

# **Modelling Multi-Platform Information Diffusion in Social Media: Data-Driven Observations**

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Maastricht University

# My Trajectory



# My Trajectory

## Early 2000s: Distributed systems/computing

### Performance predictions for a numerical relativity package in grid environments

M Ripeanu, A Iamnitchi, I Foster  
The International Journal of High Performance Computing Applications 15 (4 ...

### The Replica Location Service: Design and Experience

A CHERVENAK, R SCHULER, S BHARATHI, N PALAVALLI, ...

### Bloom filters—short tutorial

M Ripeanu, A Iamnitchi  
Computer Science Department, University of Chicago. www. cs. uchicago. edu ...

### Cactus application: Performance predictions in grid environments

M Ripeanu, A Iamnitchi, I Foster  
Euro-Par 2001 Parallel Processing: 7th International Euro-Par Conference ...

### On fully decentralized resource discovery in grid environments

A Iamnitchi, I Foster  
Grid Computing—GRID 2001: Second International Workshop Denver, CO, USA ...

### A problem-specific fault-tolerance mechanism for asynchronous, distributed systems

A Iamnitchi, I Foster  
Proceedings 2000 International Conference on Parallel Processing, 4-13

## Early 2020s: Computational Social Sciences

### Experimental evaluation of baselines for forecasting social media timeseries

KW Ng, F Mubang, LO Hall, J Skvoretz, A Iamnitchi  
EPJ Data Science 12 (1), 8

### Closing the Loop: Testing ChatGPT to Generate Model Explanations to Improve Human Labelling of Sponsored Content on Social Media

T Bertaglia, S Huber, C Goanta, G Spanakis, A Iamnitchi  
arXiv preprint arXiv:2306.05115

### Modeling information diffusion in social media: data-driven observations

A Iamnitchi, LO Hall, S Horawalavithana, F Mubang, KW Ng, J Skvoretz  
Frontiers in Big Data 6, 1135191

### Social media activity forecasting with exogenous and endogenous signals

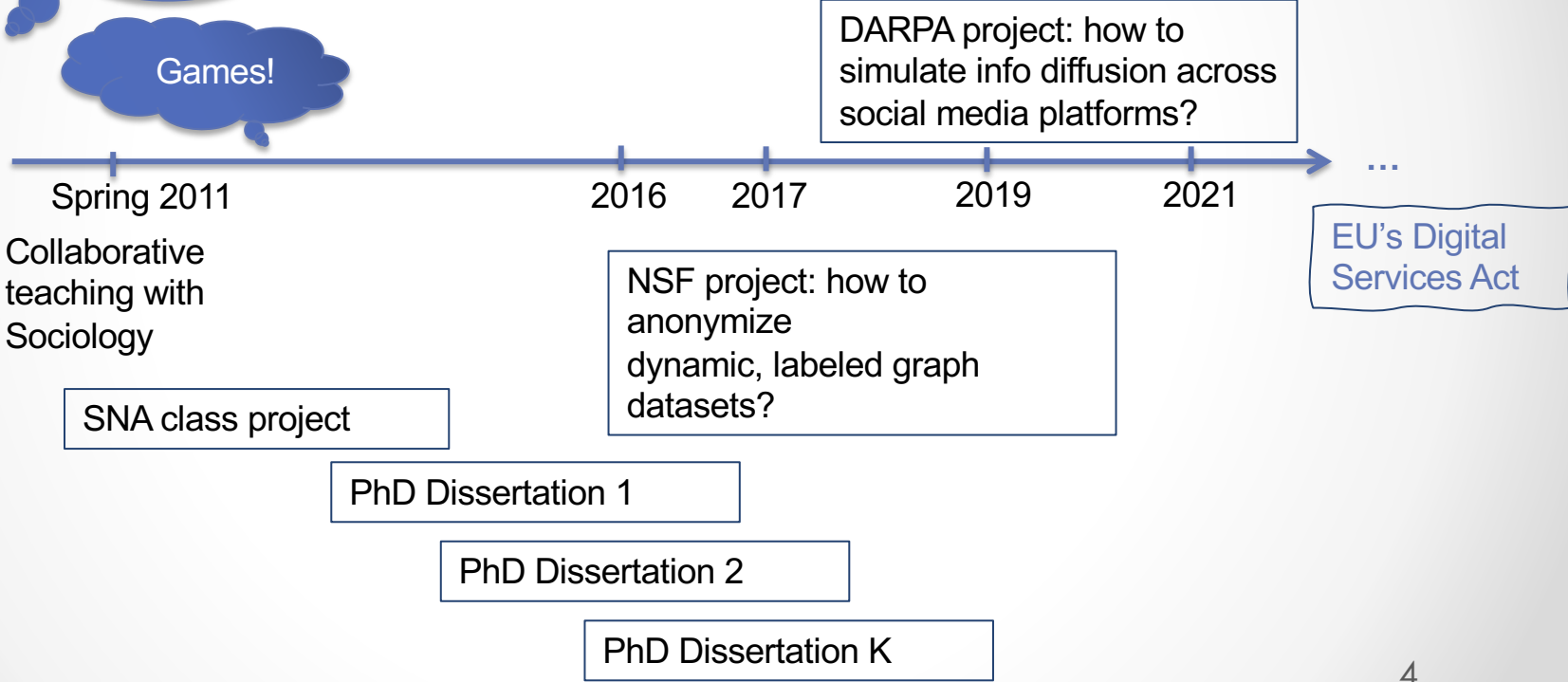
KW Ng, S Horawalavithana, A Iamnitchi  
Social Network Analysis and Mining 12 (1), 102

### Vaccination trials on hold: malicious and low credibility content on Twitter during the AstraZeneca COVID-19 vaccine development

S Horawalavithana, R De Silva, N Weerasekara, NG Kin Wai, M Nabeel, ...  
Computational and Mathematical Organization Theory, 1-22

Work on something you're passionate about!

Games!



# Can We Model Information Diffusion in Social Media?

## Why:

- Build understanding of the forces that shape online discussions in order to:
  - Adapt to changes, prepare for disruptions
  - Identify inauthentic behavior (anomaly detection)
  - Test intervention scenarios
  - Limit effects of disinformation/manipulation campaigns via interventions
- Create synthetic datasets for science experiments



Project funded by DARPA, done while and with team from University of South Florida.

# Social Media Affects the World

**REUTERS®** World Business Markets Legal Breakingviews Technology Investigations Spo

Middle east

2 minute read · September 21, 2022 8:55 PM GMT+2 · Last Updated 7 months ago

**As unrest grows, Iran restricts access to Instagram, WhatsApp**

Reuters



[1/2] An Iranian woman living in Turkey points at an old Iranian royal flag during a protest following the death of Mahsa Amini, outside the Iranian consulate in Istanbul, Turkey September 21, 2022. [Read More](#)

## Reddit's AMC, GameStop surge happened because of anger over Wall Street

Commentary: The gains are rooted in disdain for existing financial institutions, tapping into the same emotions as the Occupy Wall Street protests from a decade ago. And institutional investors are freaking out.

Roger Cheng · Feb. 1, 2021 6:22 a.m. PT

LISTEN · 06:05




There's more to this GameStop run than money.  
Sarah Tew/CNET

**The Washington Post**  
Democracy Dies in Darkness

Internet Culture · Analysis

## The Capitol rioters kept posting incriminating things on social media. Unsurprisingly, they were mocked — and arrested.



The mob that descended on the Capitol on Jan. 6 was filled with people posting footage of their whereabouts and offering their reasoning for storming the building. (Saul Loeb/AFP/Getty Images)

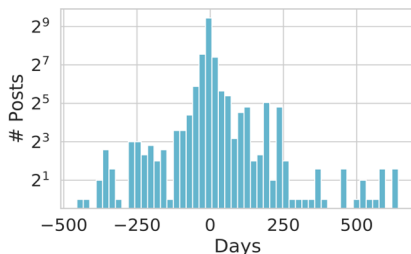
By **Travis M. Andrews**

Jan. 19, 2021 at 6:00 a.m. EST

# Information Diffusion: Observations from Three Scenarios

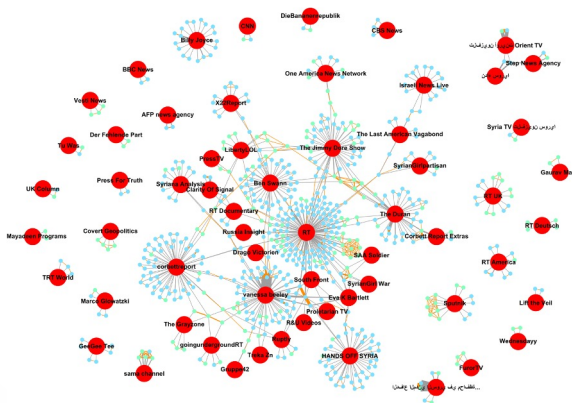
## Organic

- Software vulnerabilities in Reddit and Twitter



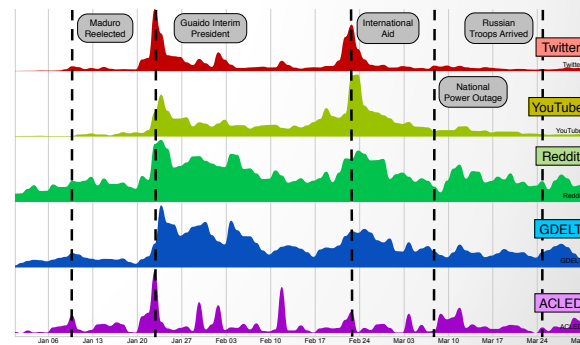
## Coordinated Campaign

- Disinformation campaign against the White Helmets



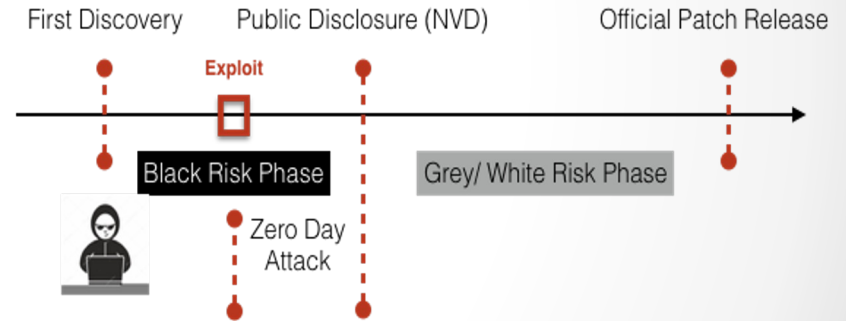
## Reactive to Events

- Venezuela political crisis in early 2019



# Software Vulnerabilities

- Identified by a unique CVE (Common Vulnerability and Exposure) identifier
- Formally recorded in a US government database (National Vulnerability Dataset)
- Discussed on social media





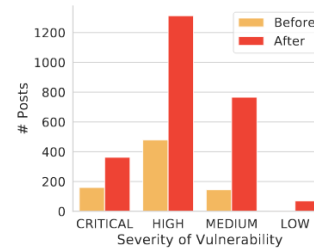
# Organic Discussions of Software Vulnerabilities

## Reddit

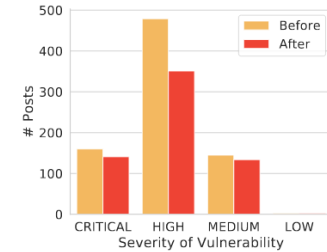
- 0.5% CVE discussed only on Reddit
- Majority discussed before public disclosure
- More “certitude” before public disclosure

## Twitter

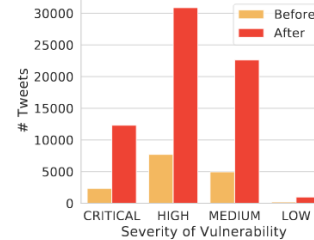
- 95% CVEs discussed only on Twitter
- Majority of discussions after public disclosure
- More “elaborations” before public disclosure



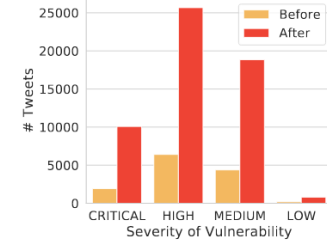
(a) Reddit (including Bots)



(b) Reddit (without Bots)



(c) Twitter (including Bots)

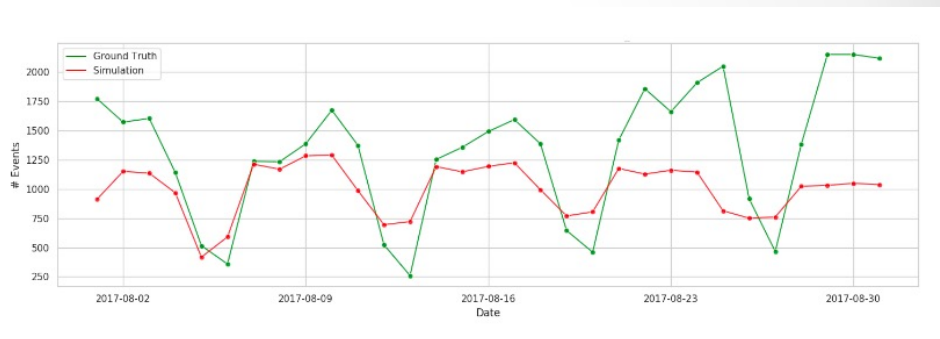


(d) Twitter (without Bots)

[Horawalavithana 2019]. Mentions of security vulnerabilities on Reddit, Twitter and Github. In *IEEE/WIC/ACM International Conference on Web Intelligence 2019*.

# Software Vulnerability Mentions on Reddit and Twitter: Lessons

- Platforms show different activity:
  - Twitter: more coverage
  - Reddit: early/more information
- Reddit and Twitter can be used to predict the activity on related software repositories on GitHub

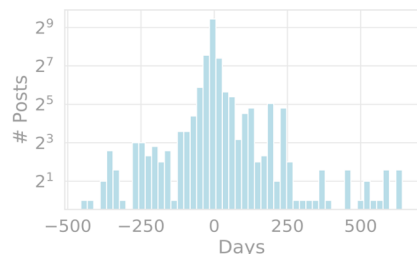


[Liu 2019] Predicting Longitudinal User Activity at Fine Time Granularity in Online Collaborative Platforms, In *IEEE International Conference on Systems, Man and Cybernetics (SMC)*, 2019

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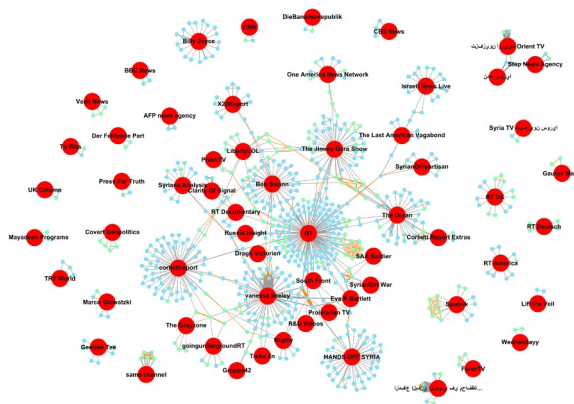
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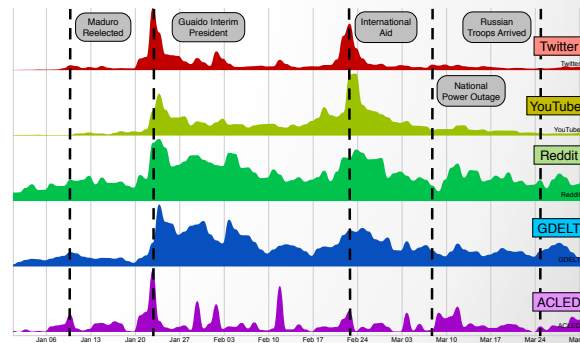
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## Reactive to Events

- Venezuela political crisis in early 2019



# The Information Campaign against the White Helmets

The **White Helmets** are a Syrian volunteer organization known for:

- Humanitarian actions
- Efforts to rescue civilians in war zones during the Syrian civil conflict
- Refusal to align with groups or military factions

They also provided:

- Video footage documentation of search and rescue operations
- Videos showing the human impact of the conflict



NEWS DESK  
THE WHITE HELMETS—SYRIA'S NOBLE RESCUERS—HAVE TO BE RESCUED BY ISRAEL  
By Robin Wright July 23, 2018



INSIDE THE CONSPIRACY THEORY THAT TURNED SYRIA'S FIRST RESPONDERS INTO TERRORISTS

How Syria's White Helmets became victims of an online propaganda machine

# Social Media Datasets

- **YouTube**

- Data collected using YouTube API Keywords
- 666 videos posted between June 19, 2014 and April 30, 2019
- For each video: date published, channel, and English translation of title and captions

- **Twitter**

- Data collected using GNIP API from April 1, 2018 to April 30, 2019
- Selected only Twitter posts with links to videos in YouTube dataset
- 14,776 tweets

- **Facebook**

- Data collected using CrowdTangle's URL endpoint query API
- Public Facebook posts with links to YouTube videos in our dataset
- 961 posts by 611 users between April 1, 2018 and April 30, 2019
- Out of 666 videos, only 236 were present in this dataset.

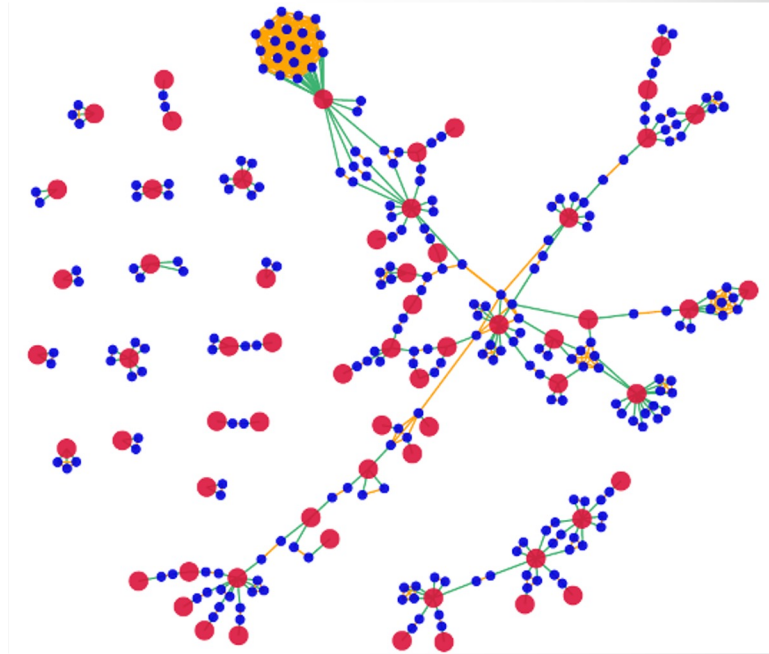
Data Collection Keywords
'white helmets', 'cascos blancos', 'capacetes blancos', 'caschi bianchi', 'casques blancs', 'elmetti bianchi', 'weisshelme', 'weiß helme', 'syrian civil defence', 'белые каски', 'الدفاع المدني السوري'

# Inorganic Activity from YouTube Comments

- 62 out of 666 videos had near-duplicate comments
- Out of 14K comments, 241 have at least one near duplicate

## Videos-Comments Network

- 62 **videos** (red nodes)
- 241 **comments** (blue nodes)
- Green edges represent a comment to a video
- **Orange** edges represent a pair of near-duplicate comments

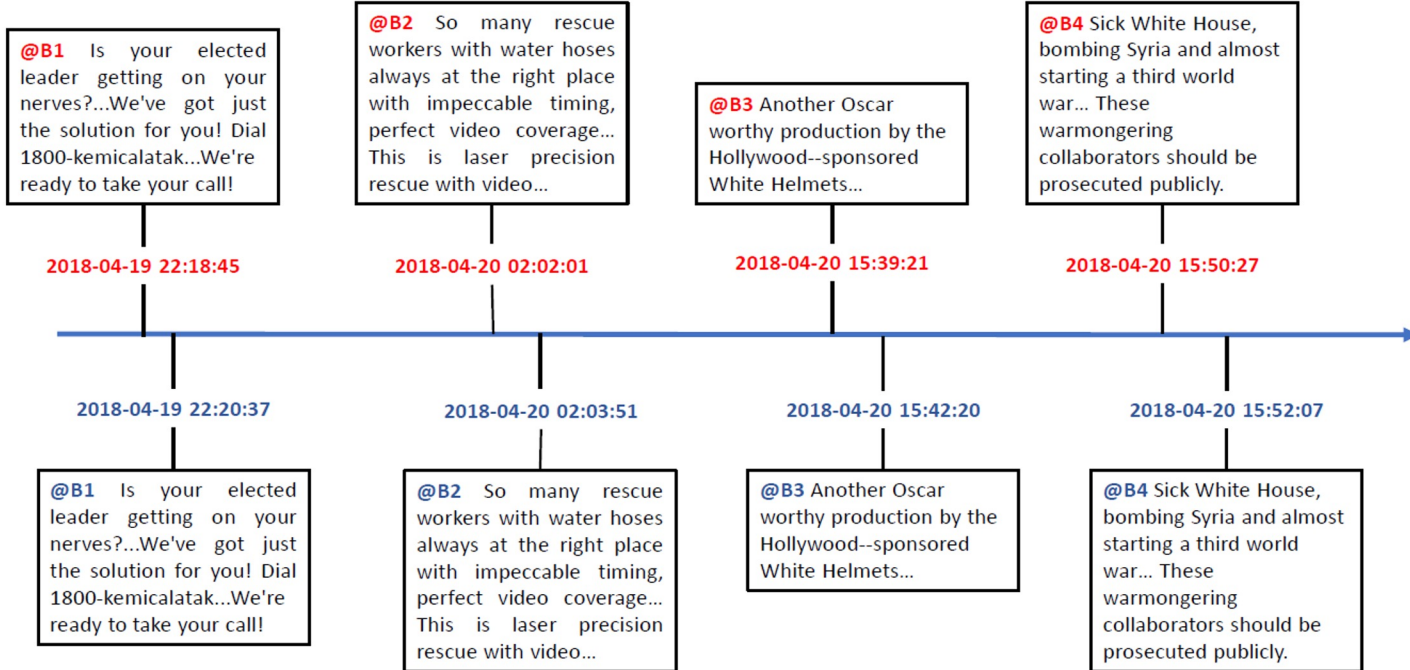


[Choudhury 2020] Strategic Information Operation in YouTube: The Case of the White Helmets. In *International Conference on Social Computing, Behavioral-Cultural Modeling and Prediction and Behavior Representation in Modeling and Simulation 2020*.

# Inorganic User Activity: Coordination

## Syrian Boy in White Helmets Video Reveals TRUTH

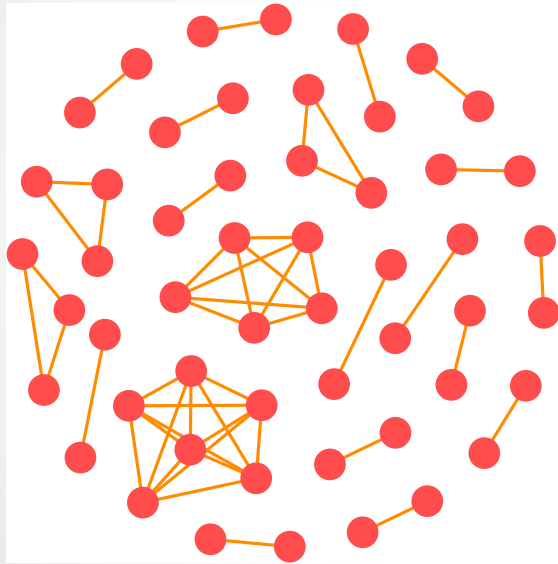
Channel: **Lift the Veil**



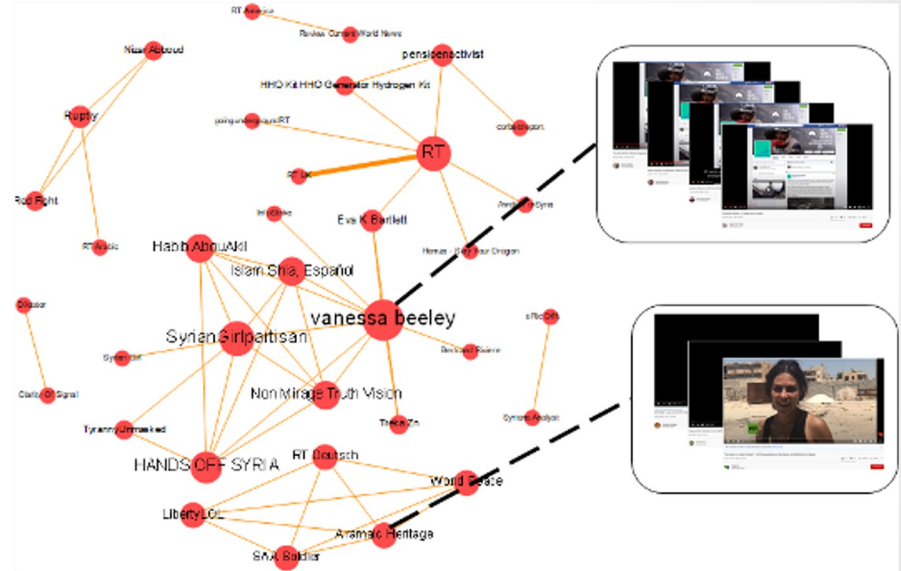
'They gave dates & cookies to kids at Douma hospital' – father of 'chem attack' victim

Channel: **RT**

# Message promotion on YouTube via near-identical videos posted on different channels



53 videos out of 666 with near-identical content uploaded to 35 different channels

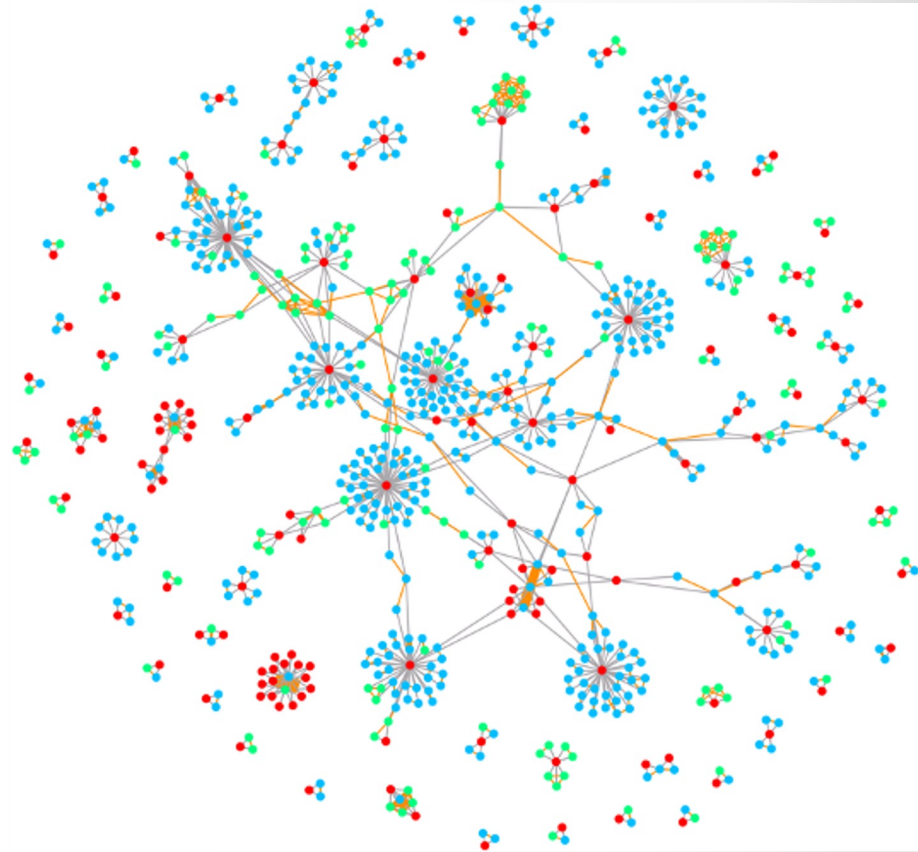


Channels connected by near-identical videos. Heavy presence of **Russian media, Western journalists, and information activists** involved in content coordination.

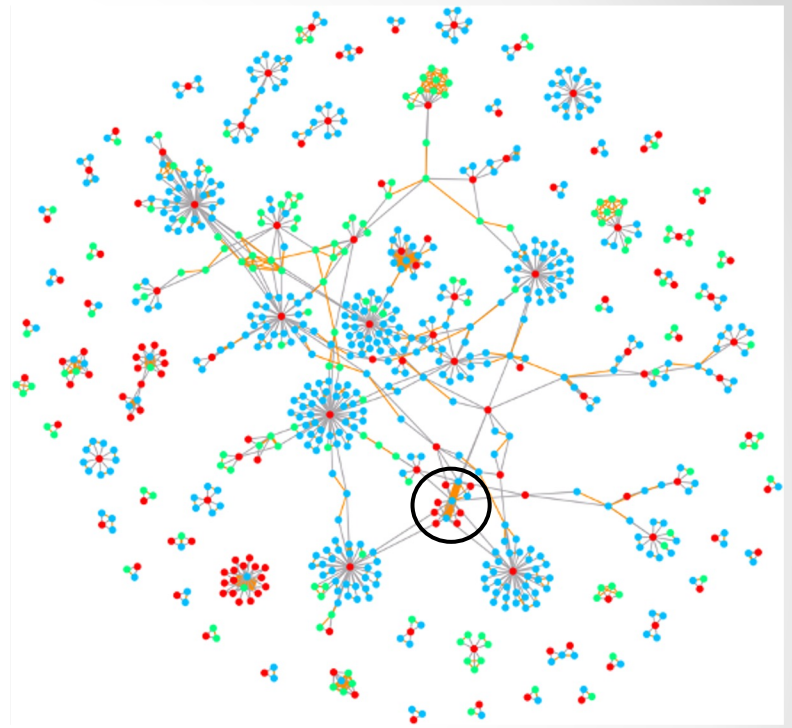


# How are YouTube videos posted on Twitter and Facebook?

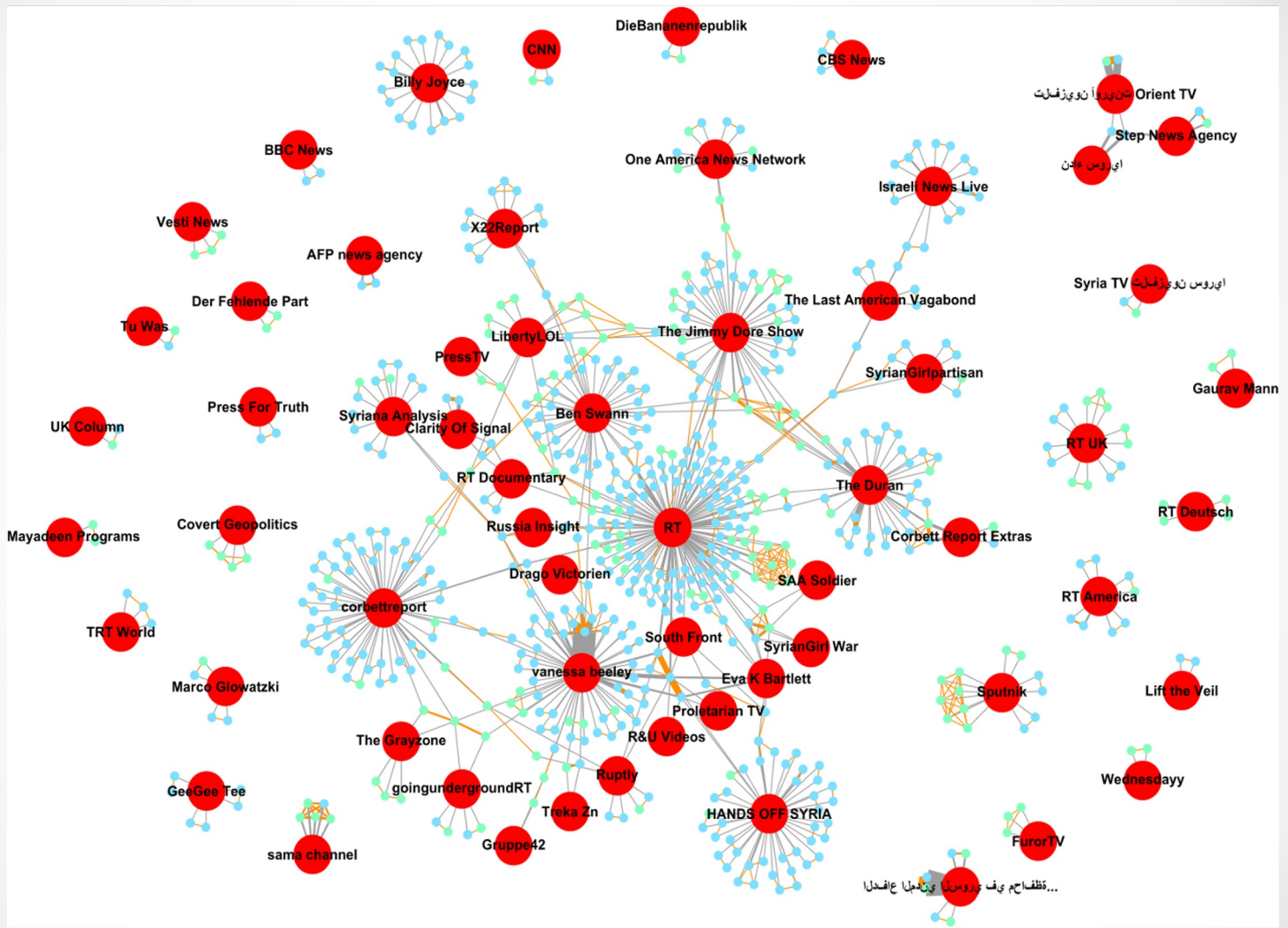
- Nodes are:
  - Red: YouTube videos (144)
  - Blue: Twitter users (471)
  - Green: Facebook users (161)
- Time threshold of 52 seconds computed based on an inter-arrival analysis between posts to the same video
- We connect social media user accounts that post the same YouTube videos within 52 seconds
  - 450 edges



# Agenda Broadcasting

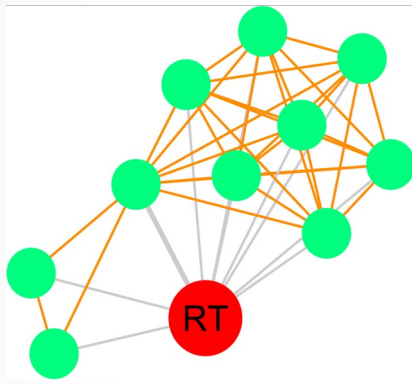


The node at the center shared all videos in detail network, whereas the other two coordinately (within 52 seconds) posted 6 and 7 videos, respectively.

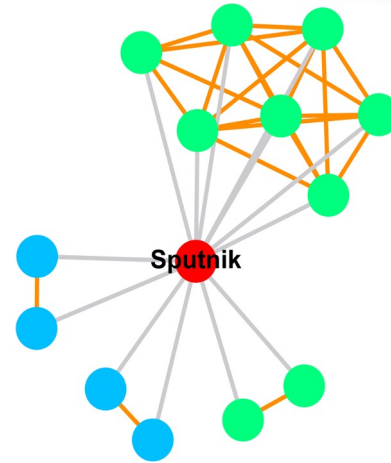


# Pattern 2: Distributed Amplification

- Rapid promotion of same content by a group of users.



**Single platform:** multiple Facebook users posted the same video from RT

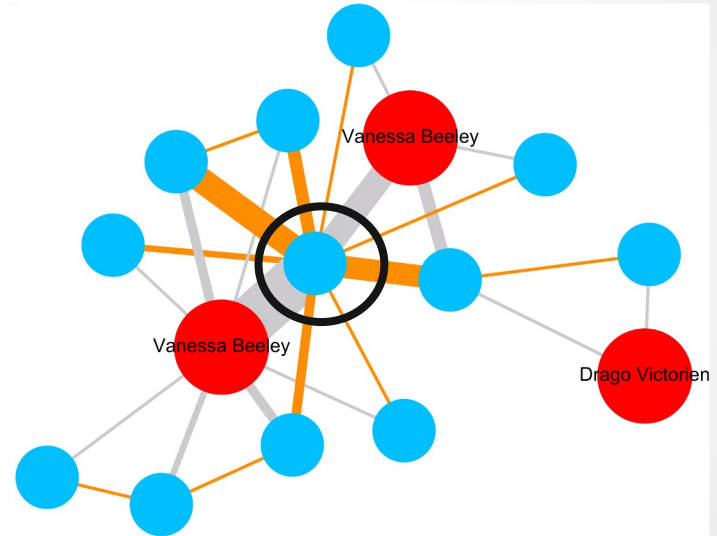


**Multi-platform:** group of users from both platforms published a video from Sputnik

[Ng 2021] Multi-platform information operations: Twitter, Facebook and YouTube against the White Helmets. In *Proceedings of The Workshop Proceedings of the 14th International AAAI Conference on Web and Social Media (ICWSM)(SocialSens)*, 2021.

# Pattern 3: Coordinated Video Recurrence

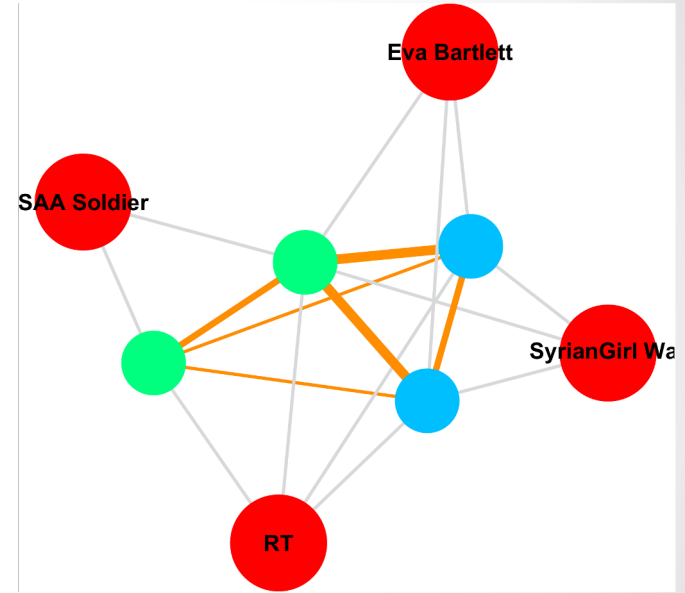
- Recurrent coordinated attempts among Twitter users in promoting same videos.
- One Twitter account repeatedly posted one video with always the same message.
  - This user posted one video 16 times, and other users coordinated repeatedly by posting simultaneously



[Ng 2021] Multi-platform information operations: Twitter, Facebook and YouTube against the White Helmets. In *Proceedings of The Workshop Proceedings of the 14th International AAAI Conference on Web and Social Media (ICWSM)(SocialSens)*, 2021.

# Pattern 4: Sockpuppetry

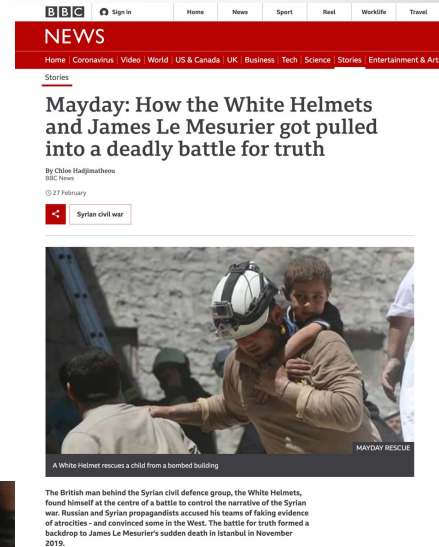
- Tightly connected network of users from different platforms who promote the same videos almost simultaneously.
- All videos in this network promote the same agenda, that of framing the WH organization as a terrorist group funded by the West.
- This behavior seems consistent with sockpuppet accounts controlled by the same agent across multiple platforms.



[Ng 2021] Multi-platform information operations: Twitter, Facebook and YouTube against the White Helmets. In *Proceedings of The Workshop Proceedings of the 14th International AAAI Conference on Web and Social Media (ICWSM)(SocialSens')*, 2021.

# What Were the Effects of This Campaign?

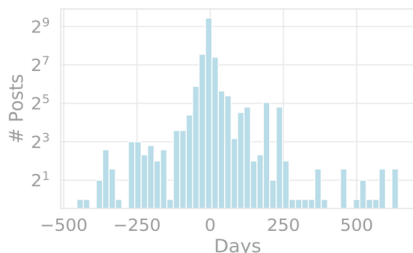
- On information diffusion: hard to measure due to limited data
  - **Support from social media platforms needed to study and limit information campaigns**
    - Various accounts were blocked, content removed by platforms
    - Hard to accurately measure diffusion: “seeing” vs. “retweeting” content
  - How to connect online engagement with offline actions is still unclear
- In real life: tragic



# Information Diffusion: Observations from Three Scenarios

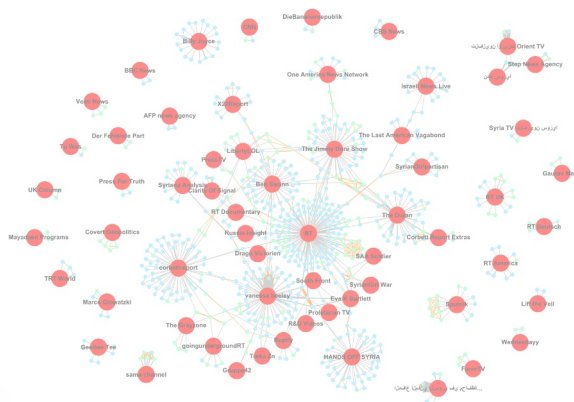
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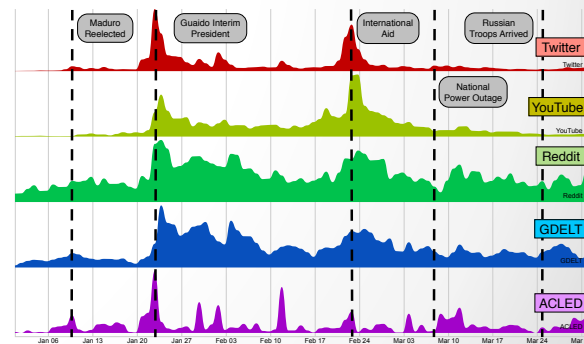
## Coordinated Campaign

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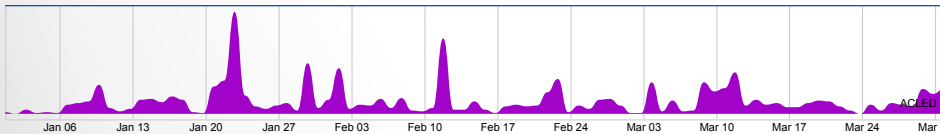
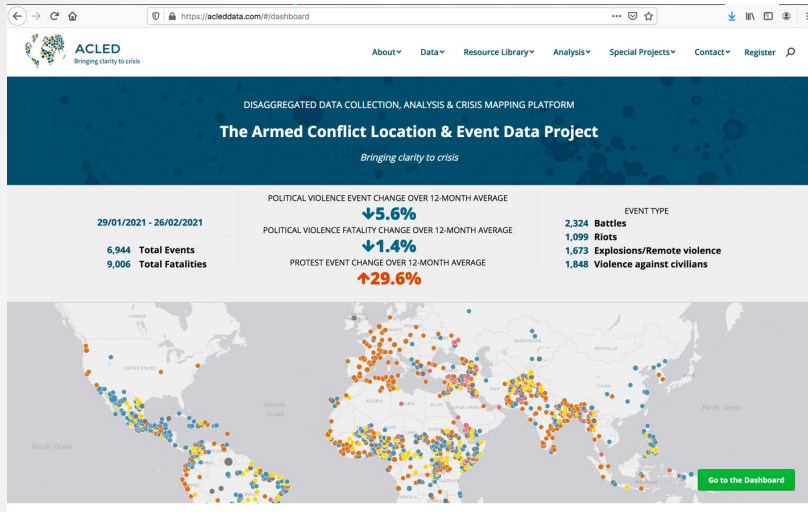
## Reactive to Events

- Venezuela political crisis in early 2019





# Venezuela Events in 2019



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## Timeline of the 2019 Venezuelan protests

From Wikipedia, the free encyclopedia

The **2019 Venezuelan protests** began in the first days of January as a result of the Venezuelan presidential crisis. Protests against the legitimacy of the Nicolás Maduro's presidency began at the time of his second inauguration following a controversial presidential election in 2018. Rallies of support were also held for President of the National Assembly, Juan Guaidó, with some Venezuelans and foreign governments recognizing him as the acting President of Venezuela.

**Contents** [show]

### January [edit]

- 10 January** – Nicolás Maduro is inaugurated for his second presidential term by the Supreme Tribunal of Justice.<sup>[1]</sup>
- 11 January** – The first open cabildo, a rally in the streets of Caracas, is held by National Assembly president Juan Guaidó, with many gathered there protesting against the failures of the Bolivarian government of Nicolás Maduro.<sup>[2]</sup> The National Assembly declares that Guaidó is the acting President of Venezuela under the constitution<sup>[3]</sup> and Guaidó calls more mass demonstrations on 23 January 2019, the 61st anniversary of the 1958 Venezuelan coup d'état.<sup>[4]</sup> Maduro responded by calling the opposition a group of "little boys" while prime minister Iris Varela stated that he had been to prepare prison cells for the opposition.<sup>[5]</sup>
- 13 January** – Guaidó is detained by the Bolivarian Intelligence Service (SEBIN),<sup>[6]</sup> but is released 45 minutes later.<sup>[7]</sup> Two journalists were also detained on-air while covering SEBIN's actions towards Guaidó: Beatriz Adrián of Caracol Television and Omary Hernández of CHN.<sup>[8]</sup> The twelve SEBIN officials involved were imprisoned days later.<sup>[9]</sup>
- 15 January** – Minister of Defense Vladimir Padrino López declares loyalty to Maduro, stating that he would give his life for him.<sup>[10]</sup> In Valencia, Carabobo thousands of residents participate in open cabildos filling Plaza Prebo and its surrounding streets.<sup>[11]</sup>
- 17 January** – A group of Venezuelan ex-army and police officers in Peru announced their support for Guaidó, saying that they do not recognise Maduro as their president or leader.<sup>[12]</sup><sup>[13]</sup>
- 18 January** – Thousands of Venezuelans gathered in Carabobo to support Guaidó at open cabildo rallies in Valencia and other cities throughout the state.<sup>[14]</sup>
- 19 January** – Across 12 states, thousands of Venezuelans demonstrate in support of Guaidó calling for a "transitional government", with some Maduro loyalists attempting to assault attendees with sticks and machetes in areas such as Petare, Maracay and Zulia.<sup>[15]</sup><sup>[16]</sup>
- 21 January** – In San José de Cúcuta, north of Caracas, over two dozen National Guardsmen participate in a mutiny against Maduro with the assistance of residents in the area during the early morning hours and are later captured by Venezuelan authorities.<sup>[17]</sup> During the night, over thirty communities in Caracas and surrounding areas participated in strong protests against the Maduro government.<sup>[18]</sup> The strongest protests occurred in San José de Cúcuta, where the rebel National Guardsmen were arrested, with demonstrations spreading throughout nearby communities, with cacerolesos heard throughout Caracas.<sup>[19]</sup> One woman who was confused for a protester was killed in San José de Cúcuta by members of a colectivo, who stole her phone.<sup>[19]</sup>
- 22 January** – Protests throughout Caracas from the previous evening continue into the morning, resulting in the National Guard and National Police being deployed, with reports of tear gas being fired into streets and residential facilities.<sup>[20]</sup>
- 23 January** – A 18-year-old boy, Aixon Pizén, is killed<sup>[21]</sup> a statue of Chávez is set on fire,<sup>[22]</sup> and three people are killed in Bolívar<sup>[23]</sup> in separate overnight protests, leading into the day of national protest.
- 24 January** – Minister of Defense Vladimir Padrino López states to the Venezuelan public that a coup is in progress and thanked governments supporting Maduro for "promoting a dialogue, a constitutional solution".<sup>[24]</sup> Cacerolesos continue throughout Caracas and authorities loyal to Maduro search homes to arrest protesters.<sup>[25]</sup>
- 25 January** – As protests continue, Guaidó calls for a continuous protest, also encouraging the people to keep up the fight if he gets arrested.<sup>[26]</sup>
- 26 January** – Venezuelan military diplomat in Washington DC, Colonel Jose Luis Silva defected from Maduro government and urge his fellow FANB to recognize Guaidó presidency.<sup>[27]</sup>
- 29 January** – US Secretary of State transfers control of Venezuelan Government assets to acting president Juan Guaidó.<sup>[28]</sup> Soon afterwards, Venezuelan Supreme Court barred Guaidó from leaving the country and froze his bank accounts.<sup>[29]</sup>
- 30 January** – Thousands attend pro-Maduro government rally in Falcon state in the northern part of the country.<sup>[30]</sup>
- 31 January** – Self-declared Venezuelan acting president Juan Guaidó is supposed to be in secret talks with the country's military as he attempts to force Nicolás Maduro from power.<sup>[31]</sup>

### Crisis in Venezuela

**Cause**

- Bolivarian Revolution - Economic policy of Hugo Chávez - Economic policy of Nicolás Maduro

**Effects**

- Refugee crisis - Blackouts - Energy crisis - Detentions - Hygiene/infant - International sanctions - Shortages - Censorship - Catatumbo campaign - Anti-Venezuelan sentiment

**Events**

- Dakazo - Golpe Azul - 2016 recall movement - 2017 Venezuelan constitutional crisis - 2018 Nicolás Maduro re-election campaign - Venezuelan presidential crisis - 2019 shipping of humanitarian aid to Venezuela - Venezuela Aid Law - COVID-19 pandemic

**Elections**

- 2013 presidential election - 2015 parliamentary election - 2017 referendum - 2017 Constituent Assembly election - 2018 presidential election

**Protests**

- 2013 - 2014 - 2015 - 2016 - 2017 - 2018 - 2019

**Timeline**

- 2014 - 2015 - 2016 - 2017 - 2018 - 2019

**Armed violence**

- 2017 Caracas helicopter incident - 2017 Venezuelan National Assembly attack - Attack on Fort Páramacay

**Timeline**

- 2018 El Junquito raid
- 2019 Caracas drone attack - 2019 Venezuela uprising
- 2020 Operation Gideon

Venezuela portal

V · T · E

# Venezuela Events in 2019

The GDELT Project

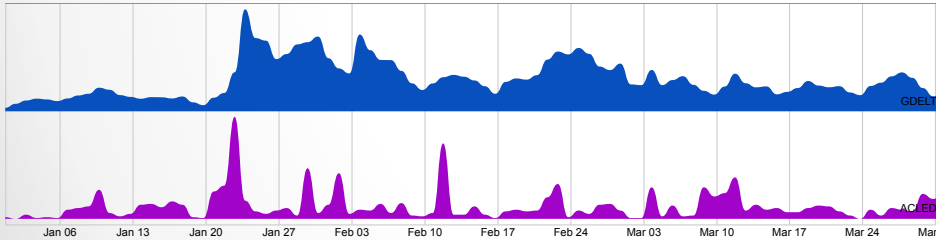
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Supported by Google [i2Globe](#), the GDELT Project monitors the world's broadcast, print, and web news from nearly every corner of every country in over 100 languages and identifies the people, locations, organizations, themes, sources, emotions, counts, quotes, images and events driving our global society every second of every day, creating a free open platform for computing on the entire world.



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### Crisis in Venezuela

**Cause**

- Bolivarian Revolution - Economic policy of Hugo Chávez - Economic policy of Nicolás Maduro

**Effects**

- Refugee crisis - Blackouts - Energy crisis - Elections - Hydratification - International sanctions - Shortages - Censorship - Catatumbo campaign - Anti-Venezuelan sentiment

**Events**

- Dakazoo - Goleto Asat - 2016 social movement - 2017 Venezuelan constitutional crisis - 2018 Nicolás Maduro re-election campaign - Venezuelan presidential crisis - 2019 shipping of humanitarian aid to Venezuela - Venezuela Aid Law - COVID-19 pandemic

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**Protests**

- 2014 - 2014 - 2015 - 2016 - 2017 - 2018 - 2019

**Timeline**

- 2014 - 2015 - 2016 - 2017 - 2018 - 2019

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**2018**

- El Junquito raid

**2019**

- Caracas drone attack - 2019 Venezuela uprising


**2020**

- Operation Gideon

Venezuela portal

V · T · E

# Venezuela Events in 2019 as Reflected on Social Media



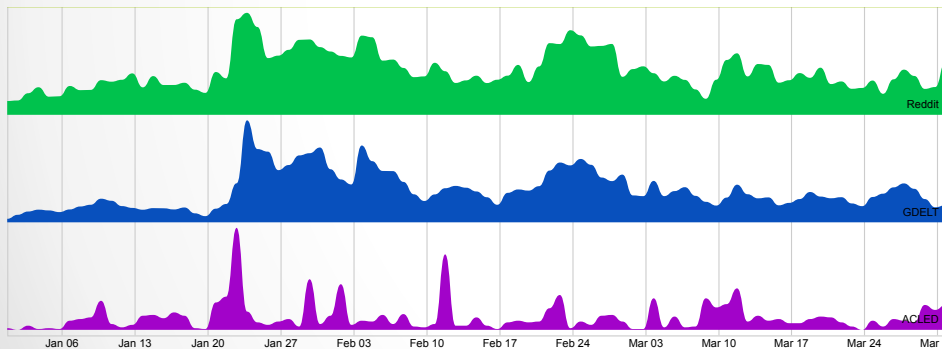
**Reddit**  
Website

<

reddit.com

Reddit is a social news aggregation, web content rating, and discussion website, recently including livestream content through Reddit Public Access Network. Registered members submit content to the site such as links, text posts, and images, which are then voted up or down by other members. [Wikipedia](#)

**Founded:** June 23, 2005, Medford, MA





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**Crisis in Venezuela**



**Cause**

- Bolivarian Revolution
- Economic policy of Hugo Chávez
- Economic policy of Nicolás Maduro

**Effects**

- Refugee crisis
- Blackouts
- Energy crisis
- Deletions
- Hybridization
- International sanctions
- Shortages
- Censorship
- Catalumbo campaign
- Anti-Venezuelan sentiment

**Events**

- Dakazo
- Golden Asaf
- 2016 social movement
- 2017 Venezuelan constitutional crisis
- 2018 Nicolás Maduro re-election campaign
- Venezuelan presidential crisis
- 2019 shipping of humanitarian aid to Venezuela
- Venezuela Aid Law
- COVID-19 pandemic

**Elections**

- 2013 presidential election
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- 2017 Constituent Assembly election
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**Protests**

- 2013–2014
- 2015–2016
- 2016–2017
- 2018–2019

**Timeline**

- 2014–2015
- 2016–2017
- 2017–2018
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**Armed violence**

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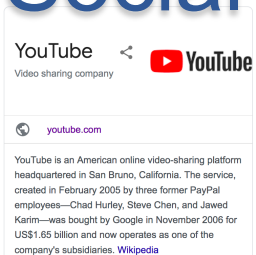
**2020**

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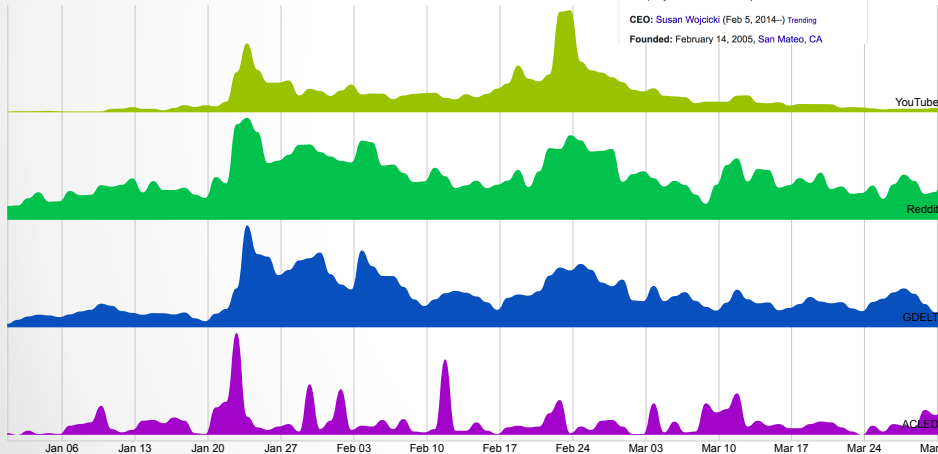


**YouTube** <  **YouTube**  
Video sharing company

 [youtube.com](#)

YouTube is an American online video-sharing platform headquartered in San Bruno, California. The service, created in February 2005 by three former PayPal employees—Chad Hurley, Steve Chen, and Jawed Karim—was bought by Google in November 2006 for US\$1.65 billion and now operates as one of the company's subsidiaries. [Wikipedia](#)

CEO: Susan Wojcicki (Feb 5, 2014–) Trending  
Founded: February 14, 2005, San Mateo, CA



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**Cause**  
Bolivarian Revolution - Economic policy of Hugo Chávez - Economic policy of Nicolás Maduro

**Effects**  
Refugee crisis - Blackouts - Energy crisis - Defections - Hyperinflation - International sanctions - Shortages - Censorship - Catatumbo campaign - Anti-Venezuelan sentiment

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# Venezuela Events in 2019 as Reflected on

## Social Media

Twitter



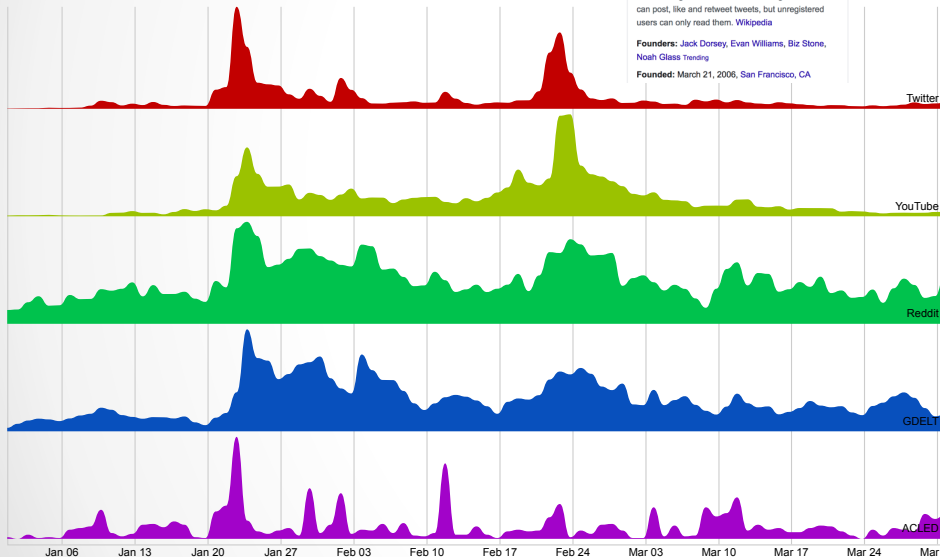
Social network company

[twitter.com](#)

Twitter is an American microblogging and social networking service on which users post and interact with messages known as "tweets". Registered users can post, like and retweet tweets, but unregistered users can only read them. Wikipedia

Founders: Jack Dorsey, Evan Williams, Biz Stone, Noah Glass, Trevor

Founded: March 21, 2006, San Francisco, CA



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##### Timeline

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##### 2019

Caracas drone attack - 2019 Venezuela uprising

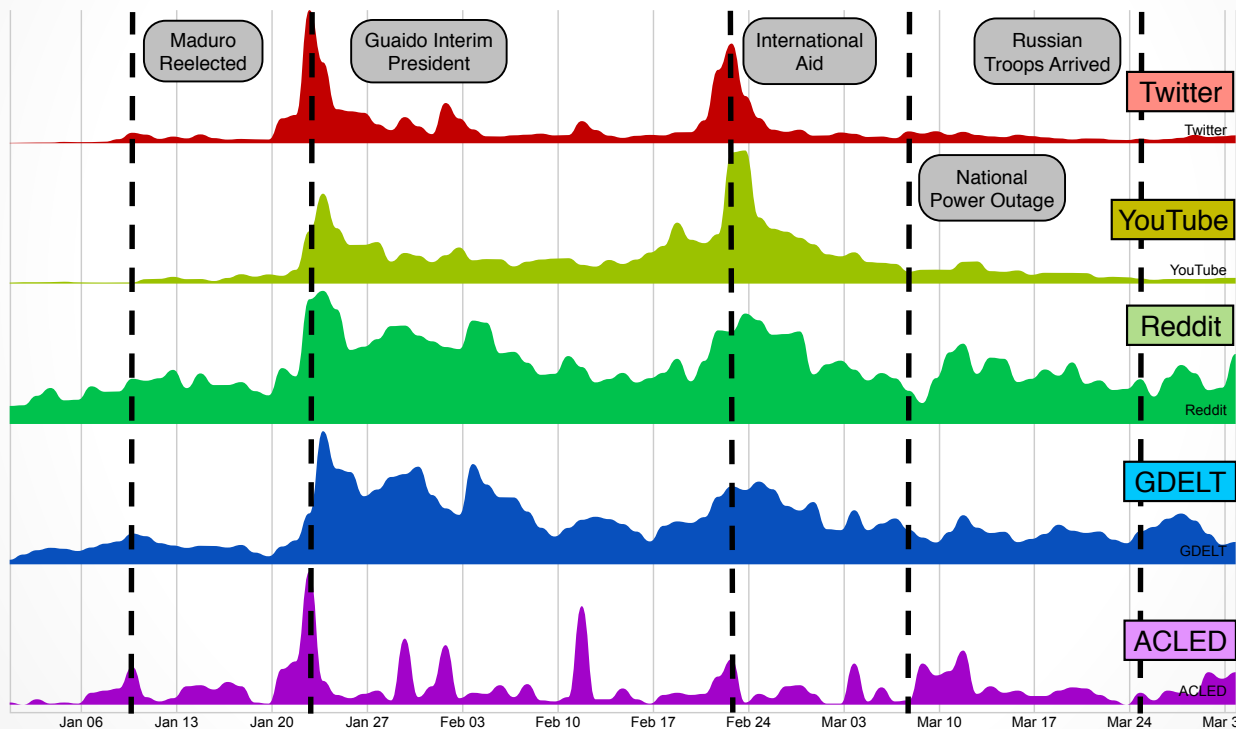
##### 2020

Operation Gideon

Venezuela portal

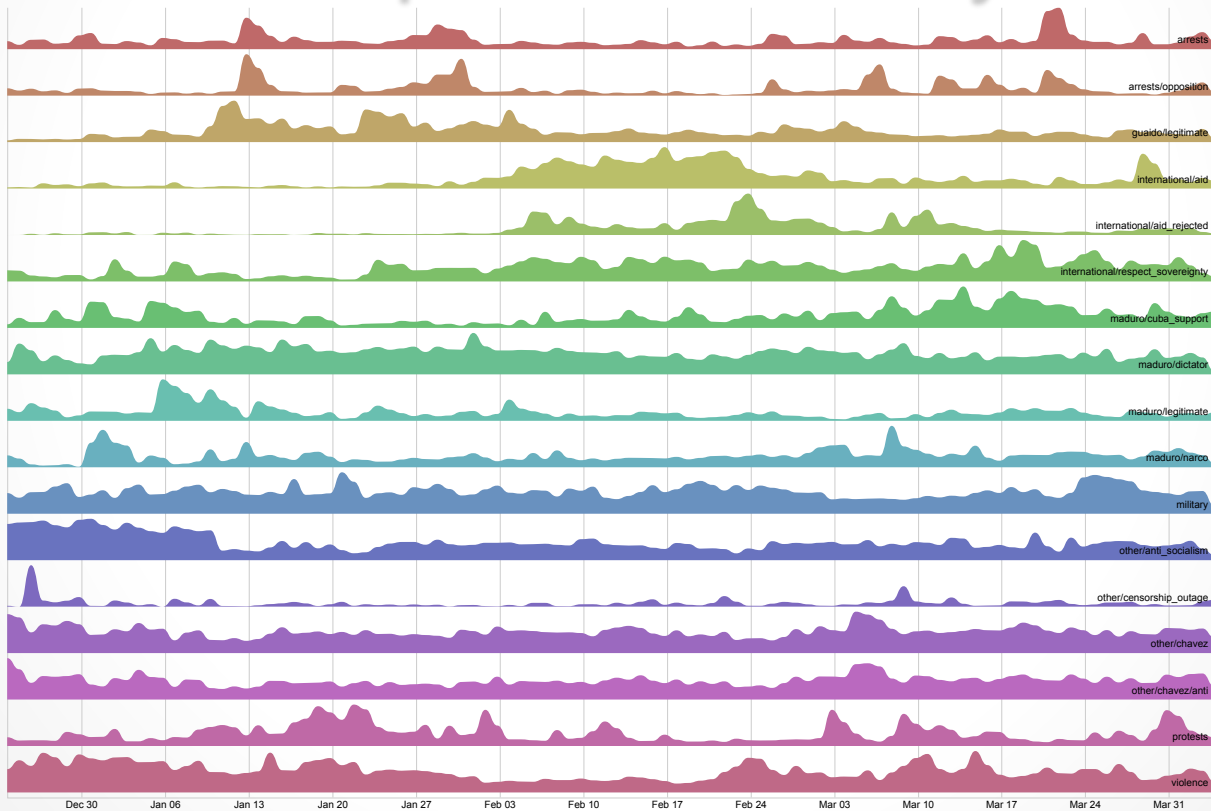
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# Venezuela Events in 2019

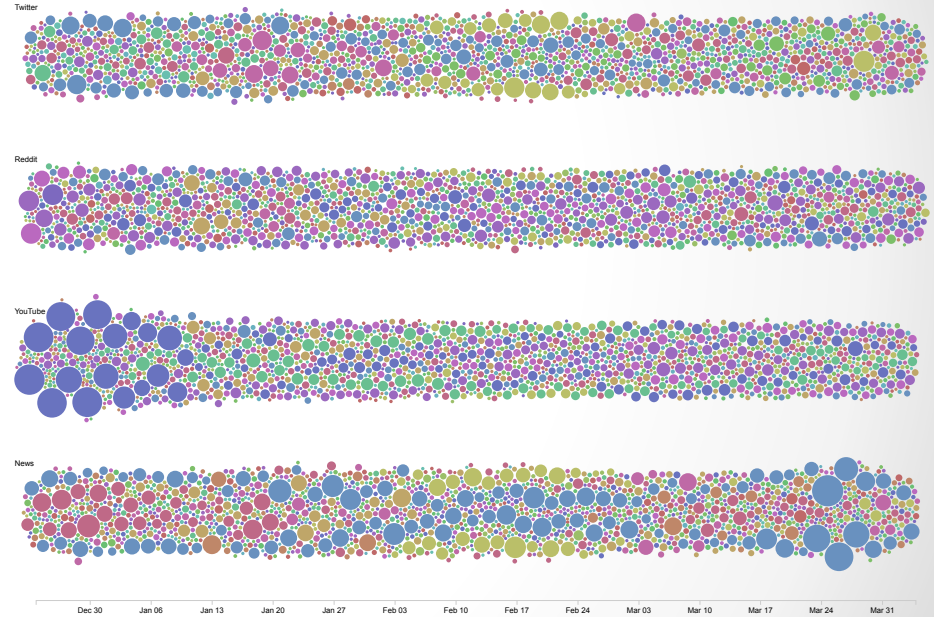
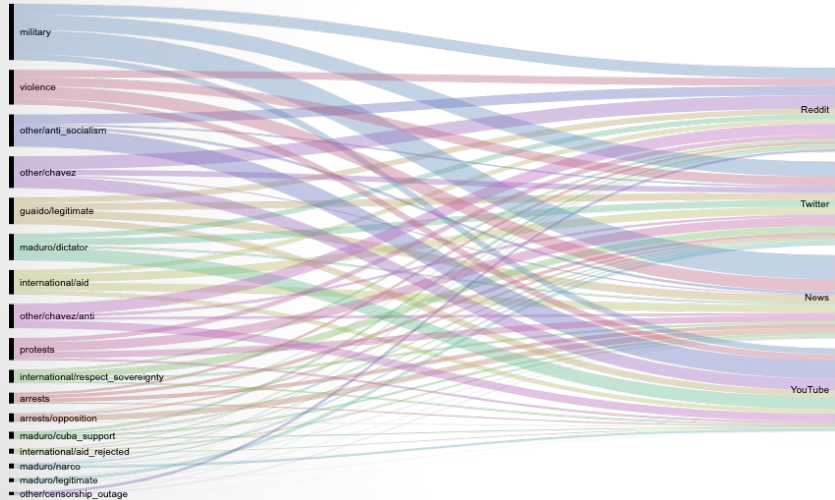


# Venezuela-Related Topics on Twitter

## Respond Differently



# Different Topics on Different Platforms

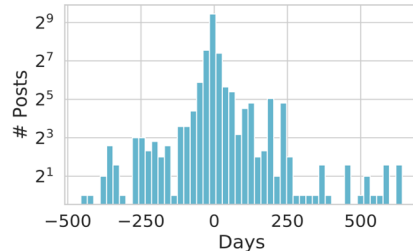




# Information Diffusion: Observations from Three Scenarios

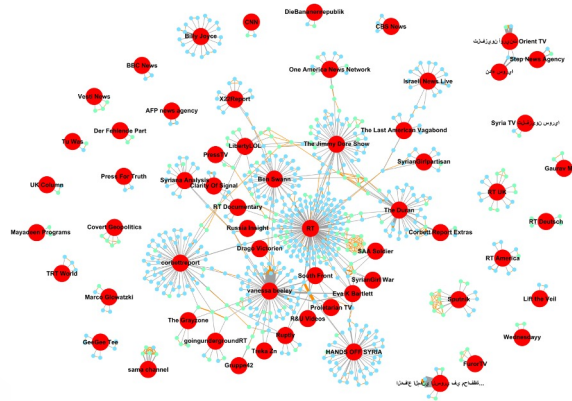
## Organic

- Software vulnerabilities in Reddit and Twitter



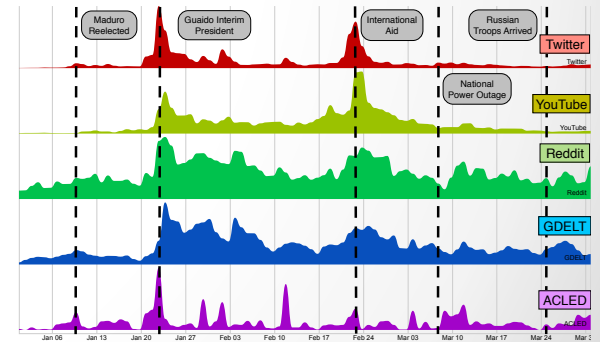
## Coordinated Campaign

- Disinformation campaign against the White Helmets



## Reactive to Events

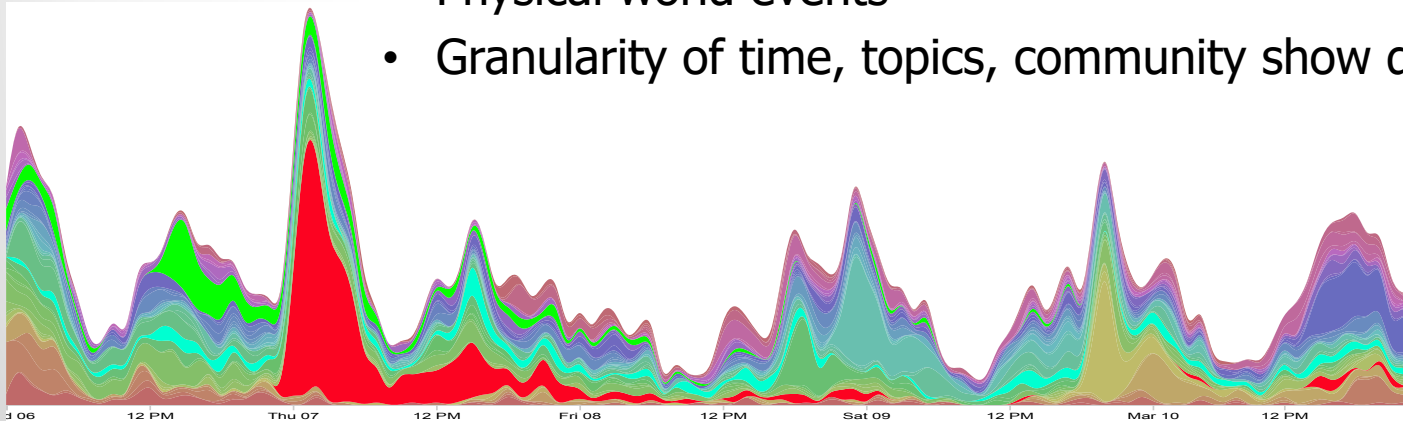
- Venezuela political crisis in early 2019



# Information Diffusion Online

Complex forces shape information diffusion

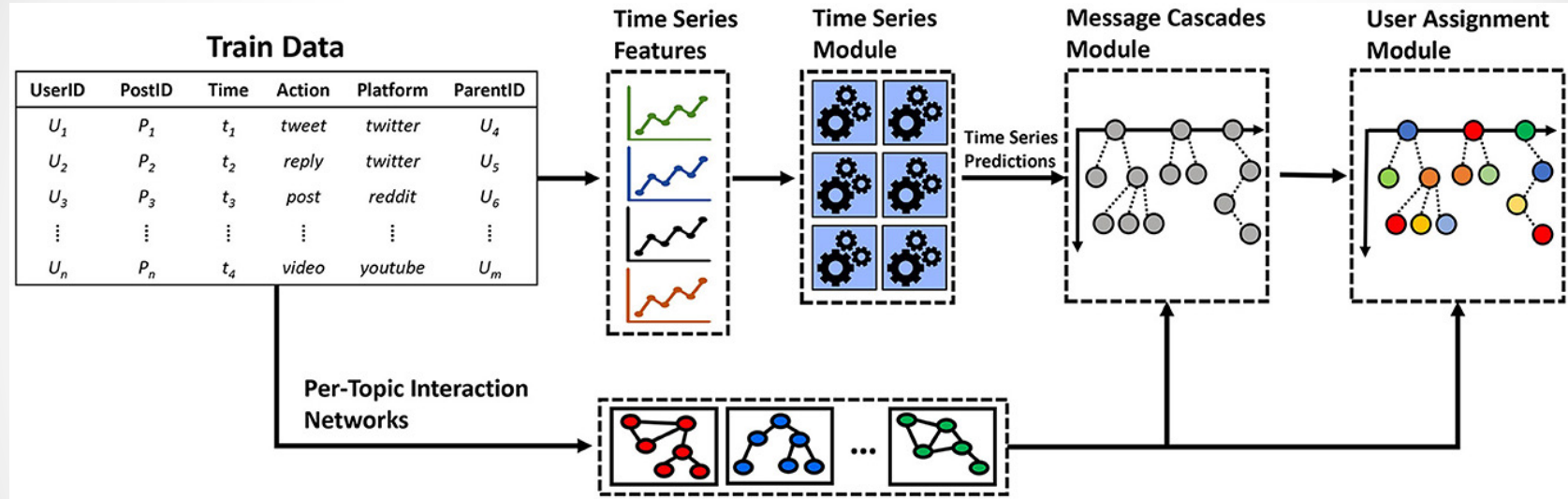
- Platform-specific features
- Platform-specific user communities
- Coordinated operations
- Physical world events
- Granularity of time, topics, community show different patterns



# The Winning Solution

- Machine learning-based models
- Forecast **multiple datapoints** in the future; avoid cumulating errors
- Specialized models:
  - **Per platform** (e.g., a set of models trained on Twitter data to predict Twitter actions)
  - **Per topic** (such as “Guaido legitimate”, “arrests”, “military”, in the Venezuela political context of early 2019)
  - Break the modeling problem into target components:
    - **Number of new users** to join the topic
    - **Number of returning users**
    - **Number of posts** (tweets, videos, etc.)
    - **Number of reactions** (retweets, replies, comments, etc.)
    - User interactions (**who reacts to whose message**)
    - Stance, emotion, etc.
    - Now we could even predict text messages with chatGPT-like tools (probably)
  - Train specialized models with **different exogenous data sources**

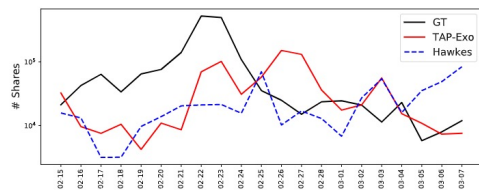
# The Winning Solution



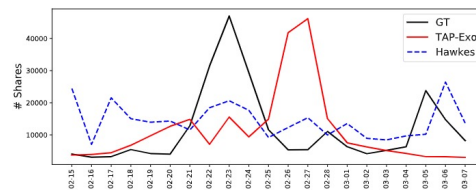
[Iamnitchi 2023] Modelling information diffusion in social media: data-driven observations, *Frontiers in Big Data* 6, 1135191

[Ng 2022] Social media activity forecasting with exogenous and endogenous signals. In *Social Network Analysis and Mining* 12 (1), 2022.

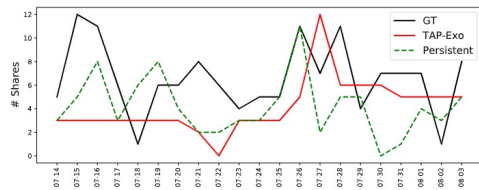
# Some Performance Results (Time Series)



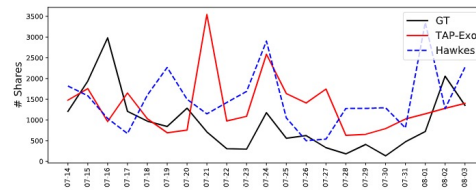
(a) international/aid (VZ Twitter)



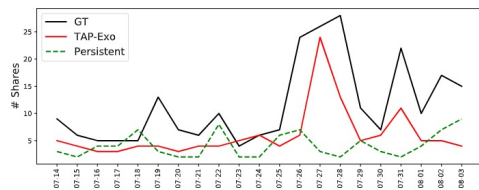
(b) other/chavez (VZ Twitter)



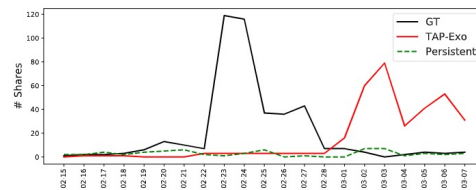
(c) leadership/sharif (CPEC YouTube)



(d) controversies/pakistan/baloch (CPEC Twitter)



(e) benefits/development/roads (CPEC YouTube)



(f) military/desertions (VZ YouTube)

Forecasting topic activity with exogenous and endogenous information signals in Twitter. Kin Wai Ng, Sameera Horawalavithana, Adriana Iamnitchi, ASONAM 2021

# Take-Away Messages

- Social media influences social processes in the real world
  - Debates, lobbying, activism, disinformation, political processes, etc.
- It is important to understand/model it
  - Much more now with the adoption of the EU Digital Services Act
- For modelling social media activity:
  - Exogenous data is paramount for capturing sudden peaks of activity
  - Training independent models, each using data (features) from different exogenous influences, captures influences from external events
  - The selection of exogenous sources to use for a given topic at a particular time is very important
  - Dynamic training-testing time windows works better than fixed time windows



Technology  
Markets  
Magazine

## These Online Detectives Have Raised \$300 Million to Keep Lies From Triggering the Next Bank Run

The Silicon Valley Bank crisis shows how panic spreads. Companies like Alethea and Graphika are using AI software to fight disinformation.

By Margi Murphy

24 April 2023 at 16:00 CEST

From **Bloomberg Markets**

Shawn Eib was on the case as soon as customers started pulling billions of dollars from [Silicon Valley Bank](#). At home in Virginia, he began scrolling on his laptop through the internet's dark corners. Dubious sources, including a website the US military accuses of promoting Russian propaganda, fanned the panic.

Another posting, which prosecutors have tied to a Chinese business executive facing [US fraud charges](#), blamed the bank's failure on the Communist Party of China's "unrestricted financial warfare." Many others paired comments with come-ons for cryptocurrency get-rich-quick schemes. "I could have made a fortune like this guy!" one read.

# Acknowledgements

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# Modelling Multi-Platform Information Diffusion in Social Media: Data-Driven Observations

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