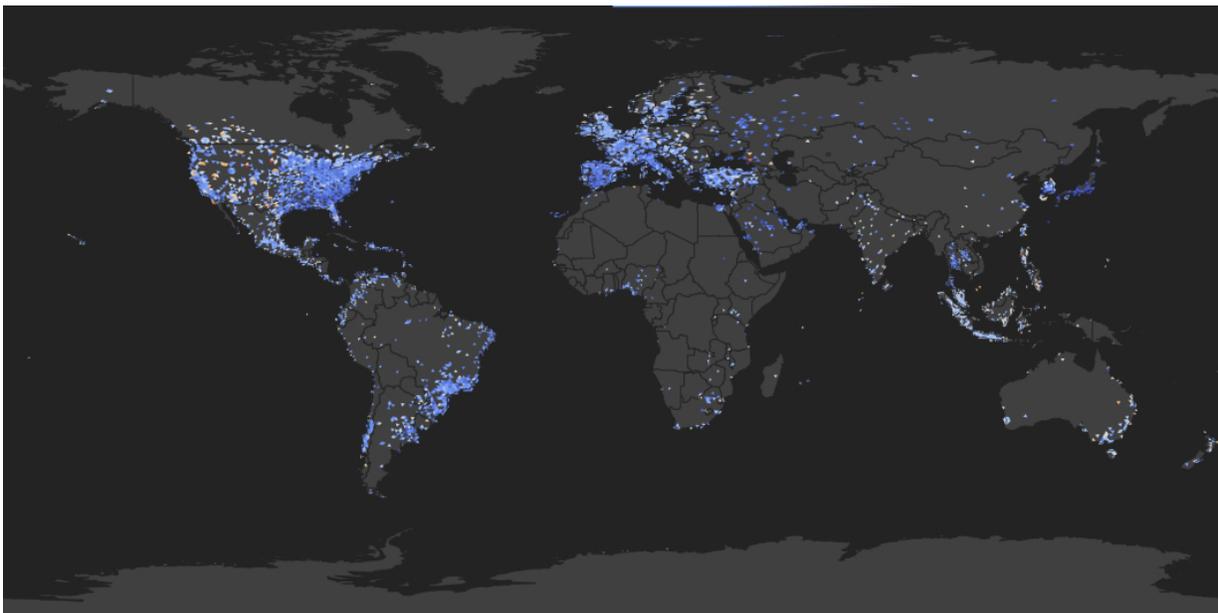


A scientific take on awesome success of Gangnam video

July 28 2017, by Nancy Owano



Geo-locations of Twitter messages containing 'Gangnam Style'. Credit: arXiv:1707.04460 [cs.SI]

(Tech Xplore)—When Gangnam Style busted out of its corner of the world in 2012, pundits and everyday people struggled to wonder why it was so catchy and why so liked.

Well, "liked" is an understatement. *Guinness World Records News* in December 2012: New landmark for online [video](#) crossed as PSY's

"Gangnam Style" becomes the first video to be viewed more than 1 billion times on YouTube, the world's largest video sharing [site](#).

Was it the dance moves? After all, *Ubergizmo* called it wacky [horse](#) dancing. *The Economist* in 2014 called it a "loony [music](#) video."

Was it the catchy tune? The funny scenes? In 2017, people are still looking for hard answers as to how this took off. Now *MIT Technology Review* is sharing news of researchers making a connection point: The article is reporting about interesting work that shows "how the spread of modern memes occurs in just the same way as ancient diseases. So the 'Gangnam Style' video pandemic [spread](#) in exactly the same way as bubonic plague!"

MIT Technology Review wrote about an "extraordinarily deep link between the [physical](#) world and the world of pure information. Just why these seemingly different things—matter and information—share these similar behaviors is not clearly understood. But it does provide ample reason for further investigation."

The title of the paper is "Video Pandemics: Worldwide Viral Spreading of Psy's Gangnam Style Video."

The six authors submitted their paper earlier this month and it is on *arXiv*.

Their affiliations include the Senseable City Lab, Massachusetts Institute of Technology, Ericsson Research in Budapest and Eötvös Loránd University, also in Budapest.

We are daily bombarded with headlines reporting videos gone "viral," and the authors suggest a similarity of videos reaching global penetration to "real diseases starting from a well-localized source."

As for the k-pop wonder, "In 2012, the record breaking 'Gangnam Style' marked the appearance of a new type of online meme, reaching unprecedented level of fame despite its originally small local audience," the authors wrote. From the k-pop fan subculture it moved on to a wide range of users of online media worldwide.

The researchers sought to approximately reconstruct its spreading process. The authors filtered geo-tagged messages containing the words 'Gangnam' and 'style'. They traced videos on the Twitter social platform. They used regions of countries and states of the world as the cells (i.e. the nodes) and aggregated the individual links connecting them.

The authors stated that "The synchrony between first appearances in Twitter and Google suggest that a universal pattern of social information flow (information highways) exist between geo-political regions, which is inherently non-technological, determined by the strength of [social ties](#) between different countries, cultures and languages."

Ubergizmo's Tyler Lee noted that in their geolocating search for mentions, it was revealed "that the video had initially spread from South Korea to the Philippines before moving on to the rest of the world."

Lee pointed out the relative proximity of the Philippines to South Korea, "and the fact that they have stronger links to the rest of the world through its diaspora, and that apparently they have stronger English language links. They confirmed this by searching on Google Trends for 'Gangnam Style' and discovered that the results matched those on Twitter."

One point made clear in *MIT Technology Review's* discussion of the study was that "geographic [distance](#) is not the key factor in the spread of information over social networks. That depends instead on the strength of links from one area to another—places that have lots of social ties are

likely to receive information more quickly than those that have weak ties."

The report added, that points to a way of replacing the geographic distance with an effective distance that captures the speed at which information can spread between them. Once Kallus and co do that—replace the geographic distance with this effective distance—the expected wavelike pattern emerged."

Tyler Lee, meanwhile, considered research implications moving forward: "This is very interesting since breaking down and understanding how viral videos and memes become viral could be instrumental for [companies](#) looking to advertise their products or services, or for musicians and record labels to better figure out a way to distribute their content more effectively."

More information: Video Pandemics: Worldwide Viral Spreading of Psy's Gangnam Style Video, arXiv:1707.04460 [cs.SI]
arxiv.org/abs/1707.04460

Abstract

Viral videos can reach global penetration traveling through international channels of communication similarly to real diseases starting from a well-localized source. In past centuries, disease fronts propagated in a concentric spatial fashion from the the source of the outbreak via the short range human contact network. The emergence of long-distance air-travel changed these ancient patterns. However, recently, Brockmann and Helbing have shown that concentric propagation waves can be reinstated if propagation time and distance is measured in the flight-time and travel volume weighted underlying air-travel network. Here, we adopt this method for the analysis of viral meme propagation in Twitter messages, and define a similar weighted network distance in the communication network connecting countries and states of the World.

We recover a wave-like behavior on average and assess the randomizing effect of non-locality of spreading. We show that similar result can be recovered from Google Trends data as well.

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