

AI Patentability In Europe & The US: Your Chances Before EPO & USPTO

Background



This article looks at the patentability of Artificial Intelligence (AI) technology, with particular reference to the practice of the European Patent Office (EPO) and, by way of comparison, that of the United States Patent & Trademark Office (USPTO).

Some level of knowledge is assumed regarding the patentability of “software inventions”, referred to herein as Computer Implemented Inventions (CIIs). AI inventions generally comprise a subset of CIIs. Of course, to be patentable at all the claimed subject matter must be novel and non-obvious (i.e. “inventive”), as well as avoiding the exclusions that apply to computer programs, mathematical methods, abstract ideas etc.

EPO Practice

The European Patent Convention explicitly excludes certain types of subject matter from patentability. These exclusions include computer programs and mathematical methods, which are obviously relevant to AI inventions in general. However, these exclusions only apply to the extent that the excluded subject matter is claimed “as such”.

The presence of any “technical” elements in the claim will circumvent the subject matter exclusion and the claim will then be judged on whether any novel elements in the claim (including elements that would otherwise be excluded if claimed “as such”) contribute to a non-obvious/inventive “technical effect”. Any CII, generally including AI inventions, will be patentable under EPO practice if it meets these criteria.



The EPO website helpfully provides an [index of its Guidelines for Examination as they pertain to CIs](#).

This includes a link to [Guidelines part G-II-3.3.1, "Artificial intelligence and machine learning"](#). As stated therein:

Artificial intelligence and machine learning find applications in various fields of technology. For example, the use of a neural network in a heart-monitoring apparatus for the purpose of identifying irregular heartbeats makes a technical contribution. The classification of digital images, videos, audio or speech signals based on low-level features (e.g. edges or pixel attributes for images) are further typical technical applications of classification algorithms.

Further examples of technical purposes for which artificial intelligence and machine learning could be used may be found in the list under [G-II, 3.3](#).

Classifying text documents solely in respect of their textual content is however not regarded to be per se a technical purpose but a linguistic one (T 1358/09). Classifying abstract data records or even "telecommunication network data records" without any indication of a technical use being made of the resulting classification is also not per se a technical purpose, even if the classification algorithm may be considered to have valuable mathematical properties such as robustness (T 1784/06).



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.

Thus, any AI invention that serves a technical purpose is potentially patentable in Europe, but those that serve only non-technical purposes (e.g. purely commercial/business purposes), regardless of novelty and non-obviousness, are not.



Applications of AI methodologies to particular practical applications are patentable if they provide a novel and non-obvious technical effect. Inventions that comprise novel “AI tools” in themselves, independent of their practical application, may be patentable only if they involve a novel and non-obvious

technical contribution to the art. One example of this would be an AI algorithm optimised for a particular type of hardware platform.

A detailed discussion of the meaning of “technical” in this context is beyond the scope of this article. Reference may be made to the Guidelines, e.g. [G-II-3.6.](#); and the Case Law of the Boards of Appeal – see the following examples: [Case Law Example 1](#), [Case Law Example 2](#), [Case Law Example 3](#).

It is worth noting also that if a CII is deemed patentable as a method under EPO practice, allowable claims can also be directed to an apparatus/device/system and/or a computer program for performing the method, and to a computer-readable [storage] medium/data carrier embodying such a program (see [Guidelines F-IV-3.9.1](#)).

USPTO Practice

Historically, the USPTO has taken a much more permissive approach to the patenting of CII than the EPO. Unlike Europe, US patent law does not explicitly exclude any particular types of subject matter from patentability. Rather, 35 U.S. Code § 101 defines patent-eligible subject matter as comprising “any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof”. Exceptions from patent-eligibility have been defined over the years by the courts. These “judicial exceptions” comprise laws of nature, natural phenomena and abstract ideas, the latter in particular being relevant to CII/AI.

Current USPTO practice regarding subject matter eligibility is based on the Revised Patent Subject Matter Eligibility Guidance of 2019, the eligibility test being explained



in more detail in the Manual of Patent Examining Procedure (MPEP § 2106) – see the following items: [Item 1](#); [Item 2](#).

The revised guidance is based on judgments given by the Supreme Court and the Federal Circuit in a number of cases, most significantly *Alice V. CLS Bank International* & *Mayo V. Prometheus Laboratories*, concerning subject matter eligibility and judicial exceptions. The current test for eligibility is often referred to as the “Alice test” or “Alice/Mayo test”.

USPTO reports and resources (including the preceding links) regarding AI can be found [here](#). A USPTO report, [“Public Views on Artificial Intelligence and Intellectual Property Policy”, October 2020](#) confirms that AI inventions are treated like any other invention, by using the Alice test to determine patent-eligibility.

A detailed discussion of the Alice test is beyond the scope of this article and reference should be made to MPEP § 2106 (see above). Stated very briefly however, a claim that is directed at least in part to an abstract idea (mathematical concepts, certain methods of organizing human activity and mental processes) may avoid exclusion if the claim recites “additional elements that amount to significantly more than the judicial exception”.



Examples that would not avoid exclusion are:

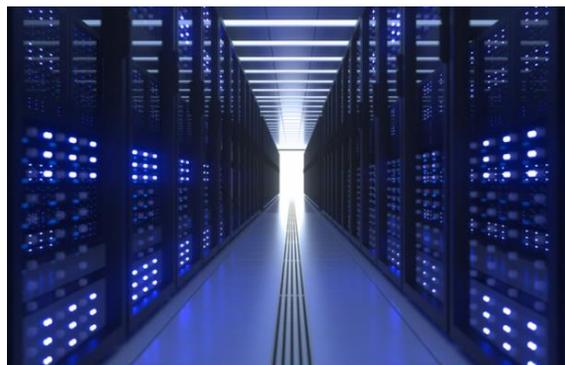
- Merely including instructions to implement the abstract idea on a computer, or using the computer as a tool to perform the abstract idea,
- Adding insignificant extra-solution activity to the judicial exception,
- Generally linking the use of a judicial exception to a particular technological environment or field of use.

Exclusion may be avoided if the claim relates to a practical application such as an improvement in the functioning of a computer, a particular treatment for a disease or medical condition, or an application of the judicial exception to a particular technological field.



Anecdotal evidence suggests that the 2019 guidance initially was applied very strictly by the USPTO, perhaps trending towards the EPO position, but that recently this trend has reversed somewhat. It remains to be seen how the US courts will view patents granted under the current guidance.

Conclusions



Patents provide a valuable form of protection for certain aspects of AI technology.

AI algorithms in themselves are generally not patentable in either Europe or the USA, being excluded as comprising no more than a mathematical method, computer program or abstract idea, regardless of novelty.

Practical applications of AI methodologies are potentially patentable. In Europe this requires the presence of a novel and inventive “technical effect”, which generally excludes (for example) purely business-oriented applications. European practice in this regard is quite well-established and stable. US practice remains more permissive than European practice in terms of potentially patentable applications of AI, but is still in a state of flux following *Alice*, *Mayo* and the 2019 Guidance.

Any AI technology that is patentable in Europe is likely to be patentable in the USA (subject to differing practice re novelty and obviousness), but the reverse will not be true in all cases.

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Patentability Guide

	Patentable?	US key points	Europe key points
Practical applications of AI methodologies	✓	More permissive than Europe. If patentable in Europe, likely to be patentable in US.	Requires novel and inventive “technical effect”.
AI algorithms	✗	Generally excluded as comprising no more than mathematical method, computer program or abstract idea.	Generally excluded as comprising no more than mathematical method, computer program or abstract idea.

Can we help you?

We would be pleased to provide more detailed information and to discuss individual cases – we take a very proactive approach to help our clients and their outside counsel get the best out of European IP systems and we welcome being able to provide early, and commercially useful, input to decisions on protection strategies in Europe.

Please **contact Avir Patel** for further information on how we can assist your business.



Avir Patel
Head Of Patent Practice

E: avir@cameronintellectualproperty.com
T: +44 (0)208 390 3775



cameronintellectualproperty.com