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Copyright Enforcement and Fair Use in the Digital World

Copyright laws in the United States have struggled to adapt and keep up with our increasingly digital world. As different social media companies employ their own algorithmic solutions for copyright detection, and subsequently enforcement, many concerns arise regarding First Amendment rights and fair use. This paper will analyze the sociopolitical and legal implications of algorithmic copyright detection and enforcement, with a focus on YouTube's Content ID and Meta's Rights Manager. After discussing these impacts, this paper will explore the difficulties associated with creating an algorithm to automatically detect fair use in cases of potential copyright infringement. Lastly, possibilities for modifying existing copyright detection algorithms to account for the nuances of fair use and free speech will be discussed.

I. Copyright and fair use before the digital age

a. What is copyright?

Copyright is "a type of intellectual property that gives its owner the exclusive right to copy and distribute a creative work, usually for a limited time. The creative work may be in a literary, artistic, educational, or musical form."[1] The U.S. Copyright Office says that copyright is rooted in originality and fixation, meaning that the work must be *created* rather than copied, and must be *tangibly permanent* so as to confirm its continued perceptive existence. We are all both

[1] Office, U.S. Copyright. "What Is Copyright?"

copyright owners and copyright users, as creators of documented original works, as well as society members who engage with *other* documented original works.

Before discussing copyright in the digital age, it is crucial to understand the long history and original conceptions of copyrightable work. The first copyright law of the United States Constitution, enacted in 1790, mainly applied to "books, maps, and charts" with a copyright and renewal period of 14 years.[2] Many amendments were made to the Copyright Act of 1790 until 1895, as Congress worked to expand the scope of copyrightable work to include photographs, art, dramatic works, musical composition pieces, and "derivative works."[3] The introduction of "derivative works" under copyright protection marks a shift towards fair use, in which pre-existing works could be used for transformative purposes in the creation of a new work.[4] During the Berne Convention of 1886, international efforts sought to mutually recognize copyright between nations, in order to ensure copyright protection on a global scale. Many different aspects of modern copyright law were developed during the Berne Convention. Most importantly, the Berne Convention introduced copyright protection through fixation as opposed to registration.[5]

However, the current copyright act that continues to shape the copyright system in the United States was passed by Congress in 1976, formally codified in U.S.C. as Title 17.[6] Throughout the time since the passing of the Copyright Act of 1976, copyright laws and regimes

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[2] Office, U.S. Copyright. "Timeline: The 18th Century."
[3] Office, U.S. Copyright. "Timeline: The 18th Century."
[4] 17 U.S.C § 101, The introduction of "derivative works" within the U.S.C. occurred in 1870. A "'derivative work' is a work based upon one or more preexisting works, such as a translation, musical arrangement, dramatization, fictionalization, motion picture version, sound recording, art reproduction, abridgment, condensation, or any other form in which a work may be recast, transformed, or adapted. A work consisting of editorial revisions, annotations, elaborations, or other modifications which, as a whole, represent an original work of authorship, is a 'derivative work.'"
[5] "Summary of the Berne Convention for the Protection of Literary and Artistic Works (1886)"
[6] Office, U.S. Copyright. "Copyright Law of the United States (Title 17) and Related Laws Contained in Title 17 of the United States Code."

have been continually disrupted by the rise of new technologies, with pianos in the late 1800s, radios in the 1920s and 1930s, cable television in the 1960s and 1970s, photocopying in the 1970s, home video cassette recorders in the 1970s and 1980s, and now digital downloading, streaming technology, and social media today.[7] The Digital Millennium Copyright Act of 1998 implemented two World Intellectual Property Organization treaties that sought to address many issues of copyright protection and enforcement created by the internet.[8] Whether or not the DMCA continues to remain relevant in the context of video content creation is debatable.[9]

Prior to the digital age, copyright was enforced through the filing of lawsuits in federal courts. As the U.S. Copyright Office states, "copyright infringement is generally a civil matter, which the copyright owner must pursue in federal court."[10] It is crucial to understand the main difference in copyright detection and enforcement prior to copyright detection algorithms. Before, copyright owners themselves needed to become aware of copyright infringement of their original documented work, and subsequently needed to decide to pursue their own enforcement. Now, the existence of copyright detection systems employed at the expansive scale of social media platforms allows for automatic detection and enforcement on behalf of copyright owners.

b. What is fair use?

The United States Copyright Office defines fair use "as a legal doctrine that promotes freedom of expression by permitting the unlicensed use of copyright-protected works in certain

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[7] Thuronyi, "Copyright Law and New Technologies: A Long and Complex Relationship."
[8] Office, U.S. Copyright. "The Digital Millennium Copyright Act of 1998."
[9] Sawers "Fair Use: YouTube Protects Some Creators against Questionable DMCA Takedowns by Paying up to $1m Legal Costs."
[10] "I Found Someone Infringing a Copyrighted Work That I Registered. Can the Copyright Office Help Me Stop This?

circumstances."[11] Fair use doctrines date back to the 19th century, and were codified in the US through the Copyright Act of 1976.[12] At its core, fair use allows for copyright users to use limited portions of somebody else's work without needing permission, but only if certain conditions regarding the work are considered. Considerations for fair use in which copyright infringement is not enforced includes "criticism, commentary, news reporting, teaching, scholarship, research," parody, etc.[13] However, there are no legal limits or qualifications dictating exactly what fair use is, and it remains highly circumstantial.

Fair use attempts to find a balance in freedom of speech and copyright protection "based on the belief that the public is entitled to freely use portions of copyrighted materials for purposes of commentary and criticism [or parody]."[14] Judges and academics tend to think of fair use as favoring the politically and economically disadvantaged.[15] There are four main factors to consider when evaluating and measuring fair use: 1) "the purpose + character of defendants use," 2) "the nature of the copyrighted work," 3) "the amount + substantiality of defendants use," and 4) "the effect of the use upon the potential market for or value of the copyrighted work."[16] The first factor refers to whether or not the use is "transformative" by loading the original "with a further purpose or different character, altering the first with new expression, meaning, or message," or otherwise for nonprofit educational purposes.[17] The second factor, "the nature of the copyright work," asks whether the new work is published or unpublished, and whether the new work is factual or fictional in nature. The third factor refers to the *amount* of the original

[11] Office, U.S. Copyright. "More Information on Fair Use."
[12] Ibid.
[13] Ibid.
[14] Stim, "Fair Use."
[15] Sag, "Predicting Fair Use."
[16] 17 U.S.C § 107
[17] "Fair Use." Legal Information Institute.

work that was taken, in comparison to what was necessary to take for the new work's purposes. It is important to note that there is no set way to deduce what *amount* crosses the boundary from fair use to copyright infringement, and it is largely up to the discretion of the judge to determine whether the "heart" of the original work has been infringed upon. The last factor asks for consideration and evidence of how the new work may impact the original copyrighted work's market and income. No single factor of the four is used independently from the others to determine whether or not a new work is a valid "derivative work" protected under fair use – these factors are used in conjunction with one another. Despite fair use of copyrighted work potentially "depriving the copyright owner of income," if the fair use is transformative due its socially necessary commentary and criticism, then it may be determined as fair use against the copyright owner's feelings.

II. Copyright detection and enforcement by social media companies

For the purposes of this paper, I will be focusing on *automatic* detection of copyright infringement through algorithmic means created by social media companies. The term "copyright detection algorithms'' (CDAs) refers to algorithms which automatically scan uploaded content, such as videos, audio, and images, against an existing database of copyright works and content with the goal of detecting instances of copyright infringement. If an uploaded content matches any content from the copyrighted works database, these algorithms notify copyright users of copyright claims. I will be defining the term "fair use detection algorithms" to refer to hypothetical algorithms which automatically determine the likelihood of fair use of copyrighted works, with regards to the four factors mentioned in the previous section.

Two major examples of copyright detection algorithms include YouTube's Content ID for video and audio content, and Meta's Rights Manager for Facebook and Instagram video, audio, and image content. The employment of copyright detection algorithms by major social media companies marks a stark shift in how copyright is detected and enforced. Copyright detection algorithms operate in a different way than was expected of copyright law, effectively acting as intermediary detection and enforcement agents outside of federal courts. Typically, enforcement of copyright through CDAs heavily favors the rights of copyright owners, with limited success for appeals on the grounds of fair use by copyright users.

From a copyright owner's perspective, both Content ID and Rights Manager are powerful tools for managing how others interact with their copyrighted content. However, from a copyright user's perspective, both of these copyright detection algorithms can greatly inhibit their free speech rights, as copyright owner's become the arbitrators of what constitutes "fair use" by copyright users.

a. YouTube's Content ID

YouTube's Content ID allows copyright owners to submit files of a copyrighted work to a database. All new videos uploaded to YouTube are then scanned against this database to easily identify copyright content, which is then given a Content ID claim. Copyright owners are given a range of options to take against matching content. These options include either "blocking a whole video from being viewed," "monetizing the video by running ads against it (sometimes sharing revenue with the uploader)," or "tracking the video's viewership statistics."[18] These decisions can be made geographically, with different actions taken by country if the copyright

[18] "How Content ID works."

owner wishes to take them. While copyright users are allowed to appeal claims, copyright owners can submit takedown requests for the video in response, ultimately resulting in a punitive copyright strike to the account.

b. Meta's Rights Manager

Meta's Rights Manager is advertised as a tool for "managing, protecting, and monetizing your copyright content on Facebook and Instagram."[19] The content includes video, audio, and image content. It works in an extremely similar way to YouTube's Content ID, except that it introduces the ability for a copyright owner to define rules and conditions which are automatically applied for content managed through Rights Manager.

First, Rights Manager requires an application that must be approved by Meta to use Rights Manager. After being approved, copyright owners set rules and conditions for any matches to their copyrighted content. All following uploaded audio, video, and images content is scanned to check if it matches any existing copyrighted content. If matches are found, actions are automatically taken according to the defined match rule. Copyright owners can also manually review matches to also allow for use of their content, or allow them to monitor, block, or take down other posts. Lastly, disputes between copyright owners and users are settled through manual reports and appeals.

III. Societal and legal implications of current copyright detection algorithms

Copyright detection algorithms ultimately disrupt the balance between copyright protection and fair use protection, as they favor copyright owners over users in their desire to avoid potential legal issues with liability. As such, these tools are marketed for copyright owners

[19] "Rights Manager: Meta for Creators."

as available protections for them. No such systems of protection exist for copyright users except for appeal processes. This section of the paper will discuss societal and legal concerns due to the dominance of copyright detection algorithms, such as false positives, impact to innovation and creativity, focus on monetization by copyright owners over potential desires for monetization by copyright users with valid fair use, and replacement of federal courts determining fair use.

a. False Positives

Despite the effectiveness of copyright detection algorithms in lessening liability for social media companies such as YouTube and Facebook, the hashing and search algorithms at the heart of Content ID and Rights Manager have the potential to produce false positives. Hashing algorithms may accidentally create exact or similar hashes for two different pieces of content, known as "collisions," which would mistakenly lead to the detection of copyright infringement.[20] Although Content ID employs "robust hashing," YouTube ultimately decides what threshold between "hash blocks" constitutes infringement or not.[21] Search algorithms work by breaking down a piece of content down to basic units, and comparing these small basic units to those of content that already exists within a database.[22] Similarly to hashing, search algorithms may break down content to similar basic units that wrongly are matched and detected as copyright infringement.

Typically, threshold decisions for hashing and search algorithms are decided by intermediary CDAs, instead of judges that may manually assess similarities and differences

[20] Lester and Pachamanova, "The Dilemma of False Positives: Making Content ID Algorithms More Conducive to Fostering Innovative Fair Use in Music Creation."
[21] Ibid.
[22] Ibid.

between two works. Given the special interest of different social media companies to protect their platforms from liability over copyright infringement, it is no surprise if they were to decide on a threshold that detects and enforces copyright at a higher rate.

b. Impact to Innovation and Creativity

Innovation and creativity are heavily impacted by the barriers imposed by copyright detection algorithms and the lack of fair use protection ingrained within them. Many smaller content creators themselves have expressed the negative impact of CDAs, specifically YouTube's Content ID, on creativity, stating that "[n]early every stylistic decision you see about the channel—the length of the clips, the number of examples, which studios' films we chose, the way narration and clip audio weave together, the reordering and flipping of shots, the remixing of 5.1 audio, the rhythm and pacing of the overall video—all of that was reverse engineered from YouTube's Copyright ID."[23] In their attempts to escape the grasp of Content ID, content creators' behaviors and expectations are heavily influenced by YouTube's copyright detection algorithm. Inevitably, different social media platforms are bound to encode slightly different decisions into their algorithms for determining what copyright infringement is, thus leading to different expectations of copyright infringement and fair use across platforms.

c. Focus on Monetization

It is crucial to mention how central monetization is to Content ID and Rights Manager, to an extent that would not be the case in copyright enforcement prior to social media and the digital age. Throughout their website, Meta advertises one of Rights Manager's main goals as

[23] Sprigman, "Will Algorithms Take the Fairness out of Fair Use?"

allowing copyright owners to "capture additional revenue." The value of monetization ends up becoming a point of profit for copyright owners, as copyright owners are given the power to monetize someone else's content because of copyright infringement despite potential fair use. The emphasis on monetization denotes a shift in the goals of copyright protection, towards one that more often prioritizes compensation for copyright owners at the expense of smaller content creators who may desire to monetize their valid derivative works.

d. Replacement of Courts

Copyright detection algorithms dangerously end up serving as a replacement to federal courts, which makes it much harder for copyright users to effectively appeal any copyright notices by claiming fair use. YouTube's Content ID and Meta's Rights Manager exist as streamlined systems designed for copyright owners (and above all, for social media companies). Since the process for copyright users appealing a claim is much less streamlined, requiring more time, copyright users are disincentivized to pursue an appeal in protection of their own first amendment rights and fair use.

Perel and Elkin-Koren point out that CDA intermediaries "effectively converge law enforcement and adjudication powers in the hands of a small number of mega platforms, which are profit-maximizing, and possibly biased, private entities."[24] Often, the creators of copyright detection algorithms are not subjected to accountability, given the perception that their CDAs are for the benefit of copyright protection as a whole.[25] Ultimately, this results in a skewed protection of copyright with limited transparency given to both the copyright users and owners.

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[24] Perel and Elkin-Koren, "Accountability In Algorithmic Copyright Enforcement."
[25] Ibid.

IV. Difficulties and feasibility of creating fair use detection algorithms

The biggest problem with automating algorithms to detect fair use is that fair use is highly circumstantial, and not defined in precise terms. There is no way to agree on a set of software rules to replicate fair use, as this is traditionally determined by federal courts whose decisions may differ. Design values can be different from company to company, and the values chosen to be embedded into the algorithm will inevitably impact human behavior and define what constitutes both copyright and fair use for *their respective* platform.[26]

In accordance with this problem, much skepticism remains towards automation in fair use detection algorithms. Undoubtedly, current technology is not advanced enough to "satisfactorily deploy algorithms to make automated fair use determinations on a case-by-case basis," while allowing for copyright users to test the limits of laws surrounding fair use.[27] Many automated systems in other contexts, such as COMPAS for law enforcement assessment of recidivism risk, have been found to be problematic due to "improperly designed algorithms" and "[in]appropriate training data."[28] Any reliance on machine learning is likely to lead to "self-reinforced feedback loops" that serve as echo chambers for biases encoded by automated system creators.[29] Even more worrisome is that these biases are not subject to speculation by the public due to their "black box" nature, and more times than not these biases affect the socioeconomically disadvantaged. [30]

V. Modification of existing copyright detection algorithms for fair use

[26] Burk, "Algorithmic Fair Use."
[27] Yu, "CAN Algorithms Promote Fair Use?"
[28] Ibid.
[29] Ibid.
[30] Ibid.

There are a number of potential modifications which could be made for assessing and promoting fair use within existing copyright detection algorithms.

a. Increasing transparency and accountability of copyright detection algorithms

Many legal experts researching copyright detection algorithms and fair use call for an increase in transparency and accountability through public participation. Additionally, requirements that CDA's track and publicly report algorithmic metrics regarding copyright infringement claims can help to expose potential issues with the algorithms, as well as build public trust.[31] Providing data on how different content is determined to either meet or not meet the threshold for copyright protection would help illuminate where these algorithms might require more attention, especially with regards to protecting fair use. Moreover, copyright detection algorithms could be required to work with the U.S. Copyright Office for the purposes of confidential data collection and determination of whether or not platforms report accurate information regarding their effectiveness.[32] Regulation could force social media platforms to disclose the criteria enforced by their CDAs, as well as impose a standardized, legally agreed-upon model of criteria for all CDAs to follow.[33]

b. Increasing human involvement in CDA's

Another modification would be to increase human involvement in copyright detection algorithms so that they are not fully automatic. In instituting a system where a human that is well-versed in copyright and fair use law can determine whether an unlicensed use of

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[31] Lester and Pachamanova, "The Dilemma of False Positives"
[32] Ibid.
[33] Perel and Elkin-Koren, "Accountability in Algorithmic Copyright Enforcement"

copyrighted work is fair use, free speech would be greater protected. A new role for legal experts within the context of copyright detection algorithms would help alleviate the burden on copyright owners to prove fair use after facing a claim. Human involvement would allow an "eliminat[ion of] the disparity between the algorithmic interpretation of the law and the law as it operates in practice."[34] Perhaps human involvement can occur sporadically, followed by a documented analysis of how CDAs engage with fair use for the purpose of accountability and transparency.

c. Creating a more streamlined process for copyright users to dispute claims

Instituting a more streamlined process for copyright users to dispute claims would be useful in allowing them to learn about their rights and fight for fair use cases. As mentioned before, the decisions made by smaller content creators are shaped around how to avoid copyright notices from CDAs. It can be argued that smaller content creators could be unaware of fair use, or otherwise disincentivized by larger content creators and automated systems to appeal claims of copyright infringement. A process for copyright users to claim fair use could be as simple as educational material that teaches users what fair use is, prompting them to reflect on whether their new work is infringement or not. As such, copyright users would be more informed about their rights, and can subsequently be empowered and encouraged to appeal against CDAs. The creation of a predetermined metric representing the likelihood of fair use can help bridge the gap and restore balance between copyright owners and users. A fair use metric shared with copyright owners would encourage them to consider their actions against users, while copyright users could determine the likelihood of an appeal being successful.

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[34] Ibid.

VI. Conclusion

After exploring multiple considerations of copyright detection algorithms, I believe it is of the utmost importance to exercise increased caution, skepticism, and scrutiny of CDAs as we continue to engage with online creative content. Some of the biggest concerns are false positives, impact to innovation and creativity, focus on monetization, and replacement of federal courts. It is unclear how likely, if ever, we are to successfully develop fair use detection algorithms. In the meantime, accountability + transparency, human intervention, and streamlined fair use processes can allow for greater protection of copyright users' rights within existing copyright detection algorithm systems.

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