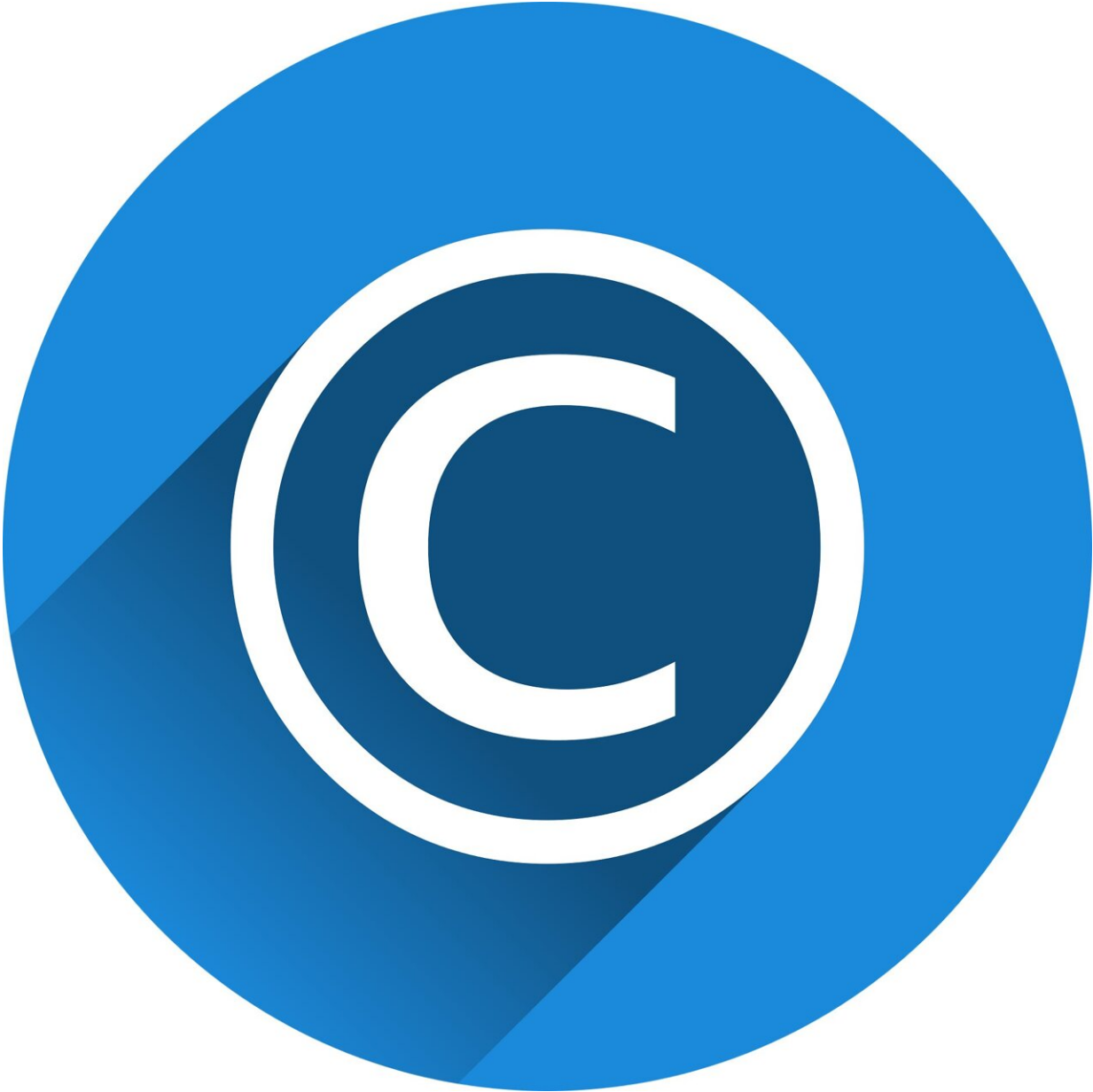


Quantum computing will radically alter the application of copyright law, study says

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Quantum computing will radically transform the application of the law—challenging long-held notions of copyright, a new study says.

Faster computing will bring exponentially greater possibilities in the tracking and tracing of the legal owners of art, music, culture and books.

This is likely to mean more copyright infringements, but also make it easier for lawyers to clamp down on lawbreaking. However, faster computers will also be able to potentially break and get around certain older enforcement technologies.

The research says [quantum computing](#) could lead to an "exponentially" greater number of re-uses of copyright works without permission, and tracking of anyone breaking the law is likely to be possible in many circumstances.

Dr. James Griffin, from the University of Exeter Law School, who led the study, said, "Quantum computers will have sufficient computing power to be able to make judgment calls as to whether or not re-uses are likely to be copyright infringements, skirting the boundaries of the law in a way that has yet to be fully tested in practice.

"Copyright infringements could become more commonplace due to the use of quantum computers, but the enforcement of such laws could also increase. This will potentially favor certain forms of content over others."

Content with embedded quantum watermarks will be more likely to be protected than earlier forms of content without such watermarks. The

exponential speed quantum computing brings will make it easier to be able to produce more copies of existing copyright works.

Existing artworks will be altered on a large scale for use in AI-generated artistic works. Enhanced computing power will see the reuse of elements of films such as scenes, characters, music and scripts.

Dr. Griffin said, "The nature of quantum computing also means that there could be more enforcement of copyright law. we can expect that there will be more use of technological protection measures, as well as copyright management information devices such as watermarks, and more use of filtering mechanisms to be able to detect, prevent and contain copyright infringements.

Copyright management information techniques are better suited to quantum computers because they allow for more finely grained analysis of potential infringements, and because they require greater computing power to be able to be applied both broadly to computer software and the actions of the users of such software.

Dr. Griffin said, "A quantum paradox is thus developing, in that there are likely to be more infringements possible, while technical devices will simultaneously develop in an attempt to prevent any alleged possible or potential copyright infringements. Content will increasingly be made in a manner difficult to break, with enhanced encryption.

"Meanwhile, due to the expense of large-scale quantum computing, we can expect more content to be streamed and less owned; content will be kept remotely in order to enhance the notion that utilizing such data in breach of contractual terms would be akin to breaking into someone's physical house or committing a similar fraudulent activity."

Quantum computers enable creators to make a large number of small-

scale works. This could pose challenges regarding the tests of copyright originality. For example, a story written for a quantum computer game could be constantly changing and evolving according to the actions of the player, and not just simply according to predefined paths but utilizing complex AI algorithms.

More information: [Quantum computing and copyright law: a wave of change or a mere irrelevant particle?](#)

Provided by University of Exeter

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