

CTL IP Series

IP Series #3: Software and Copyright

2/9/2023

CTL CENTER FOR
TECHNOLOGY
LICENSING
AT CORNELL UNIVERSITY

CTL IP Series



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INTELLECTUAL PROPERTY PROTECTIONS FOR SOFTWARE

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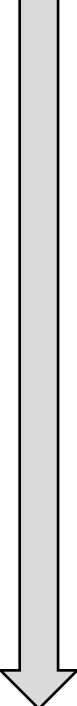
Attorneys at Law

TYPES OF INTELLECTUAL PROPERTY AVAILABLE FOR SOFTWARE

- Copyrights protect **original expression** (e.g., the source code of software).
- Trade secrets protect **confidential information** (e.g., the source code of software).
 - Source code for software may be protected as both a trade secret and as a copyrighted work.
 - When source code is being registered for copyright protection, there are special procedures for registering portions of the source code that are subject to trade secret protection.
- Trademarks protect the **brand** (e.g., name, logo, slogan, etc.).
- Patents protect **functionality** (e.g., what the software does when executed).

RELATIVE COSTS OF DIFFERENT TYPES OF INTELLECTUAL PROPERTY

Less Expensive



Copyright	Copyright protection is automatic (at no cost) the instant it is fixed in some tangible medium. In order to bring a copyright infringement action, however, the copyright must be registered.
Trade Secret	Trade secret protection is afforded as long as the owner takes reasonable measures to keep the information secret. The reasonable measures include physical, electronic and contractual measures required to keep information secret.
Trademark	Government and legal fees are required for obtaining and maintaining trademark protection.
Patent	Government and legal fees are required for obtaining and maintaining patent protection.

More Expensive

AUTHORS AND INVENTORS

- Copyrights are afforded to **authors** – the person or persons who actually produce the original expression.
 - In the context of software, the authors are the persons that write the source code.
 - Developing software is often a collaborative process, and may involve a large number of people which contribute to a code base over time. It is important to track such contributions for determining authorship.
- Patents are afforded to **inventors** – the person or persons who contribute to the “conception” of an invention, who may or may not be the same persons who reduce the invention to practice.
 - In the context of software, the inventors are the persons that come up with the idea for what the software will do. The inventors do not necessarily reduce the invention to practice by writing the source code.

AUTHORSHIP AND “WORKS MADE FOR HIRE”

- Generally, the authors of a copyrighted work are the persons that produce the copyrighted work.
- For certain “works made for hire,” the author (and owner) of the copyrighted work is the employer or client that commissioned the copyrighted work.
 - If the copyrighted work is produced within the scope of one’s employment, then the employer is the author and owner.
 - If the copyrighted work is specially ordered or commissioned by a client and produced by an independent contractor, then the client is the author and owner.
 - Works made for hire must fall within certain defined categories.
 - There is some legal precedent that software may fall under the categories of “a contribution to a collective work” or “a compilation,” but the law is not fully settled on this point. Thus, the best practice is to have the client and independent contractor agree in writing that a prospective work is a “work made for hire” and also include an agreement for the independent contractor to assign any work created to the client.

INVENTORSHIP AND “WORKS MADE FOR HIRE”

- Patent laws do not have a “works made for hire” doctrine.
- Many employment agreements, however, include an obligation for employees to assign or transfer ownership of patents to their employer.
- Even where an employment agreement includes an obligation to assign or transfer ownership of patents to their employer, this does not affect the listing of inventors for a patent.

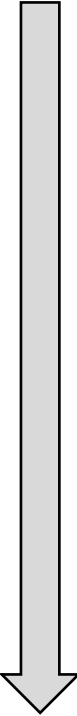
LIMITATIONS ON COPYRIGHTS

- The functionality of software may be replicated using a different written expression (e.g., different “words” in the source code).
- Fair use is a defense to copyright infringement.
 - Software copyrights are different than other types of works (books, films, music, etc.), in that software has a significant functional aspect.
 - As copyrights are intended to protect expression not function, courts may be more likely to find fair use.
 - Statutory fair use for teaching, scholarship and research, among other uses.
 - Takes into account various factors including:
 - The Purpose and Character of the Use
 - The Nature of the Copyrighted Work
 - The Amount and Substantiality of the Portion Used in Relation to the Copyrighted Work as a Whole
 - The Effect of the Use Upon the Potential Market for or Value of the Copyrighted Work
- Licensing issues.

COPYRIGHT LICENSING ISSUES

SOFTWARE LICENSE TYPES

Less Restrictive



Public Domain	No limitations on use, code is freely available to all without any restriction. Examples include Creative Commons Zero (CC0), and Unlicense.
Permissive	Code is widely available but with some restrictions including providing copyright notice and licensing of copies and derivative works. Examples include Apache, Berkeley Software Distribution (BSD), and MIT licenses.
Copyleft	Significant additional restrictions included in terms of licensing of derivative works. Examples include GNU General Public License (GPL) and its weaker variant Lesser GPL (LGPL).
Commercial/ Proprietary	Closed source code, typically using code obfuscation techniques. License is executed via click-wrap or browse-wrap mechanisms. Typically includes restrictions against accessing, reverse engineering and modifying the code, among numerous others.

More Restrictive

COPYRIGHT LICENSING ISSUES

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COPYLEFT LICENSE EXAMPLE: GNU GPL

- You may convey a work based on the Program, or the modifications to produce it from the Program, in the form of source code, provided that you also meet all of these conditions:
 - a) The work must carry prominent notices stating that you modified it, and giving a relevant date.
 - b) The work must carry prominent notices stating that it is released under this License and any conditions added.
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COPYRIGHT LICENSING ISSUES

CURRENT COPYRIGHT DISPUTES

- Class Action Lawsuit filed late 2022 against GitHub, Microsoft and OpenAI alleging that AI-generated software outputs of GitHub Copilot and OpenAI Codex violate permissive/copyleft software license agreements.
- Such suits also allege violations of Digital Millennium Copyright Act (DMCA) primarily based on allegations that AI-generated software outputs remove Copyright Management Information (CMI) such as the copyright notice in violation of DMCA.
- Copyright suits have also been filed against companies such as Stability AI, maker of AI art tool Stable Diffusion, that utilize copyrighted images to train AI/Machine Learning systems to generate new images.

LIMITATIONS ON TRADEMARKS

- Software may require registration of both a trademark and a service mark, which are in two different classes (e.g., with double the fees required).
 - The trademark covers goods, such as downloadable forms of the software.
 - The service mark covers services provided by the software.
- Does not prevent anyone from copying or imitating the functionality of the software.

LIMITATIONS ON TRADE SECRETS

- While trade secrets may last in perpetuity, there is a need for vigilance in maintaining their confidentiality.
- Trade secret protection can be lost in a number of ways, including:
 - Failure to maintain the confidentiality of the trade secret material.
 - Independent derivation of the trade secret material by a third party.
 - Reverse engineering by a third party.

LIMITATIONS ON PATENTS

- Requires public disclosure of the “best mode” of carrying out the invention and can thus involve giving away information that is better kept as a trade secret.
- Obtaining a patent can take a significant amount of time.
 - It is common for there to be several years between when a patent application is filed and when it ultimately issues as a patent.
 - Software development is typically an ongoing process with continual changes, and thus there may be situations where patent protection is not obtained before the software is obsolete, where the software is obsolete well before the patent expires (generally, 20 years from filing), or where the functionality of the software changes during development such that the patent no longer covers or insufficiently covers the functionality of the software.
- Detecting infringement can be difficult and costly, particularly for software.
- Subject to rigorous “subject matter eligibility” analysis.

PATENT SUBJECT MATTER ELIGIBILITY ANALYSIS

STATUTORY BASIS

- “Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.”

JUDICIAL EXCEPTIONS

- Abstract Ideas
 - Mathematical Concepts
 - Methods of Organizing Human Activity
 - Mental Processes
- Laws of Nature
- Natural Phenomena

PATENT SUBJECT MATTER ELIGIBILITY ANALYSIS

- Claims directed to abstract ideas or other judicial exceptions without an inventive concept are not patent-eligible.
- Claims “directed to an improvement in the functioning of a computer” are not directed to judicial exceptions, and are therefore patent-eligible.
- Claims providing “a technical improvement over prior art” include an inventive concept sufficient to transform a judicial exception, and are therefore patent-eligible.

ARTIFICIAL INTELLIGENCE (AI)/ MACHINE LEARNING SOFTWARE

- Generally, works produced via AI/machine learning (e.g., generative algorithms) cannot be copyrighted or patented, though they could be maintained as trade secrets. Under current law, an AI/machine learning system cannot be an author for purposes of copyright protection or an inventor for purposes of patent protection.
- Substantial IP protections, however, are available to certain aspects of AI/machine learning software. Such protections potentially include copyright, trade secret and patent protections.

COPYRIGHTS AND AI/MACHINE LEARNING

- The data used for training a machine learning model may be copyrightable, depending on the type of data used.
 - Raw data is not copyrightable, whereas certain types of “transformed” data may be copyrightable.
 - Copyright protection is designed to protect **original expression**, and thus the more a user shapes or transforms raw data the higher the likelihood that copyright protection may be afforded.
 - Creative labeling of training data for supervised learning.
 - Organization of data into a format suitable for use in machine learning model training.
- Using copyrighted data for training a machine learning model may be considered **fair use**.

TRADE SECRETS AND AI/MACHINE LEARNING

- Certain aspects of AI/machine learning are well-suited for trade secret protection.
 - Data used for training.
 - Machine learning model architecture.
 - Machine learning model parameters.
- The typical limitations of trade secrets are particularly relevant here, where a machine learning model often acts as a “black box.”
 - It may be trivial in some cases to reverse-engineer an original machine learning model by providing a large number of inputs to the original machine learning model and recording the outputs.
 - Such inputs and outputs can then be used to train a new machine learning model that will function in a manner similar to that of the original machine learning model.

PATENTS AND AI/MACHINE LEARNING

- A machine learning model itself may be patentable, if the patentability requirements of patent-eligibility, novelty and non-obviousness are met. Additional potentially patentable aspects include:
 - The process by which a machine learning model is trained, including transformation of data into improved formats for input to the machine learning model.
 - A new arrangement or sequence in which multiple machine learning models are used.
 - The use of particular machine learning models in specific practical applications involving real-world systems.

CTL IP Series

Thank you for your interest!

Please feel free to contact
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questions about the presentation.