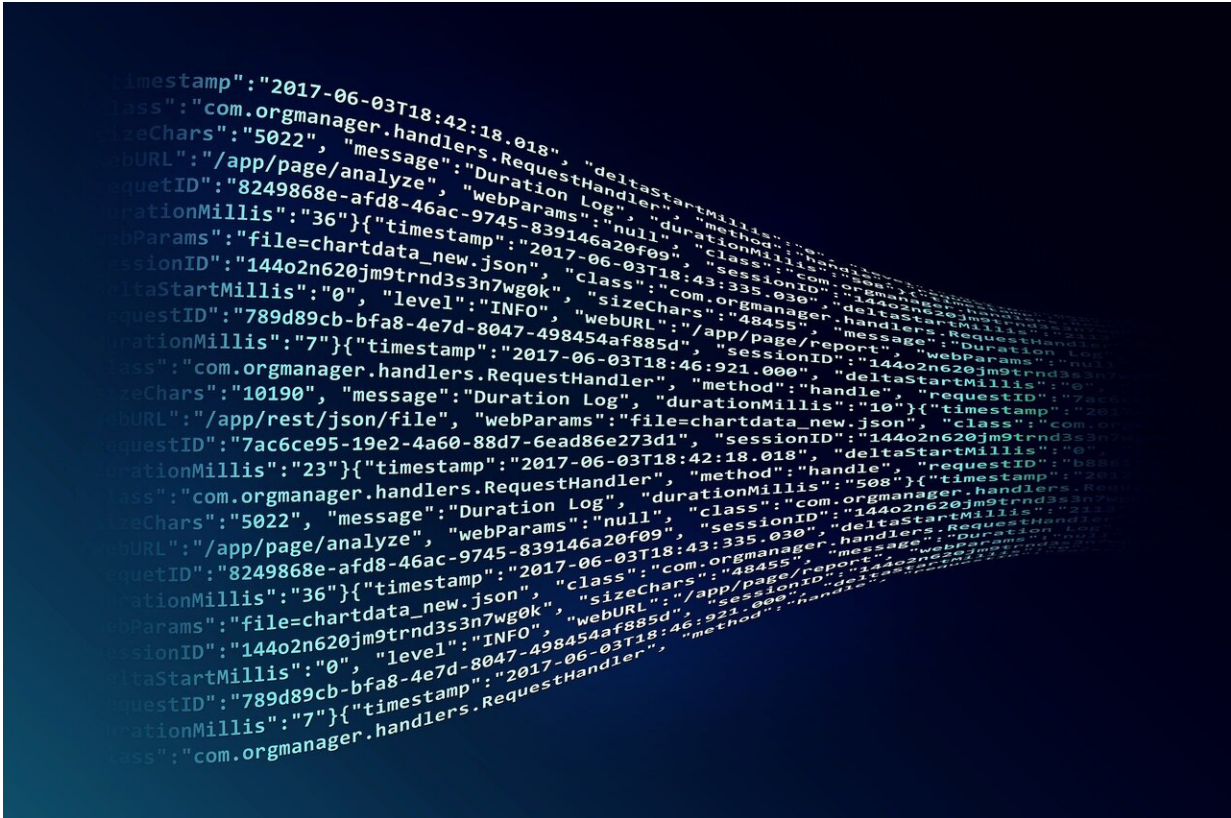# Blockchain-based copyright protection

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Credit: CC0 Public Domain

Blockchain is a decentralized technology used to protect the security and privacy of online transactions and is usually associated with cryptocurrencies such as Bitcoin. However, it can be applied to all kinds of digital exchanges. In a new study, Amna Qureshi and professor David Megías, director of the IN3, analyzed existing blockchain-based

multimedia content protection systems and established a taxonomy to classify them according to their technical features, the protection techniques they use and their performance. The study is the first detailed analysis of this type of application and looks at the technological and scientific challenges for their improvement and implementation.

The researchers said: "Blockchain has an excellent potential to be broadly applied in copyright protection and management applications. However, there are still many open issues that need to be further researched and analyzed in order to create workable copyright protection applications that can fully benefit from the use of the blockchain technology."

A gap in the research

Because of the growth in the distribution of audiovisual content through online platforms and peer-to-peer (P2P) file sharing, matters such as content security, copyright protection and piracy tracing are increasingly more pressing for the owners, producers and distributors of content. The researchers said that faced with these problems, blockchain makes it possible to "upload copyrighted content, control licensing/copyright options, manage distribution, trace sources of piracy, and receive payments upon content usage."

However, despite the boom in the sector and the capabilities of this technology, the new study highlights the fact that there are still very few blockchain-based copyright protection systems: "This points toward a research gap. To fill this gap, we propose a taxonomy that integrates technical aspects and application knowledge and can guide the researchers towards the development of blockchain-based multimedia copyright protection systems."

Comparing copyright protection systems

In order to address this shortcoming, the researchers reviewed the scientific literature, analyzed 18 blockchain-based multimedia content protection systems and compared them systematically. They studied aspects such as whether they were public or private networks and which digital protection techniques were used, for example encryption or digital watermarking. They also looked at their performance in terms of scalability, their potential to resist cyberattacks, their response time and their data storage capacity.

Their findings made it possible to identify some of the gaps in the research that will need to be filled in order to implement blockchain in this area. They underlined general shortcomings such as poor interoperability due to the lack of universal standards and the lack of models for proof of concept validation or conflict resolution. And they also point out prevailing issues regarding the design of multimedia content protection systems that can support blockchain technology when incorporating distributed systems or technological advances and security guarantees that are accepted by all involved parties.

These are broad outlines designed to improve the usability of blockchain technology in an area with great growth potential, but for the researchers future success will depend on other factors related to the technology, such as "scalability, reliability or market adoption, that are difficult to foresee."

A secure digital accounting ledger

Blockchain gets its name from the fact that it works like a distributed, and therefore decentralized, digital accounting ledger, in which the records are blocks that are connected and encrypted cryptographically.

Each block is linked cryptographically with the previous one after the distributed validation, in which the rest of the network users participate, thereby circumventing costly intermediaries. The addition of new blocks usually makes it impossible to modify or delete the older ones, thus preventing manipulation.

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