Applying blockchain to digital advertising

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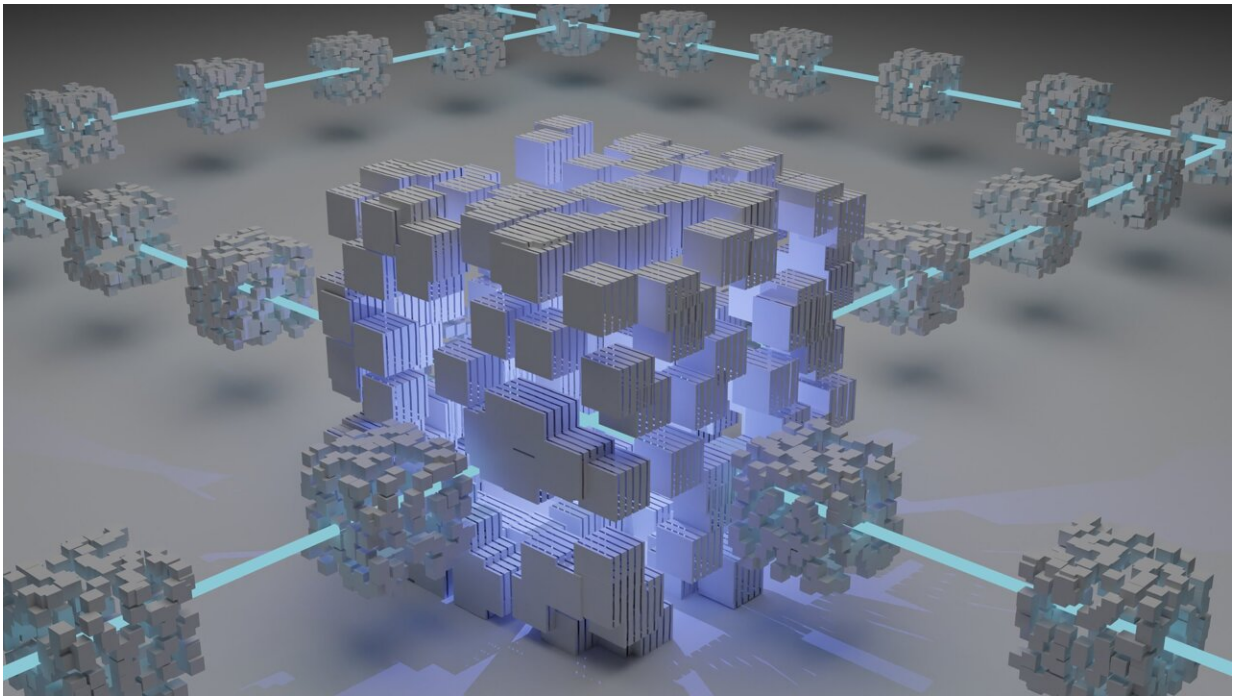

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The same technology that secures cryptocurrency systems could also protect users from invasive and predatory advertising, according to a new study from researchers at the University of Georgia.

Many consumers don't understand how their data is used in digital advertising. Which devices gather what information, how companies use that information and how to block certain ads can be a mystery. And on

the other side of the coin, advertisers and publishers can face the negative impacts of ad fraud, ranging from unauthorized ads to bots that overtake ad traffic and divert profits.

Blockchain can combat both of these challenges, researchers said.

"Because the advertising ecosystem is vastly big, its size and complexity mean there are always bad players," said lead author Jooyoung Kim, a professor of advertising in the Department of Advertising and Public Relations in the Grady College of Journalism and Mass Communication and director of Cox International Center. "Advertisers and publishers cannot track them effectively, and consumers are concerned about their personal data."

Protecting consumer experience

In the face of digital ads, some consumers try to opt out entirely, Kim said. They'll use an ad blocker to stop ads from appearing before videos or in the margins of a web page. Others pay for premium streaming packages that cost more but forego ads.

"When we consume media, it's sort of our personal domain, and you don't want to be interrupted by advertising," Kim said. "But without advertising, media companies cannot survive, which in turn will increase the cost for consumers to access entertainment, news content, as well as information about the products and brands they might need. Blockchain's automated nature means that consumers can maximize their control on exposure to ads."

This could increase trust in advertising, as control is put in the hands of consumers. They get to opt out of some ad categories and craft an experience that appeals to their needs, in addition to tracking how their data is used.

And because blockchain links together user information and transactions, while also tracking changes and making modifications visible, users experience greater transparency and companies face greater accountability than traditional hosting services, said Kyu Lee, the second author of the study who is an associate professor of the UGA's School of Computing and associate director of the Institute of Cybersecurity and Privacy.

Customers can also fall victim when a fraudulent ad is placed on top of a legitimate ad. If the customer clicks the ad hoping to learn more, they are then taken to a fake website.

This can not only negatively impact user experience and make people more distrusting of digital ads, but it also diverts potential profits from advertisers.

Protecting profits by securing ads

In addition to the placement of fake ads, fraudsters can utilize bots to defraud ads. These bots can repeatedly click ads, depleting the advertisers' budgets.

Digital advertising fraud schemes like these are why 15% to 50% of ads are wasted, contributing to an estimated USD 100 billion in losses worldwide in 2022, not to mention the wasted attention of consumers and increased potential threats for them, Kim said.

While blockchain might not completely prevent fraud from the beginning, Lee said, it clears a path to stop it. When a fake ad is recognized, it can be traced back through the blockchain to the source and stopped.

"Blockchain allows us to track down who is a bad guy," Lee said. "From

that point, we can easily prevent all advertising from the same fraudulent company."

Some digital advertising products already utilize blockchain to confirm advertiser identities or restrict access to user data, but this is only done on a small scale. Growing these ad networks and implementing blockchain-based digital advertising will also face challenges, according to the study.

One critical challenge is speed and scale. Purchasing Bitcoin through its blockchain network, for example, can take hours because there are safeguards in place to confirm the purchase. But in advertising, where digital ads are placed within milliseconds of a consumer opening their browser, Lee said, the speed must be increased.

"Largely, I think blockchain can improve consumer welfare by giving them a better, more relevant media and ad experience," Kim said. "Thanks to blockchain's efficiency, the cost of running it—aside from the electricity and power consumption used—can be much lower than running a traditional ad network or ad exchange."

To further explore potential applications, Kim and Lee are also planning to create a small-scale, blockchain-based digital advertising exchange for the UGA community. The system will be open to UGA community members such as student groups, startups, campus units and organizations, who can post advertisements, Lee said, and enable researchers to apply the principles and methods explored in this paper.

The research is published in the *Journal of Business Research*.

More information: Jooyoung Kim et al, Linking blockchain technology and digital advertising: How blockchain technology can enhance digital advertising to be more effective, efficient, and

trustworthy, *Journal of Business Research* (2023). DOI: 10.1016/j.jbusres.2023.113819