could be:

- Label properly the information that constitutes the TS and restricting access to it.

⁵⁰ *Ibid.*

⁵¹ *Diamond v. Diehr*, 450 U.S. 175, 209 USPQ 1 (1981)

⁵² C. J. WHITE and H. R. PIROOZI (2019), “Drafting Patent Applications Covering Artificial Intelligence Systems”, *American Bar Association*, available at: https://www.americanbar.org/groups/intellectual_property_law/publications/landslide/2018-19/january-february/drafting-patent-applications-covering-artificial-intelligence-systems/#10; USPTO, *Subject Matter Eligibility Examples: Abstract Ideas*, p. 18, available at: https://www.uspto.gov/sites/default/files/documents/101_examples_37to42_20190107.pdf

⁵³ S.S. KHAN and N. T. PRADHAN (2020), “How to Overcome the Two Biggest Challenges of Patenting AI Technologies”, *FOLEY*, available at: <https://www.foley.com/en/insights/publications/2020/02/how-overcome-challenges-patenting-ai-technologies>

⁵⁴ A. RAPACHE (2018), “Using Trade Secret Protection for AI IP”, *Rapacke Law Group*, available at: <https://arapackelaw.com/trade-secrets/trade-secret-ai-ip/#:~:text=The%20only%20viable%20alternative%20for,independent%20discovery%20or%20reverse%20engineering>; J. M. MEYERS (2019), “Artificial Intelligence and Trade Secrets”, *American Bar Association*, available at: https://www.americanbar.org/groups/intellectual_property_law/publications/landslide/2018-19/january-february/artificial-intelligence-trade-secrets-webinar/; D. A. PRANGE and A. N. LAWSON (2018), “Re-evaluating companies, AI protection strategies”, *Patents and Trade Secrets AI*, pp. 37-38, available at: <https://www.robinskaplan.com/-/media/pdfs/reevaluating-companies-ai-protection-strategies.pdf>; A. W. JEFFRIES and E. J. TAIT (2018), “Protecting Artificial Intelligence IP: Patents, Trade Secrets, or Copyrights?”, *Jones Day*, available at: <https://www.jonesday.com/en/insights/2018/01/protecting-artificial-intelligence-ip-patents-trad>

⁵⁵ WIPO, *Trade Secret, What is a Trade Secret?*, available at: <https://www.wipo.int/tradesecrets/en/>; Art 2.1. Directive (EU) 2016/943 of the European Parliament and of the Council of 8 June 2016 on the protection of undisclosed know-how and business information (trade secrets) against their unlawful acquisition, use and disclosure, (Trade Secrets Directive), ELI: <http://data.europa.eu/eli/dir/2016/943/oj>

- Sign Non-Disclosure Agreements (NDA) with employees during and after the employment.
- Sign NDA and restrictive License Agreements with third parties, to ensure that they cannot improperly disclose the information.
- Use of encryption and passwords to protect the software code.
- Implement technological security measures in the files containing TS information.
- Perform regular security checks⁵⁶.

Nevertheless, TS is not *erga omnes*, as it does not protect against independent discovery or creation, and reverse engineering⁵⁷.

Furthermore, TS protection could prevent collaboration and integration with other companies developing AI. Actually, in the EPO conference “Patenting Artificial Intelligence”, 30 May 2018, it was stated that *“from the perspective of innovation for the benefit of society, there should be as much incentive as possible for innovators to disclose AI innovations – such as the algorithms and how they were trained – and not to choose the option of trade secrets”*⁵⁸.

3.2.4. Open source vs. proprietary software

Due to the rapid development environment in which AI is created, many developers, including the biggest tech companies such as Microsoft, Amazon, Google, or IBM, are involved in open source⁵⁹. Some of the most important open-source AI platforms nowadays are:

- TensorFlow, a machine learning platform developed by Google⁶⁰.
- Microsoft Cognitive Toolkit, for commercial-grade distributed deep learning⁶¹.
- SystemML, an Apache project developed by IBM for declarative machine learning⁶².

At first sight it may seem contradictory that these companies, which are the largest patent holders in the AI sector⁶³, share their source code and, sometimes, also provide

⁵⁶ IPR Helpdesk, *The Legal Protection of Trade Secrets*, pp. 5-7, available at: <https://www.av-asesores.com/upload/335.PDF>

⁵⁷ European Commission, FAQ: *Protection against the unlawful acquisition of undisclosed know-how and business information (trade secrets)*, available at: https://ec.europa.eu/growth/industry/policy/intellectual-property/trade-secrets/faq_en; Art. 3 Trade Secrets Directive.

⁵⁸ EPO (2018), *Patenting Artificial Intelligence*, p.3, available at: [http://documents.epo.org/projects/babylon/acad.nsf/0/D9F20464038C0753C125829E0031B814/\\$FILE/summary_conference_artificial_intelligence_en.pdf](http://documents.epo.org/projects/babylon/acad.nsf/0/D9F20464038C0753C125829E0031B814/$FILE/summary_conference_artificial_intelligence_en.pdf)

⁵⁹ C. HARVEY (2020), “Open Source Artificial Intelligence: Leading Projects”, *Datamation*, available at: <https://www.datamation.com/artificial-intelligence/open-source-artificial-intelligence-projects.html>

⁶⁰ See; Tensor Flows website at <https://www.tensorflow.org/>

⁶¹ See; Microsoft Cognitive Toolkit website at <https://www.microsoft.com/en-us/research/product/cognitive-toolkit/?lang=fr>

⁶² See; SystemML website at https://www.ibm.com/support/knowledgecenter/SSPT3X_4.2.5/com.ibm.swg.im.infosphere.biginights.product.doc/doc/bi_systemML.html

⁶³ For statistics on who are the main patent holders and in which fields of AI there are more patents, and where, see: WIPO (2019), *WIPO Technology Trends 2019...* *Supra*; P. COWAN and J. HINTON (2018),

free licenses for their patents. Nevertheless, the decision to use open source goes beyond the altruistic or philosophical belief in open science⁶⁴. It is a strategy that allows large companies to build a reputation, attract consumers willing to pay complementary fee-based products, and maintain them via brand loyalty. Consequently, the adoption of open source provides these companies with great profits⁶⁵.

- For example: Google attempts to stimulate the use of Tensorflow on Google Cloud, as cloud service is a very lucrative business⁶⁶.

While there are many important open source projects that in the short term contribute to the faster diffusion, adoption, and development of AI technology, not having property rights could have a negative impact in the middle-long term. This is due to the fact that companies that have invested large amounts of money and effort in R&D expect an adequate return⁶⁷.

Hence, what companies do is to adopt a hybrid strategy by participating in the open-source community, while maintaining their proprietary source code⁶⁸. There are open-source licenses, such as the MIT and BSD, which are permissive and allow the software to be re-licensed as proprietary⁶⁹. However, other licenses are more restrictive, such as the ones pertaining to the GPL family, and require the licensed software and any modifications to be redistributed under the same set of rights, preventing the software from becoming proprietary⁷⁰.

Furthermore, some open source licenses, such as Apache 2.0, contain patent retaliation clauses that could be prejudicial to the party accepting the license terms, as they curtail the company's ability to protect, defend, and assert their own intellectual property⁷¹.

"Intellectual property and artificial intelligence: what does the future hold?", *IAM Media*, available at: https://www.bereskinparr.com/files/file/IAM88_AI-and-IP_Jim%20Hinton.pdf

⁶⁴N. CALVIN and J. LEUNG (2020), "Who owns artificial intelligence? A preliminary analysis of corporate intellectual property strategies and why they matter", *Future of Humanity Institute, University of Oxford*, pp. 5-7, available at: https://www.fhi.ox.ac.uk/wp-content/uploads/Patents_-FHI-Working-Paper-Final-.pdf P. SHAFTO (2016), "Why big tech companies are open-sourcing their AI systems", *THE CONVERSATION*, available at: <https://theconversation.com/why-big-tech-companies-are-open-sourcing-their-ai-systems-54437>; S. DEAN (2017), "Artificial Intelligence: Open Source and Standards Bodies Drive Opportunities", *LiNux.COM*, available at: <https://www.linux.com/training-tutorials/artificial-intelligence-open-source-and-standards-bodies-drive-opportunities/>

⁶⁵ N. CALVIN and J. LEUNG (2020), "Who owns... *Supra.*; EUIPO (2020), *Open-Source Software in the European Union*, pp. 25-27, available at: https://euipo.europa.eu/tunnel-web/secure/webdav/guest/document_library/observatory/documents/reports/2020_Open_Source_software/2020_OSS_Full_EN.pdf

⁶⁶ *Ibid.*

⁶⁷ N. BOSTROM (2017), "Strategic Implications of Openness in AI Development", *Global Policy*, pp.1-9, available at: <https://www.nickbostrom.com/papers/openness.pdf>

⁶⁸ N. CALVIN (2019), *Supra*, pp. 7-8.

⁶⁹ D. J. KAPPOS (2017), "Open Source Software and Standards Development Organizations: Symbiotic Functions in the Innovation Equations", *Science and Technology Law Review*, 18(2), 263-264, available at: <https://journals.library.columbia.edu/index.php/stlr/article/view/4018>

⁷⁰ AI: UNDERSTANDING THE IP (2020), "Got a secret? Can you keep it? Using trade secrets to protect AI", *Ashurst*, available at: <https://www.ashurst.com/en/news-and-insights/insights/can-you-keep-a-secret/>

⁷¹ M. HUSOVEC (2018), "Standardization, Open Source, and Innovation: Sketching the Effect of IPR Policies", *TILEC Discussion Paper No. 2018-034*, pp. 5-6, available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3215769

- For example: Facebook's React project was licensed under an open source license that contained a strong retaliation clause. Should anyone sue Facebook over patent rights, even if unrelated to this project, Facebook would automatically revoke the royalty-free patent grant. It was not successful, so Facebook relicensed the project under MIT license⁷².

Therefore, it is important to be well aware of the terms of the open-source licenses before committing to such projects, and to bear in mind that the use of this model may also have drawbacks⁷³.

3.3. Output protection

3.3.1. Works and databases protected by copyright

In the EU, works are protectable by copyright if they are original, i.e. they are their author's own intellectual creation⁷⁴. The originality requirement is only satisfied when the author is a human being. Therefore, even if texts, databases, images, songs... generated by AI systems are creative, they can never be original and protected by copyright⁷⁵.

In the US it is also not possible to protect AI-generated works with copyright. *Section 306 of the U.S. Copyright Office's Compendium of Practice of September 29, 2017*, expressly states that the office shall register original works of authorship, provided that they are created by a human being⁷⁶. In addition, *Section 313.2* clarifies that machine-generated works could in no case be protected by copyright, nor could they be registered⁷⁷.

- For example: the translations made by DeepL are not protectable by copyright.

⁷²*Ibid.*

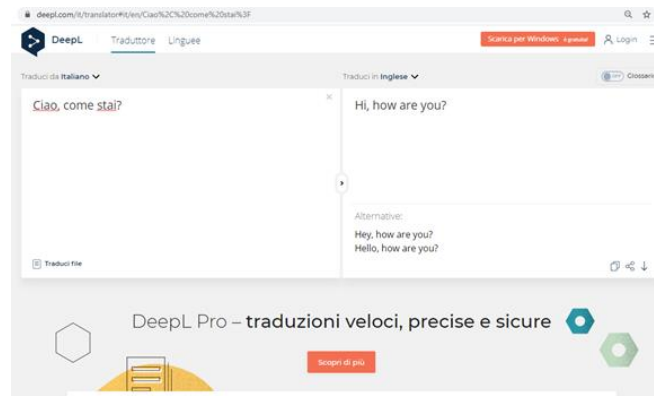
⁷³ See F. LAMBERT (2015), "A number of companies are now using Tesla's open-source patents and it has some interesting implications", *electrek*, available at: <https://electrek.co/2015/11/10/a-number-of-companies-are-now-using-teslas-open-source-patents-and-it-has-some-interesting-implications/>

⁷⁴ Art. 1 Software Directive, y Art. Art. 3 Database Directive, and Art. 6 Directive 2006/116/EC of the European Parliament and of the Council of 12 December 2006 on the term of protection of copyright and certain related rights, ELI: <http://data.europa.eu/eli/dir/2006/116/oj>

⁷⁵ A. GUADAMUZ (2017), "Artificial intelligence and copyright", *WIPO Magazine*, available at: https://www.wipo.int/wipo_magazine/en/2017/05/article_0003.html; A. RAMALHO (2018), "Ex Machina, Ex Auctore? Machines that create and how EU copyright law views them", *Kluwer Copyright Blog*, available: http://copyrightblog.kluweriplaw.com/2018/11/12/ex-machina-ex-auctore-machines-that-create-and-how-eu-copyright-law-views-them/?doing_wp_cron=1596658267.5696430206298828125000

⁷⁶ Compendium of U.S. Copyright Office Practices, updated version of the Compendium of U.S. Copyright Office Practices, Third Edition, September 29, 2017, available: <https://www.copyright.gov/comp3/>

⁷⁷ *Ibid.*



However, when the AI system is merely an instrument of the natural person in the creation process, it is possible to protect the results through copyright. The key is to be able to demonstrate that there has been a relevant human participation in the creation of the work, and that it falls within what is called "AI assisted works". Thereby, it is necessary to prove that the result is predetermined by the learning training, and the introduction of parameters, data and rules in the algorithm⁷⁸.

- For example: if the AI system autonomously generates text or images, they will not be protectable. But if a human being subsequently organises them in such a way that the selection and arrangement are original, the database created will be protected by copyright.

As mentioned above, the *sui generis* right of databases does not protect AI-generated data *per se*. Created data can be protected only after subsequent substantial investment in the creation of the database⁷⁹.

- For example: a website with schedules presented with additional information or content is protected.

3.3.2. Inventions protected by patents

The EPO has refused two European patent applications designating an AI system as an inventor on the grounds that they do not comply with the EPC requirement that the inventor designated in the application must be a human being. In addition, the EPO stated that, in order to benefit from the rights linked to the status of inventor, the inventor must have legal personality, and, as AI systems do not have legal personality, they cannot benefit from those rights⁸⁰.

⁷⁸ J. GINSBURG and A.L. BUDIARDJO, "Authors and Machines", Columbia Public Law Research Paper No. 14-597, *Berkeley Technology Law Journal*, Vol. 34, No. 2, 2019, p.6, available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3233885; A. KISELEVA (2018), "What is artificial intelligence and why does it matter for Copyright", 4iP Council, pp. 11-14, available at: https://www.4ipcouncil.com/application/files/6815/4876/6908/What_is_artificial_intelligence_and_why_does_it_matter_for_Copyright.pdf

⁷⁹ B. HUGENHOLTZ (2017), "The "Data Producer's Right": Unwelcome Guest in the House of IP", *Kluwer Copyright Blog*, available at: http://copyrightblog.kluweriplaw.com/2017/08/25/data-producers-right-unwelcome-guest-house-ip/?doing_wp_cron=1597321295.1461319923400878906250

⁸⁰ Kluwer Patent blogger (2020), "EPO: a machine cannot be an inventor", *Kluwer Patent*

The USPTO adopted the same approach and has also rejected two patent applications because the designated inventor was an AI system. The USPTO also argued that, although the term "natural person" is not explicit in the *U.S. Patent Act*, it addresses the inventor with pronouns that are used for natural persons⁸¹.

However, when a natural person uses the AI system for outcome verification or identifies a problem and uses AI as a tool to help her/him to find the solution, we are still in the field of "AI-assisted inventions". Therefore, these inventions are patentable provided that the requirements explained above are met⁸².

3.3.3. Data and outputs not covered by copyright and patents, protected by Trade Secrets

The raw data, works, and inventions non-protectable by IP rights can be protected by Trade Secrets, if the requirements explained above are met⁸³. However, keeping the results secret is not always the best strategy, since in some sectors the protection of the AI system is more important than the protection of the results themselves⁸⁴.

- For example: in the digital market there is a high demand for immediate consumer content, and in some sectors, such as journalism, the great interest of competitors is focused on being the first to reach the market, independently of the IP protection. Most of the websites where the creations are hosted generate income through advertising, so getting a large total number of visitors becomes a great commercial success. In this race, AI systems can be of great help, as they produce content at a faster rate than humans⁸⁵.

Blog, available at: http://patentblog.kluweriplaw.com/2020/01/29/epo-a-machine-cannot-be-an-inventor/?doing_wp_cron=1595703956.4962530136108398437500; EPO (2020), *EPO publishes grounds for its decision to refuse two patent applications naming a machine as inventor*, available at: <https://www.epo.org/news-events/news/2020/20200128.html>

⁸¹ E. J. TAIT, M. W. W. JOHNSON, and C.L. A. KUKKONEN (2029), "Reboot Required: Artificial Intelligence System Cannot Be Named As An Inventor Under U.S. Patent Law, USPTO Says", *Jones Day*, available at: <https://www.jonesday.com/en/insights/2020/05/reboot-required-artificial-intelligence-system-cannot-be-named-as-an-inventor-under-us-patent-law-uspto-says>; Decision available at: https://www.uspto.gov/sites/default/files/documents/16524350_22apr2020.pdf

⁸² R. ABBOTT (2019), "The Artificial Inventor Project", *WIPO Magazine*, available at: https://www.wipo.int/wipo_magazine/en/2019/06/article_0002.html; N. SHEMTOV (2019), *A study on inventorship in inventions involving AI activity*, Commissioned by the European Patent Office, available at: [http://documents.epo.org/projects/babylon/eponet.nsf/0/3918F57B010A3540C125841900280653/\\$File/Concept_of_Inventorship_in_Inventions_involving_AI_Activity_en.pdf](http://documents.epo.org/projects/babylon/eponet.nsf/0/3918F57B010A3540C125841900280653/$File/Concept_of_Inventorship_in_Inventions_involving_AI_Activity_en.pdf);

⁸³ K. M. PASQUINELLI, ESQ. (2019), "Adapt Your IP Strategy for Artificial Intelligence", *Robins Kaplan*, pp. 17-18, available at: <https://www.robinskaplan.com/-/media/pdfs/publications/adapt-your-ip-strategy-for-artificial-intelligence.pdf>

⁸⁴ C. AYDIN, and T. ERDOGAN, "Fast Moving Consumer Goods: Competitive Conditions and Policies", *ERC Working Papers 0503*, ERC - Economic Research Center, Middle East Technical University, 2005, pp. 32-33, available at: <https://ideas.repec.org/p/met/wpaper/0503.html>;

⁸⁵ R. YU, "The Machine Author: What Level of Copyright Protection is appropriate for Fully Independent Computer Generated Works?", *165 U. Pa. L. Rev. 1245*, pp. 1264-1265, available at: https://scholarship.law.upenn.edu/penn_law_review/vol165/iss5/5/

3.4. Importance of trademarks for AI companies

Trademarks help to protect and enhance a company's brand, differentiating products and services from those of competitors. In the field of AI, the accountability and transparency of the algorithms support the goodwill of the brand⁸⁶.

Companies can use their trade name when offering AI technology. In addition, they may also use trademarks to offer highly sophisticated AI systems⁸⁷. For example:

- Google Deep Mind has registered “Alphago” as a trademark⁸⁸;
- IBM has registered “Watson” as a trademark⁸⁹.

However, companies should be careful not to allow the loss of distinctiveness of their trademarks if the words constituting them are also used as names in the AI system itself⁹⁰.

- For example: Aspirin and Cellophane are not distinctive anymore because they are used as generic names, and therefore, cannot be registered as a trademark⁹¹.

Furthermore, it will be more challenging to register as a trademark words that are common and descriptive of AI, than those that are fictitious and have no real meaning. Additionally, some trademarks may be stronger than others⁹².

- For example: the trademark “Watson” is more distinctive than a trademark which uses the word “Smart” to identify AI technology or products⁹³.

3.5. Importance of the industrial designs/design patents

Industrial designs in the EU⁹⁴, and design patents in the US⁹⁵, protect the appearance of a product or its parts, when it is novel and has an individual character⁹⁶. Therefore, they

⁸⁶ S. NEIL (2020), “Artificial Intelligence and Trade Marks”, *AA THORNTON*, available at: <https://www.aathornton.com/artificial-intelligence-and-trade-marks/>

⁸⁷ *Ibid.*

⁸⁸ See Alphago trademark registration details at <https://trademarks.justia.com/869/58/alphago-86958754.html>; <https://www.tmdn.org/tmview/#/tmview/detail/EM500000015290067>

⁸⁹ See IBM Watson trademark registration details at <https://www.tmdn.org/tmview/#/tmview/detail/US500000085984219>

⁹⁰ WIPO (2006), *Making a Mark, An Introduction to Trademarks for Small and Medium-sized Enterprises*, available at: <https://www.wipo.int/publications/en/details.jsp?id=106&plang=EN>

⁹¹ A. VAN DER MERWE (2016), “How and when does a trade mark become generic?”, *KISCH IP*, available at: <https://www.lexology.com/library/detail.aspx?g=8cb5409b-fd40-419d-ae5e-8224e2646803>

⁹² I. CAULDER (2019), “How to Develop a Successful IP Strategy for AI”, *Bereskin & Parr*, available at: <https://www.bereskinparr.com/doc/how-to-develop-a-successful-ip-strategy-for-ai>

⁹³ *Ibid.*

⁹⁴ European IP Helpdesk, *Design Rights*, available at: <http://www.iprhelpdesk.eu/taxonomy/term/158>; EUIPO, *Designs in the European Union*, <https://euipo.europa.eu/ohimportal/en/designs-in-the-european-union>

⁹⁵ USPTO, *Design Patent Application Guide*, available at: <https://www.uspto.gov/patents-getting-started/patent-basics/types-patent-applications/design-patent-application-guide>

⁹⁶ WIPO, *Industrial Designs, What is an industrial design?*, available at: <https://www.wipo.int/designs/en/>

can be used to protect the appearance of AI-based technology products, graphical computer interfaces, and graphical animation⁹⁷.

3.6. Contracts

As we have seen, contracts play a major role in securing and assigning IP rights in the development of AI technology. Furthermore, contracts help fill gaps and protect training datasets, and AI generated outputs that are not protectable by IP. It is therefore important for companies to have contracts that define in detail the scope of protection, and how these elements can be used. Well-drafted agreements ensure a successful business relationship, and avoid costly litigation⁹⁸.

On the other hand, if companies decide to engage in open source communities, they should familiarise themselves with the terms of the different existing versions of the licenses, and choose the one that best suits their business model and necessities.

3.7. Conclusion/ Action Plan

It is important to have an adequate IP strategy in order to capture the rewards of economic and research investment in AI, and have a competitive advantage over competitors. This strategy should follow the subsequent steps:

- Some companies restrict access to data through trade secrets, contract law, or technical protection measures. Then, in order to access and use such data in the AI training, it is necessary to sign a data licensing or transfer agreement. Furthermore, if the training dataset consist of images, videos, audios, or texts that are protected by copyright, neighbouring rights, or the *sui generis* right of databases, a licence or assignment agreement is needed as well, unless an exception applies. In the EU, the DSM Directive contains an exception for TDM techniques that SMEs could claim, unless the right holders have expressly reserved their right, for example, by adding robot.txt type metadata to their content online. In the US, this practice might be considered as part of Fair Use.
- The hand-labelled training datasets used in supervised learning, both in the US and the EU, are protected by copyright as long as its structure is original. Furthermore, in the EU, the *sui generis* right of databases protects annotated datasets if there has been a substantial investment, quantitative or qualitative, in

⁹⁷ I. CAULDER and P. BLIZZARD (2018), “Protecting and Navigating Intellectual Property for Artificial Intelligence Based Technologies”, *Bereskin & Parr*, available at: <https://www.bereskinparr.com/doc/protecting-and-navigating-intellectual-property-for-artificial-intelligence-based-technologies>;

⁹⁸ L. TIEDRICH, G. DISCHER, F. ARGENT and D. RIOS (2020), “10 Best Practices for Artificial Intelligence Related Intellectual Property”, *COVINGTON*, available at: <https://www.insidetechmedia.com/2020/06/04/10-best-practices-for-artificial-intelligence-related-intellectual-property/#page=1>; L. BENNETT, B. NOLAN, and A. AVIKI (2020), “Cos. Should Assess IP, Contractual Protections For Their AI”, *Law360*, available at: <https://www.mayerbrown.com/-/media/files/perspectives-events/publications/2020/06/cos-should-assess-ip-contractual-protections-for-their-ai.pdf>

the verification of the data. However, when companies want to protect the data itself, they must rely on trade secrets, or implement contracts or technical protection measures to restrict the access. It is relevant in unsupervised learning.

- Copyright protects also the software's architecture or code, either at the source, object, or machine level, as well as its preparatory design material. The protection is automatically granted with the sole act of creation of the software, but its registration is recommended.
- In the EU, it is not possible to patent software if it is not in the context of a specific use to solve a specific technical problem. On the other hand, to obtain a patent on an AI invention, the patent claim must not be directed to purely abstract objects or models, such as "deep learning", or "neural networks", but either to a method involving the use of technical means, or to a device. In the US, the patent claim of software or of an invention involving AI must neither be directed to an abstract idea, such as an algorithm, or a method of computation. However, even if the claim is directed to an abstract idea, the invention can still be patentable if the claim includes an inventive concept that goes beyond it.
- Ideas or principles implicit in the software, the computer logic, the programming language, the algorithms, and the ML methods, may be protected by trade secrets. Companies must take "reasonable measures" to maintain secrecy, which can be physical or technical, and vary depending on the company's size and resources. Nevertheless, TS protection is not *erga omnes*, and it might prevent collaboration and integration with other companies developing AI.
- Many developers are involved in open source projects. While these projects in the short term contribute to the faster diffusion, adoption, and development of AI technology, not having property rights could have a negative impact in the middle-long term. Hence, what companies do is to adopt a hybrid strategy by participating in the open-source community, while maintaining their proprietary source code by selecting the appropriate license terms. Therefore, it is important to be well aware of such terms before committing to the projects, and to bear in mind that the use of this model may also have drawbacks.
- Both in the EU and the US, AI generated works cannot be protected by copyright. Nevertheless, AI assisted works, in which there has been relevant human participation in the creation of the work, are covered. Neither is possible to grant patents to AI systems' inventions. Nonetheless, when a natural person uses the AI system for outcome verification, or identifies a problem and uses AI as a tool to help her/him to find the solution, we are still in the field of "AI-assisted inventions", which are patentable. The raw data, works, and inventions non-protectable by IP rights can be protected by trade secrets. However, keeping the results secret is not always the best strategy, since in some sectors the protection of the AI system is more important than the protection of the results themselves.
- Companies can use their trade name when offering AI technology, or use trademarks to offer highly sophisticated AI systems. If they opt for the latter, they should be careful not to allow the loss of distinctiveness of their trademarks.

Furthermore, it will be more challenging to register as a trademark words that are common and descriptive of AI, such as “smart”.

- Industrial designs in the EU, and design patents in the US, might be used to protect the appearance of AI-based technology products, graphical computer interfaces, and graphical animation.
- Contracts help to fill gaps and protect training datasets, and AI generated outputs that are not eligible for IP protection. It is therefore essential for companies to have contracts that define in detail the scope of protection, and how these elements can be used.