

/en/legal/guidelines-epc/2023/g_ii_3_3_1.html

3.3.1 Artificial intelligence and machine learning

Artificial intelligence and machine learning are based on computational models and algorithms for classification, clustering, regression and dimensionality reduction, such as neural networks, genetic algorithms, support vector machines, k-means, kernel regression and discriminant analysis. Such computational models and algorithms are *per se* of an abstract mathematical nature, irrespective of whether they can be "trained" based on training data. Hence, the guidance provided in [G-II, 3.3](#) generally applies also to such computational models and algorithms.

Terms such as "support vector machine", "reasoning engine" or "neural network" may, depending on the context, merely refer to abstract models or algorithms and thus do not, on their own, necessarily imply the use of a technical means. This has to be taken into account when examining whether the claimed subject-matter has a technical character as a whole ([Art. 52\(1\), \(2\) and \(3\)](#)).

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.