IP BULLETIN

Vol. IV Issue 2, JULY- DEC, 2023, Pg. 88-98

ENFORCING SOFTWARE IP PROTECTION IN THE FACE OF COPYRIGHT VIOLATIONS WITH EMERGING TECHNOLOGIES WITH A SPECIAL EMPHASIS ON SOFTWARE COPYRIGHT PROTECTION

Siva Ram J[1]

ABSTRACT

IPR involves protecting corporate rights and preventing the free exchange of knowledge. This paper will discuss how the software industry is protected under copyright, its purposes, and its effects. This is an extensively used legal software protection methodology for developing the world economic system of intellectual property right into the problems surrounding IPR, emphasizing the need for precise protection to safeguard against copyright infringement and violations. Elucidating the complexities of software development and the evolution of information technology highlights the significance of copyright in fostering innovation while ensuring fair compensation for creators.

The study delineates the process of copyrighting software, recognizing its pivotal role in the modern IT sector. It underscores the importance of understanding and adhering to copyright laws to mitigate infringement risks. Furthermore, it examines the impact of copyright protection on the economic dynamics of the software industry, emphasizing its role in fostering a conducive environment for innovation and growth.

Through a comprehensive analysis, the paper reveals how intellectual property protection, enshrined in copyright laws and regulations such as the Information Technology Act, is a transparent barrier against unauthorized dissemination and misuse of software. It underscores the necessity of upholding ethical and legal standards to safeguard against illicit activities that undermine the integrity of the software ecosystem the paper synthesizes key findings,

[1] 5th Year, B.B.A. LL.B. Symbiosis Law school, Nagpur

advocating for a balanced approach that upholds the rights of creators while promoting the dissemination of knowledge and technological advancements. It underscores the critical importance of intellectual property protection in shaping the future trajectory of the software industry, ensuring sustainable growth and innovation in the digital era.

Keywords: Intellectual property right, software industry, copyright law, programming, licensing, Technology.

INTRODUCTION

Intellectual property means anything created or invented by any person to the world, such as literary works, scripts, artwork, Designs in industry, Symbols, names, fonts, and images used for commercial purposes. Intellectual property is the rights of such inventions or creations. IP Rights for trademarks, copyrights, and patents must be protected by law and technology. It should be legally legitimate to grant licenses for a particular brand, copyrights, and patents used by others. Different types of law came up with new advancements and ideas to cover rights and duties with various sectors in intellectual property rights. The technology law deals with cybercrimes and other online illegal activities used by electronic devices, computer systems, or social media of connected Networks after cybercrimes and online scamming-related issues and after an increasing number of crimes brought into notable before the government of law. The Information Technology Act of 2000 was implemented, often known as cyber law.

Computer programs were not protected under the Copyright Act until 1974 and were not viewed as fixed, physical objects. However, traditional copyright law was expanded to cover machine-readable software 1983, and the Copyright Act granted computer programs the same copyright rights as literary works. Software piracy of programming material, data theft, and copying of coding languages, fonts, and names that owners or creators do not permit are some of today's most prevalent copyright infringements.

The inventor or owner had granted copyright protection to the specific software or coding languages. If other companies must use copyrighted data of software or coding, they should get a license to use technology with the permission of the inventor or creator. Any unauthorized copyrighted software is used by any of the ones it leads to be illegal. With software copyright, there are some specific problems related to copyright, but the laws and rules apply. As a result of technological advancements, information and intellectual property can be copied, transferred, and altered more rapidly than ever before. In this procedure, computer software

can process specific data structures based on user commands or sets of programs.

COPYRIGHT INFRINGEMENT RELATED TO CODING:

Copyright is a type of computer coding or programming that, under some circumstances, can be violated without a copy of the thing being copied. For instance, if a new program is created using the same methodology, functionality, and significant or minor programming code or component similarities as an original computer program for "inspiration,"[2] the actual program is also copyrighted. However, copyright infringement is still possible even if the original code is not used.

UNDERSTANDING OF COPYRIGHT SOFTWARE LICENSING AND IP

Utilizing computers for information processing and storage does not inherently pose more significant challenges for copyright holders in upholding their rights. Competitors are not entitled to replicate your coding efforts, recognizing the substantial time and dedication invested in creating programming code, software, and applications. The primary concern revolves around both piracy and plagiarism, which are issues that should not arise due to the illicit distribution and sale of counterfeit versions. Copyright software licensing serves as a protective measure in preventing software theft while still allowing widespread access to the program. The core of this process lies in copyright software licensing, serving as a framework for legitimate software utilization without violating copyright laws. In this context, developers and managers must ensure the software is entirely free from copyright restrictions and available for public use.[3]

There are two primary categories of licenses: open-source and proprietary. The availability of open-source software is often determined by the type of open-source license in use, alongside specific terms and conditions that govern alterations, distribution, and usage. Acquiring proprietary software typically involves obtaining a permit with an associated annual fee rather than an outright purchase. In contrast, free software is crucial in enabling the public to learn

[2] Vijay K. Tyagi* (no date) *NFRINGEMENT OF COPYRIGHT IN COMPUTER PROGRAMS IN INDIAUNDERSTANDING THE STATE OF VIRTUAL NON-LIQUET AND CHALLENGES VIS-À-VIS ARTIFICIAL INTELLIGENCE*, *ILI Law Review Vol. II*. Available at: https://ili.ac.in/pdf/vkt.pdf (Accessed: 10 October 2023).

[3] Group, T. (no date) *Software copyright guide: Examples & protection*, *Software Copyright Guide: Examples & Protection from Infringement*. Available at: https://cpl.thalesgroup.com/software-monetization/software-copyright-guide (Accessed: 15 October 2023). Twin, A. (no date) *Non-disclosure agreement (NDA) explained, with pros and cons*, *Investopedia*. Available at: https://www.investopedia.com/terms/n/nda.asp (Accessed: 16 October 2023).

from others, fostering collaborative problem-solving, and advancing knowledge in an open and accessible manner. [147]However, it is essential to note that such free software usually lacks the sharing of all its source code, making it inaccessible to users who do not have access to the underlying code.

SECURITY BREACHES AND MEASURES FOR PROACTIVE DEFENCE

And there is multi-layer protection of perimeter defences inside your computers of companies inside the network perimeter. Some employees are working in the same company. The stealing data act & information of secret findings to another company stealing IP thieves will eventually the levels of security must restrict breakthrough use access controls of system employees and admins. According to the functional level of controls, access & restrictions to sensitive data in configuration setting as proper credential authorization. The file encryption must protect to symmetric access of both files from A key to end key to access such files without encryption or decoding. Hackers can easily breach your defences by relying on IP data and getting easy access through folders. They regularly monitor the network activity which user data can reveal before hacking through hackers that sensitive IP data & information. Routine Auditing is a setup tool that automatically analyses the whole connected network/domain used by machine learning and artificial intelligence in the initial security stages.

The immediate knowledge with high accuracy and large volume analysis. The complex of copyrighted data combined with automation and study through AI algorithms and machine learnings. And two more important intellectual property safeguards originate network on the malware detection, which will prevent malware from unwanted websites, email bombings, or SMS bombings that reach your networks.[4] The Anti-malware software implemented to deal with impacted networks. This intelligence malware assists us in removing and detecting viruses that enter the action. When firewalls are installed as the primary server's gateway, authorized connections can open and close portals with the required authorization. To secure a company's intellectual property (IP), software coding and programming techniques, and private data files, email filters and web content filters are also crucial. As to be covered by the layout of network structures in every location in connected network platforms. Threats such as email spoofing are used to protect the environment, which is usually cleared with correct authorization. Hackers will steal information and data from systems through various domains of cybercrime

[4] Amanda N. Craig, JD (no date) *Proactive cybersecurity (final) - dlc.dlib.indiana.edu*, *dlib.indiana.edu*. Available at: https://dlc.dlib.indiana.edu/dlc/bitstream/handle/10535/10249/SSRN-id2573787.pdf?sequence=1 (Accessed: 15 October 2023).

that are actively involved in these crimes happening due to the legal issues and difficulties with enforcing copyright protection pf IP law nowadays.

INFLUENTIAL TECHNOLOGY AND ITS TRANSFORMATIVE EFFECTS ON INDIVIDUALS' LIVES

An essential aspect of human life involves the influence of technology on intellectual property rights. The advancements in storage technology have had the most significant impact on copyright law within this context, with three categories of technology being of concern. This development has important implications for content owners regarding their rights regarding the duplication of their works, among other things. These developments have consequences for the media industry, the publishing industry, and the performing arts industry. Introducing new data and information processing technologies has also affected and implied rights, specifically regulating plagiaristic works. The purpose of this chapter is to demonstrate how advancing technology is enforced by exploring how these technologies interact with each other and how these interactions significantly contribute to shaping the mechanisms that govern intellectual property rights.

Due to recent advancements in storage technology, intellectual property rights enforcement may be a significant issue in the future. The initial phase of storage technology has made gaining exclusive rights to one's creations quite challenging, as many people worldwide have been able to use these technologies to copy works without obtaining any IP licenses to reproduce pieces made.[5] A subsequent phase in information, data, programming, and coding storage systems is characterized by the decline of specialization toward specific data types. Computerized components and procedures are designed to handle diverse forms of information, including text, graphics, audio, and video. Hence, governing information, data, programming, and coding within traditional formats becomes challenging in computer technology, especially when these components and systems are designed to handle diverse forms of information. Because of these innovations, Owners and creators face an escalating threat of unauthorized copying.

In this digital age dominated by technology, computers significantly impact copyright enforcement, and the act of information storage presents challenges for copyright holders

[5] *Chapter 4 impact of technology on enforcement of ... - Princeton University*. Available at: https://www.princeton.edu/~ota/disk2/1986/8610/861007.PDF (Accessed: 15 October 2023).

striving to safeguard their rights. Specifically, the challenge is apparent when we consider the regulation of reproduction systems, which introduces three notable concerns regarding copyright infringement, distinguishing it from other data storage or duplication technologies like photocopying or videotaping. In contrast to these methods, digital information can be duplicated swiftly and inexpensively. Moreover, computer-mediated information has the potential to generate multiple flawless copies of content. Importantly, it is essential to recognize that ownership of the original work is not a prerequisite for obtaining future copies of the same quality and content. The author indicates that while some of these copies may only persist for a fraction of a second, others may endure until the computer is powered off, with a few remaining stored on magnetic tape or disk.

LEGAL PROVISIONS OF THE COPYRIGHT ACT & CONTRACTS BETWEEN PERSONS

According to copyright act 1957 section 2(0) you can protect any software or programming codes from making duplicate, translating, or copying, pirating others creative of data to protect you from copyright infringement. The software infringement means if any persons creative of work is copied or replicating the original work without their consent in unauthorized manner. If the technology of software is ready to launch in market must protected under intellectual property law with licensing management. A computer capable of performing a specific task or achieving a particular result is referred to as programmable a set of instructions expressed in words, codes, schemes, or in any other form, including a machine-readable medium, according to Section 2(ffc) of the Copyright Act 1957, read with Section 2(o).

Copyright licenses for software coding or programming are provided under IP law. There will be a mutual contract of agreement with the owner or developer if someone pays for the use of software technology. Once the agreement is in place, there will be terms and conditions for licenses to access intellectual property. For example, if any programme is downloaded through the internet, it might be anything from secondary sources of unauthorized websites to cracked software or unpaid one or few charges in irrelevant websites on an online network platform. One of the most serious issues in IP law is the internet era. Intellectual property software piracy is a continuous problem that has now become a global issue as copyright infringement. There are several online sources, including as BitTorrent, Subtonic, and others, from which you can obtain peer-to-peer file sharing websites. So, this bothers an original artist, authors, creator, or owners the legitimate payment they deserve for their work.

In that technology to protect the software, there are so many methods by way of unauthorized

access to the company network easily. To enable by way of preventing up and anytime active IT defences on the fortune of securing each file in computer networks each software's with the protection of cyber security in connected networks of computers. As we mentioned in cyber security, computer networks, in addition to adding security levels, must be set up in all interconnected networks while using domains in each IP address number.

A LEGAL PERSPECTIVE ON SOFTWARE LICENSING AND NONDISCLOSURE AGREEMENTS

Understanding software licensing agreements and nondisclosure agreements (NDAs) is vital for protecting the interests of software developers and technology businesses. Let us begin by looking at software license agreements, which are legally binding contracts that outline the conditions and situations under which a software developer or company permits users to use their software, which can be found in the user licensing agreement. A software license agreement defines the use of a piece of software, how it can be distributed, and what safeguards are associated with it. Software licensing agreements are available in various forms, such as proprietary licenses, open-source licenses, subscription agreements, and agreements covering intellectual property rights. In these contracts, software developers are guaranteed the right to license their intellectual property when substantial intellectual property is involved. When this is the case, you have the legal authority to prevent others from using your intellectual property commercially. If you own a piece of intellectual property, you possess the legal power to do so. Licensing is advantageous for intellectual property owners, as it allows them to generate revenue by allowing others access to their assets to generate revenue for the owner without relinquishing ownership.[6] Licensing is also advantageous for licensees, as it saves them the cost of purchasing assets outright.

We can also discuss the importance of nondisclosure agreements in intellectual property rights. Nondisclosure agreements (NDAs) protect proprietary software and other confidential business information. Such information may include marketing strategies, sales plans, potential customers, manufacturing processes, or proprietary software. Several legal actions can be taken if an NDA is breached by one party, including seeking court action to prevent any further disclosures, and suing the other party for monetary damages in case the breach was intentional.

[6] Ray, A. and About The Author Adhip Ray is the founder of WinSavvy. He has a legal (2023b) *Software licensing agreements: An international perspective*, *WinSavvy*. Available at: https://www.winsavvy.com/software-licensing-agreements/ (Accessed: 16th October 2023).

They establish a legal obligation for the receiving party not to disclose or misuse the confidential information. The software source code, algorithms, designs, and license agreements. Both software licensing agreements and nondisclosure agreements are critical legal tools for software developers to protect their intellectual property and their business interests.

THE LEGAL ASPECTS OF PROTECTING SOFTWARE IP

Addressing the Legal Aspects of Software Intellectual Property (IP) Protection is vital for businesses and software creators. Enforcing copyright to prevent violations is a paramount concern in this context. Given the intricate nature of the tech industry, managing the legal intricacies surrounding software innovations can be challenging. Here is an overview of various stages: Fair Use, Reverse Engineering, Compulsory Licenses, Data Privacy, GDPR, and Software Piracy.

Within the realm of software, legal implications, and concerns play a crucial role in safeguarding software IP, especially in terms of fair use under copyright law, and these legal aspects extend to how software serves as a gateway for various applications.

I. Fair Use

The concept of fair use within copyright law, as it pertains to software, represents a beneficial defence available to copyright holders. This defence can be invoked when someone is accused of copyright infringement. Fair use permits specific individuals to utilize a copyrighted work without the owner's explicit permission. This exception applies in cases involving criticism, commentary, news reporting, teaching, or research. It is important to note that the legal framework for fair use was established by the judicial system and codified in the Copyright Act.[7]

Within the copyright act, specific factors must be considered to determine what qualifies as fair use. These factors include examining the purpose and character of the service, which includes whether it has a commercial aspect, the nature of the copyrighted work, the significance of the portion used to concern the whole, and the impact the use has on the potential market value of

[7] *What is fair use?* (2023) *Copyright Alliance*. Available at: https://copyrightalliance.org/faqs/what-is-fair-use/ (Accessed: 12 October 2023).

the copyrighted work.

II. Reverse Engineering

The concept of reverse engineering has been frequently associated with the idea of fair use in computer technology and the realm of trade secrets. Reverse engineering is equivalent to evaluating a product's functional side within the trade secrets domain. Instances of reverse engineering encompass the examination of chipboard layouts, integrated circuits, or the de-compilation of computer software.[8] The ability to duplicate the code or the software itself makes the outcomes analysis feasible. The courts have determined that making these copies for reverse engineering falls under the category of fair use, which does not constitute the infringement of the copyrights of the original authors.

III. Compulsory licenses:

Through compulsory licensing, the government grants permission to an external entity to manufacture or employ a patented product for its purposes, even without the patent holder's consent. A patent license allows a third party to utilize, create, produce, and sell an innovation already patented by another entity without securing prior approval from the patent holder. These licenses are exclusively issued by the government, the authorizing body. This principle is part of the World Trade Organization's TRIPS Agreement, which encompasses the flexibility of patent protection.

The process of reverse engineering software is one of the most essential methods of reversing software defects, especially in the software industry. Reverse engineering is a method by which hackers can uncover vulnerabilities within software that can be exploited to create malicious programs by using the vulnerabilities discovered.[9] In general, reverse engineering is legal. This term refers to deconstructing a known product to understand or reproduce it, as established in the "Kewanee Oil Co. v. Bicron Corp" (416 U.S. 470, 1974) case. Software maintenance and machine development are just a few examples of how reverse engineering can be applied in various fields. Reverse engineering can be defined as converting a source code back into the machine code of a program. This source code represents the algorithm used in the program's initial creation and programming.

---

[8] Admin *et al.* (no date) *Legality of reverse engineering of a computer programme: Does it amount to copyright infringement*, *RACOLB LEGAL*. Available at: https://racolblegal.com/legality-of-reverse-engineering-of-a-computer-programme-does-it-amount-to-copyright-infringement/ (Accessed: 14 October 2023).

[9] Kumar, R.S. (2021) *Compulsory license under the Patents Act*, *SSRN*. Available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3896012 (Accessed: 16 October 2023).

IV. GDPR and Data privacy:

This article provides an overview of the General Data Protection Regulation (GDPR), which imposes stringent data protection standards for processing, storing, and transmitting personal data within the European Union. To ensure compliance with the General Data Protection Regulation, which includes rights like the right to erasure and data portability, software used to process data must comply with specific instructions to ensure compliance with those rights. Furthermore, obtaining user consent for data processing and maintaining transparency in software's data handling practices are crucial to consent and openness.

In the digital age, software companies must implement robust strategies and security measures to safeguard their proprietary information, including source code, algorithms, and confidential databases, in compliance with copyright laws. I want to emphasize a few key aspects of software. In the context of software piracy, it is the act of unauthorized duplication, distribution, or utilization of software, which results in significant financial losses to software developers and companies. Businesses can address this issue in several ways, including legal action against individuals involved in piracy or corporations breaking piracy laws. Equally important, companies can develop tools and methods to combat piracy.

CASE STUDIES AND CASE LAWS

1. In "Ferid Allani v Union of India, the Delhi High Court argued that patent restrictions on computer programs hinder technological progress in areas like AI and blockchain. It ruled that inventions based on computer programs could be patented if they showed a technical contribution. The Court held that 'an invention is patentable if it displays a technological effect or contribution, even if it is based on a computer program"[10]
2. The invention in "Accenture v Assistant Controller of Patents was a data document design system addressing database system challenges. Initially, it faced objections for not having unique hardware adaptation. Upon appeal, the IPO granted the patent, establishing that software patents do not need hardware modifications"
3. In a high-stakes dispute between Oracle and Google, Oracle accused Google of using Java SE code without its permission in Android and sought to recover $9 billion in damages. Ultimately, the U.S. Supreme Court ruled in Favor of Google, which has now

[10] (No date) *Ferid Allani vs Union of India & Ors on 12 December, 2019 - Indian kanoon*. Available at: https://indiankanoon.org/doc/90686424/ (Accessed: 15 October 2023).

been permitted to use Java code snippets for its purposes, ending a decade-long controversy.

4. A growing number of computer programs are being illegally used and copied globally. According to a report by the Federal Security Administration in 2002, 92% of all software in China was illegally copied (BSA, 2002). There is a high percentage of unlawful software in Vietnam, with 97% being illegal (Carrasco Muniz, Stocking, BSA, 2003). Unauthorized software use frequently exceeds 80% in various other Southern nations.[11]

CONCLUSION AND SUGGESTIONS

This conclusion concludes with the statement that safeguarding software intellectual property is a complex undertaking requiring both technological and legal solutions. For copyright to be upheld in the digital age, proactive measures must be taken, international law needs to be understood in all its intricacies, and most importantly, a strong commitment should be maintained to defending the rights of software developers. Given the dynamic nature of technology, the landscape of software intellectual property protection will evolve, underscoring the significance of adaptability and vigilant protection of innovations for stakeholders. To guarantee ample security and legal integrity, it is frequently recommended to engage technologists to create and enforce these contracts. Constructing a robust cybersecurity policy, fortifying IoT connections, adopting a people-centric strategy, and managing access to sensitive data are some valuable guidelines to consider. As part of its initiatives to modernize its intellectual property framework, there should be revisions to the IPR enforcement toolkit to aid law enforcement in addressing IP-related offenses, notably counterfeiting and piracy.

Additionally, this update should facilitate direct collaboration between industry stakeholders and state law enforcement agencies to combat digital piracy linked to copyright infringements in programming, coding, and emerging technologies. In software, enforcing intellectual property rights in the face of copyright violations remains a dynamic and ever-evolving challenge. These technologies do come with several limitations and warrant additional research. Software engineers need to be well-versed in these challenges to navigate them effectively, and they should seek legal advice when it is prudent to do so.

****

[11] *Technology and innovation report 2021 - UNCTAD*. Available at: https://unctad.org/system/files/official-document/tir2020_en.pdf (Accessed: 15 October 2023).