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Social media record is not the public, UCT study on ShotSpotter finds

A fascinating research paper by the University of Cape Town's (UCT) experts in information systems suggests that social media cannot be read as a straightforward record of public opinion on controversial technologies such as ShotSpotter, an acoustic gunshot-detection system used in marginalised neighbourhoods in Cape Town and the United States.

The researchers found that the X hashtag #shotspotter is overwhelmingly populated by accounts connected to the technology's operational infrastructure, while discussions on Reddit contain far more sustained debate among individual users.

The study, "When the Record is Not the Public: Discursive Colonization in Reddit and X Evidence on ShotSpotter", examined 75 897 posts carrying #shotspotter on X between June 2020 and August 2025, alongside 8 417 Reddit comments.

The researchers found that a single scanner-aggregation account produced 60.3% of all original tweets carrying the hashtag. The 10 most active accounts were responsible for 79.4% of original tweets, while the top 100 produced 89.3%.

By contrast, the Reddit discussion involved 3 580 authors, with the 10 most active contributors accounting for only 5.2% of comments. No individual author contributed more than 0.9% of the comments. The difference was not simply about the volume of posts. It was about what those posts represented.

On X, much of the content consisted of automated or templated reports on gunfire incidents, vendor promotions and financial market discussions. On Reddit, users debated whether ShotSpotter works, whether it produces false alerts, how much it costs, its implications for surveillance and privacy, and whether its records can be trusted.

The researchers call the phenomenon "discursive colonization". Because ShotSpotter continuously emits gunfire alerts, the technology and the accounts built around it – scanner feeds relaying detections, vendor marketing, finance accounts tracking the company's share price – fill the online space with their own operational traffic. Layer by layer, this accumulates on top of a thin residue of ordinary public comment, so that what looks like public debate is largely the system talking about itself. The share of genuine discussion shrinks exactly when nothing newsworthy is happening.

The term does not suggest that the technology or its operators are deliberately manipulating the conversation. Rather, the researchers argued that the technology's ordinary operation can itself shape what becomes visible online.

This has significant implications for researchers, journalists and policymakers who increasingly use social media to understand public responses to controversial technologies.

"If researchers simply count posts or analyse sentiment without first asking who is producing those posts, they may end up measuring the technology rather than the public," said Grant Oosterwyk, a senior lecturer and PhD candidate in information systems at UCT's School of Information Technology.

He added: "The danger is particularly acute when technologies are deployed in marginalised communities."

ShotSpotter has been used in Cape Town's Hanover Park and Manenberg, with its coverage expanded in 2023 to include areas such as Lavender Hill. The researchers' smaller Cape Town dataset contained 456 tweets from 306 accounts. Vendor accounts produced 22.1% of these tweets, news outlets 18% and government or political accounts 4.6%. Half of the tweets were retweets.

But the most affected communities were almost entirely absent from this online record.

"This does not mean residents are silent, nor does it prove that they have been excluded from online spaces. Their absence from the datasets demonstrates that social-media records cannot automatically be treated as representative of the public," said Oosterwyk.

For the researchers, this is the study's most important point: the finding is not only that the hashtag is dominated by the technology's own infrastructure, but also that the affected public is, on these platforms, mostly unrecorded.

The Reddit discussions, while richer and more conversational, also cannot be treated as "the public". They largely represent a non-affected online audience.

The study proposes three basic checks before using social media data as evidence of public opinion: identify who is posting before counting posts; distinguish amplification from genuine conversational engagement; and establish where affected communities actually discuss the technology.

"These checks could be particularly important as governments, researchers and oversight bodies increasingly turn to digital platforms to gauge public reactions to artificial intelligence and other algorithmic systems," said Ojelanki Ngwenyama, emeritus professor of information systems at UCT's School of Information Technology. He is currently a professor of global management and the director of the Institute for Innovation and Technology Management at the Ted Rogers School of Management, Toronto Metropolitan University.

The central lesson, said Ngwenyama, is simple: the social media record is not necessarily the public.

"And when the people most affected by a technology are missing from that record, their absence should not be mistaken for consent," he said.

They will present the paper at the 60th Hawaii International Conference on System Sciences, to be held at the Hilton Waikoloa Village on the Big Island from 5-8 January 2027.

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