▼

DOW JONES, A NEWS CORP COMPANY

DJIA **25270.83** -0.43% ▼   S&P 500 **2723.06** -0.63% ▼   Nasdaq **7356.99** -1.04% ▼   U.S. 10 Yr **0/32 Yield** 3.214% ▼   Crude Oil **62.86** -1.30% ▼

TECH

How YouTube Drives People to the Internet's Darkest Corners

Google's video site often recommends divisive or misleading material, despite recent changes designed to fix the problem

By Jack Nicas
Updated Feb. 7, 2018 1:04 p.m. ET

YouTube is the new television, with more than 1.5 billion users, and videos the site recommends have the power to influence viewpoints around the world.

Those recommendations often present divisive, misleading or false content despite changes the site has recently made to highlight more-neutral fare, a Wall Street Journal investigation found.

People cumulatively watch more than a billion YouTube hours daily world-wide, a 10-fold increase from 2012, the site says. Behind that growth is an algorithm that creates personalized playlists. YouTube says these recommendations drive more than 70% of its viewing time, making the algorithm among the single biggest deciders of what people watch.

The Journal investigation found YouTube's recommendations often lead users to channels that feature conspiracy theories, partisan viewpoints and misleading videos, even when those users haven't shown interest in such content. When users show a political bias in what they choose to view, YouTube typically recommends videos that echo those biases, often with more-extreme viewpoints.

Such recommendations play into concerns about how social-media sites can amplify extremist voices, sow misinformation and isolate users in "filter bubbles" where they hear largely like-minded perspectives. Unlike Facebook Inc. and Twitter Inc. sites, where users see content from accounts they choose to follow, YouTube takes an active role in pushing information to users they likely wouldn't have otherwise seen.

"The editorial policy of these new platforms is to essentially not have one," said Northeastern University computer-science professor Christo Wilson, who studies the impact of algorithms. "That sounded great when it was all about free speech and 'in the marketplace of ideas, only the best ones win.' But we're seeing again and again that that's not what happens. What's happening instead is the systems are being gamed and people are being gamed."

YouTube says it recommends more than 200 million different videos in 80 languages each day, typically alongside clips users are currently watching or in personalized playlists on YouTube's home page.

Long a place for entertainment, YouTube has recently begun trying to make it a more reliable site for news, said YouTube Chief Product Officer Neal Mohan.

YouTube has been tweaking its algorithm since last autumn to surface what its executives call "more authoritative" news sources to people searching about breaking-news events. YouTube last week said it is considering a design change to promote relevant information from credible news sources alongside videos that push conspiracy theories.
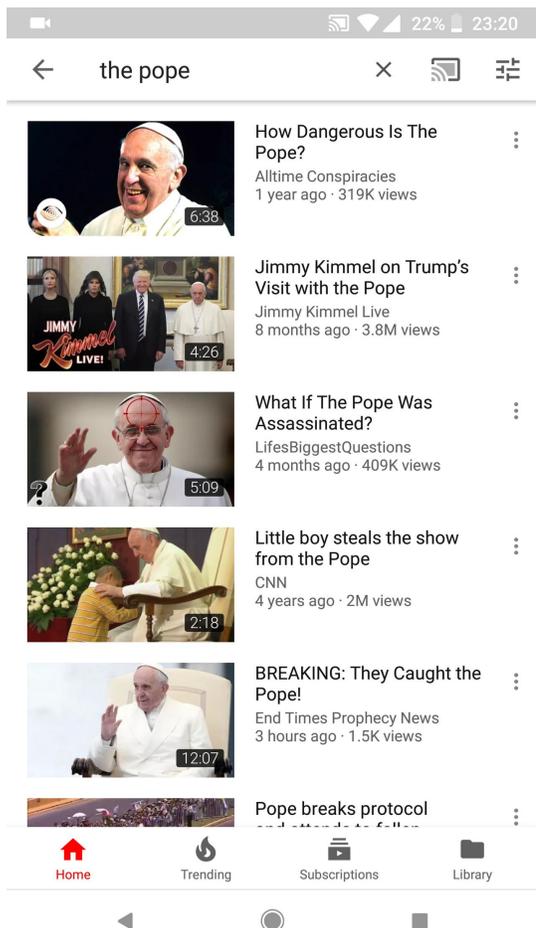
A search for 'the pope' this week returned conspiracy theories and sensationalist videos alongside mainstream clips. The Journal conducted all searches while logged out of YouTube with history cleared, leaving the site with little user data on which to base its recommendations.

After the Journal this week provided examples of how the site still promotes deceptive and divisive videos, YouTube executives said the recommendations were a problem. "We recognize that this is our responsibility," said YouTube's product-management chief for recommendations, Johanna Wright, "and we have more to do."

YouTube engineered its algorithm several years ago to make the site "sticky"—to recommend videos that keep users staying to watch still more, said current and former YouTube engineers who helped build it. The site earns money selling ads that run before and during videos.

The algorithm doesn't seek out extreme videos, they said, but looks for clips that data show are already drawing high traffic and keeping people on the site. Those videos often tend to be sensationalist and on the extreme fringe, the engineers said.

Cristos Goodrow, YouTube's lead recommendations engineer, said this week that the algorithm struggles with news and political recommendations partly because "it's basically the same system that's working for people who come to YouTube for knitting or quilting or cat videos or whatever."

There is another way to calculate recommendations, demonstrated by YouTube's parent, Alphabet Inc.'s Google. It has designed its search-engine algorithms to recommend sources that are authoritative, not just popular.

The same search in YouTube and Google can produce strikingly divergent results.

Consider the results of a search for "FBI memo" on Friday, several hours after Republicans released a memo on how intelligence officials sought a warrant authorizing surveillance of a former Donald Trump adviser.

On YouTube, after small thumbnails from mainstream news sources, the top result came from BPEarthWatch, which describes itself as "Dedicated to Watching the End Time Events that
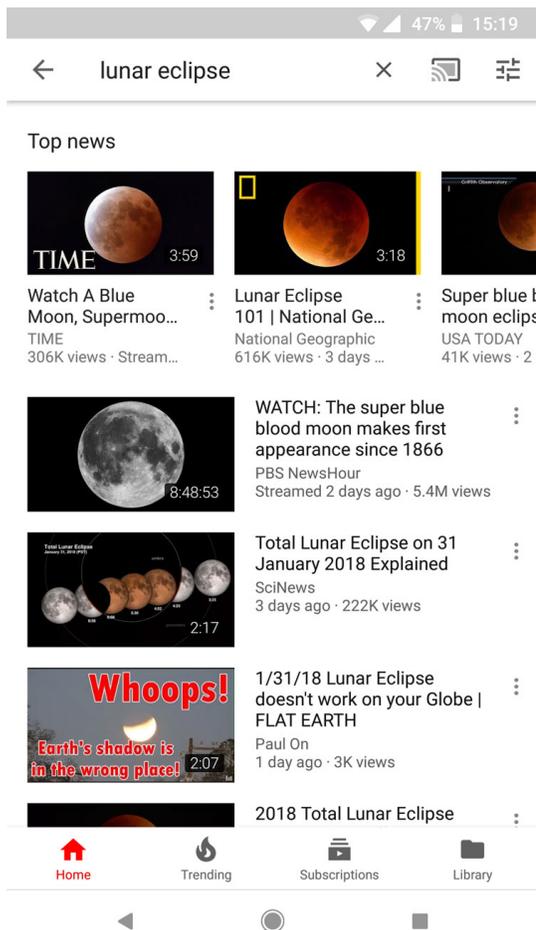
YouTube sometimes surfaces conspiracy theories on innocuous queries. A search last week for 'lunar eclipse' returned a video, with just 3,000 views, that suggested the earth is flat.

Lead to the Return of Our Lord Jesus Christ. Comets, Asteroids, Earth Quakes, Solar Flares and The End Time Powers." There were also videos from Styxhexenhammer666, whose informational page simply says, "I am God," and from Alex Jones, the founder of Infowars, a site that often promotes conspiracy theories.

In contrast, a Google search led users to only mainstream news sources.

Google spokeswoman Crystal Dahlen said that Google improved its algorithm last year "to surface more authoritative content, to help prevent the spread of blatantly misleading, low-quality, offensive or downright false information," adding that it is "working with the YouTube team to help share learnings."

YouTube's Ms. Wright said Google's results can be more reliable because the Google team has more experience with news—and more authoritative results to pull from. "Typically when news breaks, people write stories about it," she said. "They don't make videos about it."

In October, YouTube tweaked its algorithm to return more mainstream sources on breaking-news queries after searches about the deadly Las Vegas shooting yielded videos claiming the government was involved.

In recent weeks, it has expanded that change to other news-related queries. Since then, the Journal's tests show, news searches in YouTube return fewer videos from highly partisan channels.

Many searches on the site this week were still returning conspiracy-theory videos.

YouTube's recommendations became even more effective at keeping people on the site in 2016, when the company began employing an artificial-intelligence technique called a deep neural network that makes connections between videos that humans wouldn't. The algorithm uses hundreds of signals, YouTube says, but the most important remains what a given user has
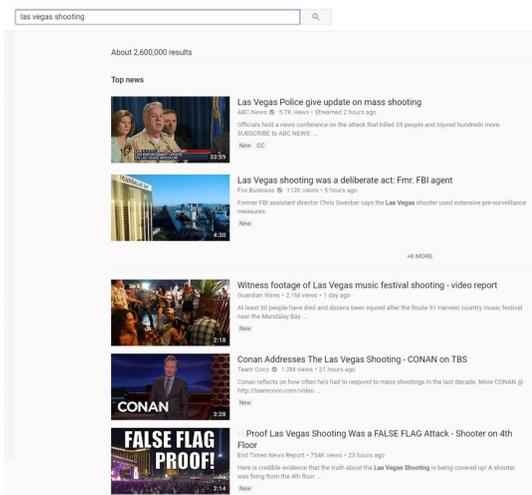
YouTube's results to a search for 'Las Vegas shooting' on Oct. 3, two days after the attacks. The fifth result suggested the shooting was a government hoax.

THREE CHANNELS WITH MOST RECOMMENDED VIDEOS IN DECEMBER

- Conservative Network: clips, with provocative titles, of conservative personalities criticizing liberals
- Dose of Dissonance: clips, with provocative titles, of journalists and political personalities arguing
- MSNBC: cable-news channel

THREE CHANNELS WITH MOST RECOMMENDED VIDEOS IN JANUARY

- CNN: cable-news channel
- Jimmy Kimmel Live: late-night talk show
- The Late Show With Stephen Colbert: late-night talk show

Note: The Journal analyzed data pulled by former YouTube engineer Guillaume Chaslot on YouTube's recommendations on popular news-related queries, chosen from the 40 most-searched terms on Google News in recent months. The December analysis examined the 21 news-related searches left after eliminating queries about entertainment, sports and gaming, and the January analysis examined 27 news-related queries after eliminating those topics.

watched.

Using a deep neural network makes the recommendations more of a black box to engineers than previous techniques, YouTube recommendations engineer Jim McFadden said last year. "We don't have to think as much," he said. "We'll just give it some raw data and let it figure it out."

To better understand the algorithm, the Journal enlisted former YouTube engineer Guillaume Chaslot, who worked on its recommendation engine, to analyze thousands of YouTube's recommendations on the most popular news-related queries, chosen from the 40 most-searched terms in Google News in November and December.

Mr. Chaslot created a computer program that simulates the "rabbit hole" users often descend into when surfing the site. In the Journal study, the program collected the top five results to a given search. Next, it gathered the top three recommendations that YouTube promoted once the program clicked on each of those results. Then it gathered the top three recommendations for each of those promoted videos, continuing four clicks from the original search.

Mr. Chaslot and the Journal collected all data after logging out of YouTube and deleting any history of videos watched, leaving the site with little other data on which to base its recommendations.

The first analysis, of November's top search terms, showed YouTube frequently led users to divisive and misleading videos. On the 21 news-related searches left after eliminating queries about entertainment, sports and gaming—such as "Trump," "North Korea" and "bitcoin"— YouTube most frequently recommended these videos:
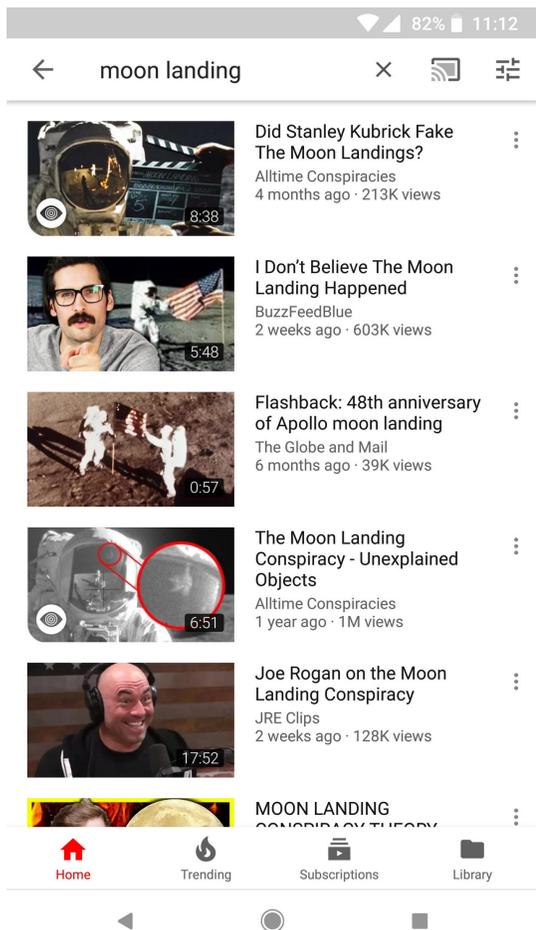
A YouTube search Tuesday for 'moon landing' returned videos that suggested humans haven't landed on the moon.

A later analysis, of December's top search terms, showed YouTube was returning more-mainstream sources for news-related queries —but still was promoting many divisive videos. On the 27 news searches left after eliminating queries about entertainment, sports and gaming, YouTube most frequently recommended these videos:

YouTube's algorithm tweaks don't appear to have changed how YouTube recommends videos on its home page. On the home page, the algorithm provides a personalized feed for each logged-in user largely based on what the user has watched.

Repeated tests by the Journal as recently as this week showed the home page often fed far-right or far-left videos to users who watched relatively mainstream news sources, such as Fox News and MSNBC.

Searching some topics and then returning to the home page without doing a new search can produce recommendations that push users toward conspiracy theories even if they seek out just mainstream sources.

After searching for "9/11" last month, then clicking on a single CNN clip about the attacks, and then returning to the home page, the fifth and sixth recommended videos were about claims the U.S. government carried out the attacks. One, titled "Footage Shows Military Plane hitting WTC Tower on 9/11—13 Witnesses React"—had 5.3 million views.

Write to Jack Nicas at jack.nicas@wsj.com

Appeared in the February 8, 2018, print edition as 'YouTube Drives Viewers to the Internet's Darkest Corners.'