



line thickness represents the frequency in which the URL from each news domain appeared on each social platform. Credit: University of Alabama at Birmingham

Researchers at the University of Alabama at Birmingham, Cyprus University of Technology, University College London and Telefonica Research have conducted the first large-scale measurement of how mainstream and alternative news flows through multiple social media platforms.

After analyzing millions of posts containing mainstream and [alternative news](#) shared on Twitter, Reddit and 4chan, Jeremy Blackburn, Ph.D., and collaborators found that alt-right communities within 4chan, an image-based discussion forum where users are anonymous, and Reddit, a social news aggregator where users vote up or down on posts, have a surprisingly large influence on Twitter. The results of the study were published this week in a [paper](#) at the ACM Internet Measurement Conference in London.

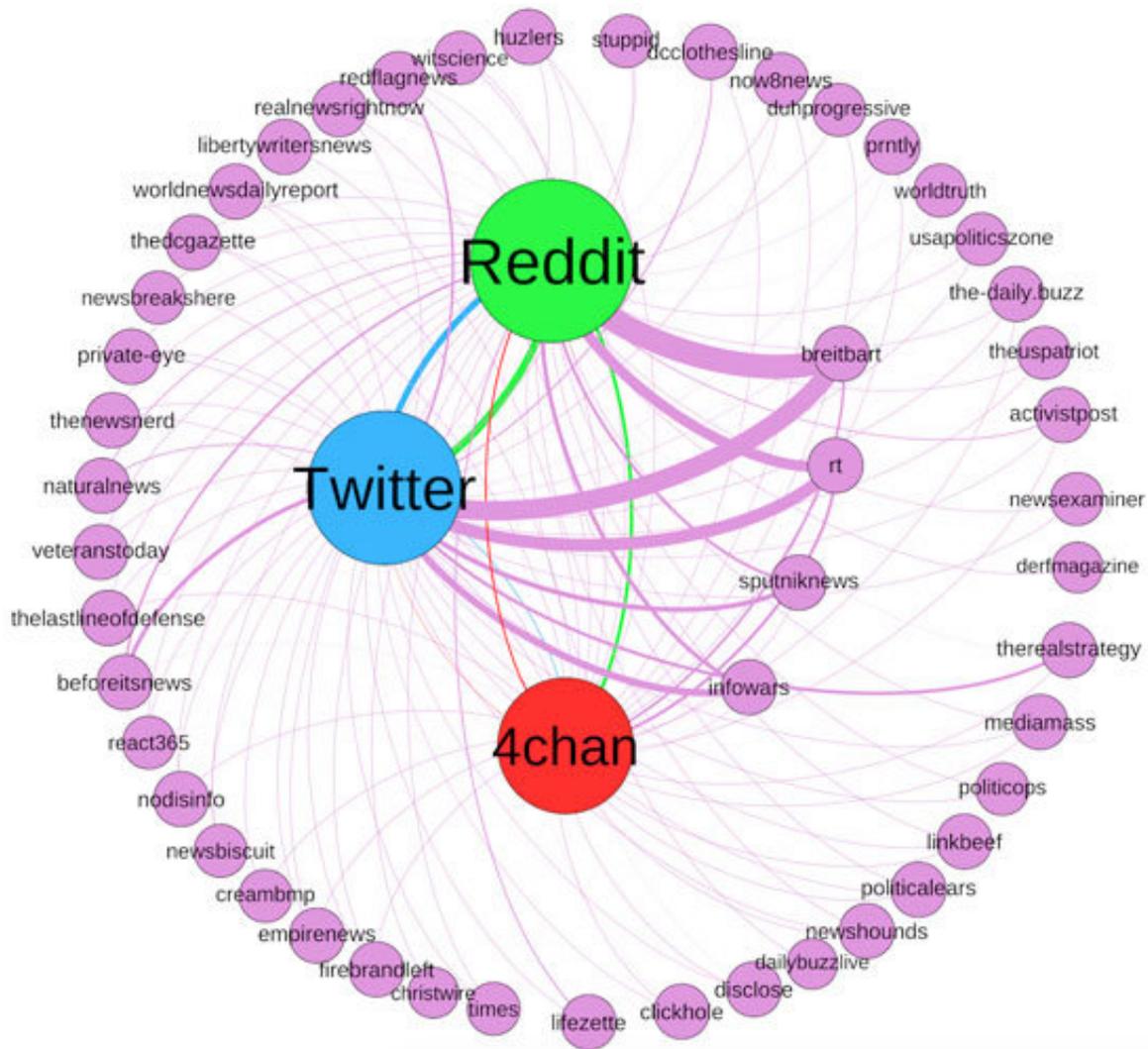
"Based on our findings, these smaller, fringe communities on Reddit and 4chan serve as an incubation chamber for a lot of information," said Blackburn, assistant professor of computer science in the UAB College of Arts and Sciences. "The content and talking points are refined until they finally break free and make it to larger, more mainstream communities."

The team gathered information from posts, threads and comments on Twitter, Reddit and 4chan that contained URLs from 45 mainstream and 54 alternative news websites. Activity on the three platforms was measured between June 20, 2016, and Feb. 28, 2017.

They analyzed more than 400,000 tweets, 1.8 million posts and comments on Reddit, and 97,000 posts and replies on 4chan. After analyzing the occurrence of 99 URLs on the top 20 mainstream and alternative news sites, they found Breitbart.com made up 55 percent of the URLs from six selected subreddits, and the nytimes.com made up 14 percent. Breitbart.com made up 44 percent of the URLs on Twitter, while theguardian.com made up 19 percent, and Breitbart.com made up 53 percent of the URLs, with theguardian.com making up 14 percent.

Using the unique URLs across all platforms and the time they first pop up, the team analyzed their appearance in one, two or three platforms, and the order in which the appearance occurred. Examination of the path of a URL reveals the domains whose URLs tend to appear first on each of the platforms.

Flow of mainstream news



This graph represents the news ecosystem for alternative news domains used in the study. The connecting lines are colored the same as their source node and line thickness represents the frequency in which the URLs from each news domain appeared on each social platform. Credit: University of Alabama at Birmingham

For the mainstream news domains, the group found that URLs from [nytimes.com](http://nytimes.com) and [cnn.com](http://cnn.com) tend to appear first more often on Reddit than Twitter and 4chan. On the other hand, URLs from other domains like [bbc.com](http://bbc.com) and [theguardian.com](http://theguardian.com) tend to appear first more often on Twitter

than Reddit. There was no instance where mainstream news URLs tended to appear first on 4chan.

### Flow of alternative news

The group found that [breitbart.com](http://breitbart.com) URLs appear first in Reddit more often than on Twitter, and more frequently than they do on 4chan. However, for other popular alternative domains, such as [infowars.com](http://infowars.com), [rt.com](http://rt.com) and [sputniknews.com](http://sputniknews.com), URLs appear first on Twitter more often than Reddit and 4chan. As is the case with the mainstream domains, there was no domain where 4chan dominates in terms of first URL appearance.

In addition to studying how news is shared on the three platforms, the researchers were able to estimate how much influence each platform has on the information shared on other platforms, using a mathematical technique known as Hawkes process.

The group measured the influence of six subreddits from Reddit.com, "The\_Donald," "politics," "worldnews," "AskReddit," "conspiracy," and "news," the "/pol/" board on [4chan](http://4chan) and the Twitter [platform](#). They found that Twitter has a heavy influence on the posting of URLs from alternative news sites on the other social platforms, and is the most influential single source for most of the other web communities.

"These platforms have become an important piece of the modern information ecosystem," Blackburn said. "As we continue to see the creation and spread of hoaxes, rumors and false information online, this knowledge is crucial to understand the risks associated with alternative [news](#) and to aid in designing appropriate detection and mitigation strategies."

Blackburn is a co-founder of the International Data-driven Research for

Advanced Modelling and Analysis Lab, or iDRAMA Lab, an international group of scientists focusing on modern socio-technical issues with expertise ranging from low-level cryptography to video games.

**More information:** The Web Centipede: Understanding How Web Communities Influence Each Other Through the Lens of Mainstream and Alternative News Sources. arXiv:1705.06947 [cs.SI]

[arxiv.org/abs/1705.06947](https://arxiv.org/abs/1705.06947)

Provided by University of Alabama at Birmingham

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