

The legal protection of AI software

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Copyright protection

- Scope of protection: Copyright protects the **creative expression** of software, specifically the **expressive form in which the software is written** (expressive form of both source code and object code). Underlying ideas and concepts, such as the mathematical algorithms that implement program functions, are not protected.
- Protection generally arises upon creation, with **no registration required** (art. 5.2 Berne Convention). In Italy, it is possible to deposit the software with SIAE (the Italian Society of Authors and Publishers) solely to certify the date on which the work already existed.
- The **minimum** duration of protection is **50 years after the author's death** (art. 7 Berne Convention). In Italy, this is extended to 70 years after the author's death (signatory states of the Berne Convention may provide longer protection).

Patent protection

- Scope of protection: patents **protect the underlying invention** of the software (i.e. its innovative functionality).
- Requirements: in the European patent system, an invention must have a “**technical character**” to be eligible for a patent (i.e. the inventive software **must solve a specific technical problem using technical means**).
- For a computer program to be eligible for a patent, it must produce a 'further technical effect' that goes beyond the normal physical interaction between the program and the hardware on which it runs (Art. 52.2 and 52.3 EPC and EPO case law).
- **Formal registration** and grant by a patent office are required.
- Duration: Limited to **20 years from the application filing date**.

Trade secret protection

- Scope of protection: **confidential business information** (e.g., algorithms and programming techniques) that provides a competitive advantage.
- **Requirements** (Art. 2 of EU Directive no. 2016/943):
 - (a) secrecy,
 - (b) commercial value arising from secrecy and
 - (c) reasonable steps to maintain secrecy.
- **No formal registration** is required.
- Duration: **Potentially unlimited**, as long as secrecy is maintained.
- Usefulness: Ideal for protecting software logic that does not meet patentability standards (i.e. software without a technical character).

Special challenges relating to neural networks

- A neural network is a computational model based on the structure and functions of biological neural networks. It is composed of interconnected "neurons" organised in layers.
- Complexity and opacity (the "Black Box problem"): The vast number of interconnected neurons and the extensive processing of data **make it difficult to fully understand the reasoning of a neural network.**
- Impact: This makes it challenging to compare a protected solution with potentially infringing software and to gather evidence.

AI Distillation Algorithms

- **Teacher-Student Learning:** A large, complex "teacher" AI model transfers its knowledge to a smaller, simpler "student" model. The student model learns to replicate the teacher's actions and decision-making processes.
- **How they provide insight:**
 - (a) Understanding data processing: it analyses how the teacher model handles different data types and their relationships, revealing its internal logic.
 - (b) Observing Student Responses: by observing the student model (which emulates the teacher), we gain partial insight into the teacher's reasoning.
- **Key application:** Helps to unravel the reasoning process of a complex teacher model (e.g., suspected infringing software). It enables comparison between the functionality of the teacher model and that of protected software.

Presumption of infringement and reversal of the burden of proof

- Art. 34 of the TRIPs Agreement makes it easier for holders of process patents to prove infringement, particularly when it is difficult to gather evidence of the process used by the infringer.
- **Presumption of infringement and reversal of the burden of proof:** any identical product when produced without the consent of the patent owner shall, in the absence of proof to the contrary, be deemed to have been obtained by the patented process if:
 - (a) the product obtained by the patented process is **new**; or
 - (b) if there is a **substantial likelihood** that the identical product was made by the patented process and the patent owner has been unable, **despite making reasonable efforts**, to determine the process used.

The key role of the Italian system for preserving evidence

- The Italian “*Descrizione*” is **Europe’s most efficient** evidence preservation system.
- Its purpose is to gather evidence of suspected infringing AI software when it is not freely available, as an urgency measure.
- A court-appointed IT expert **inspects** the software, as well as all relevant data and documents. Copies of the software and all technical, commercial and accounting documents **are acquired** for further examination.
- Typically issues as ***Ex Parte* order**, before the defendant is summoned, to prevent the destruction or concealment of evidence.
- Possibility to enforce Italian evidence preservation orders **in other EU Member States**, pursuant to Regulation (EU) No. 1215/2012.
- The Hejduk decision (CJEU C-441/13) can be used to justify the jurisdiction of the Italian courts in cases where infringing software is made available on the internet.



Lorenzo Gyulai is an Italian lawyer. His work focuses on contracts and litigation relating to intellectual property rights and copyright. He assists both Italian and foreign clients, particularly German-speaking clients. Lorenzo plays an active role in anti-counterfeiting initiatives, collaborating with organisers of relevant national and international trade fairs and dealing with customs intervention procedures.

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