Leveraging AI To Understand Protests & Foster Secure Societies During Protest



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Outline

- Motivation
- Research Overview
- Extracting actionable knowledge from the online ecosystem
 - What are the different narratives shared during an online protest?
 - What are the online strategies adopted during the protest?
- Counter online threats during protests
- Summary
- Timeline
- Publications
- References

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"Any society always has sufficient discontent to supply the grass-roots support for a movement"

- Stronger Assumptions

"Grievances and discontent may be defined, created, and manipulated by issue entrepreneurs and organizations"

- Weaker Assumptions

[McCarthy, 1977]

Countries worldwide with current active protests since 2017

Inside Delhi: beaten, lynched and burnt alive





Why Rihanna and Greta Thunberg Are Taking on India's Modi

Global celebrities are helping Indians to fight their government's crackdown on dissent.

By Salil Tripathi, a writer based in New York.





Image source: https://carnegieendowment.org/publications/interactive/protest-tracker#







What is the role of social media in socio-political protests?

Social media's ability to spread information quickly is a double-edged sword.

- Provides a platform to mobilize people across socio-political spectrum.
 - Reduction in 'information asymmetry' between people in power and activists
 - **Gather support** from communities that are not bound by geography

- Provides opportunities to manipulate users that can fuel the flames of division or violent protests.
 - **Confirmation bias:** tendency to favor information that confirms one's prior beliefs
 - Selective exposure mechanism: tendency to adjust opinions, and actions according to the recent observations

ABOUT CONTACT SUPPORT DONATE

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Global Protest Tracker

A one-stop source for following crucial trends in the most significant antigovernment protests worldwide since 2017.

LAST UPDATED ON SEPTEMBER 13, 2022

Over 2300 significant antigovernment protests have erupted worldwide.

IONAL PEACE

CARNEGIE ENDOWMENT FOR



78%

of authoritarian or authoritarian-leaning countries have faced significant protests.

Over

25

significant protests have been directly related to the coronavirus pandemic.

https://carnegieendowment.org/publications/interactive/protest-tracker#

What can we do to help?

- Develop systems that helps to demystify people's opinions and address the concerns of the protest for early relief.
- Weed out various forms of manipulation that can fuel the flames of division and lead to polarization of society and violent protests.

Thesis overview



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- Motivation
- Research Statement
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To **understand social movements** mediated by social media and **counter threats** that pollute the online and offline ecosystem that might unfold grave consequences

To **understand social movements** mediated by social media and **counter threats** that pollute the online and offline ecosystem that might unfold grave consequences.

Extracting actionable and concise knowledge from the online ecosystem

Exposing Inauthentic Actors & weed out the possible threats

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Social Media Protests: Decade at glace

15-M, Indignados Movement [González-Bailón, Sandra, et al., 2011]	Gezi park Protest, Turkey [Varol, Onur, et al., 2014]	No Ball, No wall [Wei, Kai, et al., 2020]	
Aim: To Identify recruitment pattern in the protest Findings: Exposure from multiple sources than multiple exposure from a source	Aim: To study protest topic evolution Findings: Online behaviour were greatly affected by the ongoing activity	Aim : To reduce prejudice against immigrants Findings : Protests leads to both positive and negative change in people's prejudice	
Arch Caring	Provit roforondum	Vanazuala Political Crisis	
[Starbird, Kate, and Leysia Palen., 2012]	[Grčar, Miha, et al., 2017]	[Horawalavithana, et al., 2021]	
Aim: To understand interplay of users on Twitter & people present on-ground Findings: Coordination in tweets	Aim: To find relation between Twitter mood and referendum outcome Findings: Twitter can be a good	Aim: To study internal and external factors of influence Findings: Anti-Maduro campaign was led by media, Pro-Maduro	

Research Gaps

- Protests are morally unique, each one imposing a different origin
 - Awareness of political and moral values in the country of origin
 - Understanding the narratives such as grievances comes unique to a protest
 - Unsupervised setting as labels might not be present

• Limited analysis present on protests in developing countries with a robust democratic system.

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Research Focus



The Pursuit of Being Heard: An Unsupervised Approach to Narrative Detection in Online Protest

Accepted at ASONAM, 2022



Motivation

To decipher various narratives shared during an online protest to understand people's perceptions







CAA: Allows the illegal immigrants who have faced religious persecution in Afghanistan, Bangladesh, or Pakistan to seek citizenship in India.

Farmers Bill: Introduces 3 laws regarding the trade and laws for Indian farmers. Farmers worried that the 3 laws would result in the abolishment of the minimum support price (MSP) Police, Crime, Sentencing, and Courts Bill (PCSC): Introduces New police powers and reviewed the present rules around crime and protests in England and Wales. RQ 1: What are the different narratives present in a protest?

RQ 2: What are the most prominent narratives present within a protest?

RQ3: Are there any converging narratives across protests?

Contribution: A comparative analysis of tweet clusters in 3 protests around government policy bills, we contribute novel insights about narratives shared during an online protest.

Definitions





Protest	Timeline of Data collection	#Tweets	#Users
САА	Dec 07, 2019 - Feb 27, 2020	11, 350, 276	931, 175
FP	Mar 31, 2021 - Aug 13, 2021	1, 509, 703	160, 286
КТВ	Jan 14, 2022 - Jan 26, 2022	280, 549	73,666

Table 5: Data statistics for unsupervised narrative detection framework.

Methodology



Duplicate Tweets



RQ 1: What are the different narratives present in a protest?



Analysis

Protest	Narrative	Unique Tweets	#Tweets	#Users	Example
	Questioning	13,380	2, 387, 533	278, 184	The police showed patience and did not shoot. Who fired at 56 policemen in Lucknow? Those who are saying that they do not have any paper, are they who are the end? Listen to the story of Pakistani Hindu.
CAA	Skepticism	15,274	3,911,679	466, 139	Thousands on the street in support of CAA! I was not expecting this from Bhubaneshwar
	CTA	865	154,926	72,415	What ever way is there we oppose poisonous $\#\mathrm{CAA}$ Rangoli is our tool
	OGA	647	98,221	48,276	The demonstration was held today at the Valluvar Fort in Chennai on behalf of the Tamil National Party and the Tamil National Alliance. Urged to withdraw the Citizenship Act
	СТА	6,287	13,734	464	Through violence, haarsh weather, beatings, & amp; Deaths of OurThers and Sisters, We Stand Tall And Adud! We Will Not Back Up Down Till Farm Laws ARE Repealed. #300deathsatProtest The war continues the war continues
FP	CTA-AP	845	26, 897	9,470	We want humanity in our country We want a government who serve for nation/people not for corporations No more BJP
	OGA	683	66, 660	2,538	Watch- On #HolikaDahan, Farmers in Rajasthan #BurnFarmLawsOnHoli amidst slogans for 300+ who have died in #FarmersProtest.
	OGA	742	20, 557	9,431	Don't worry we are no longer being gaslighted @BorisJohnson @Conservatives @sajidjavid no trial needed you are as bad as each others. Lie after lie af- ter lie #BorisJohnsonMustGo #ToriesDevoidOfShame #ToriesUnfitToGovern
КТВ	СТА	2,958	178, 499	56,079	The government are stripping away our fundamental rights with the #PolicingBill. It would: - Ban noisy protests - Criminalise the GRT community - Increase stop search powers - Jail protest organisers for up to 10 years. Join us at protests tomorrow to #KillTheBill



RQ 2: What are the most prominent narratives present within a protest?



CAA: **Skepticism** and **Questioning** in CAA reveal the contention in the online social media about the Act



FP: Protest was more in harmony with opposing the bill, with narratives formed majorly towards **CTA** and **OGA**



KTB: CTA was most prominent narrative in the protest



Protest	Narra-	Total	Tweet	Retweet
	\mathbf{tive}	Tweets		
	CTA	154,926	2,926	152,000
CAA	OGA	98,221	1,580	96,641
	CTA	40,631	925	39,706
FP	OGA	66, 660	879	65,781
	CTA	178,499	4,546	173,953
KTB	OGA	20,557	868	19,689

 Table 7: Converging narratives across protests



- Across government policy-induced online protests in India and the United Kingdom, we found familiar mass mobilization narratives across protests.
 - On-ground activities cluster
 - Call-to-action cluster
- We found protest-centric narratives clusters together in all protests
- Call-to-action is the most dominant cluster among protests

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Research Focus



Truth and Travesty Intertwined: A Case Study of #SSR Counterpublic Campaign

Accepted at FOSINT-SI, ASONAM 2021



#SushantSinghRajput





Urban Dictionary @urbandictionary

Replying to @itsSristi

SSRians: SSRians are fans of the actor Sushant Singh Rajput. They... ssrians.urbanup.com/15832257

SSRians

SSRians are fans of the actor Sushant Singh Rajput. They are normally termed as 'warriors' for their dedication to demand justice for the actor who passed away in mysterious circumstances. They have taken an "oath" to hold the legacy of the actor as he was known for his kindness, thoughts and values. As per SSRians, Sushant is an emotion.

Person 1: Bro, why are they even trying? They should just give up. Person 2: No bro, they are SSRians, and warriors never give up.



define.php?term=SSRians&defid=15832257

Aim: To study the strategies adopted by *counterpublics* to conduct protests

What are counterpublics?

Counterpublics are defined as marginalized communities that distribute messages to diverse social groups, raise awareness, and challenge dominant narratives. [Jackson and Banaszczyk, 2016]

Research Questions:

RQ1: What is the organizational structure of the social media counterpublic campaign around the death of Singh Rajput (SSR)?

RQ2: How did hashtag-based storytelling evolve during the counterpublic campaign?

RQ3: How did the campaign activists with different perspectives achieve issue alignment on the topic?
#SushantSinghRajput: Methodology

The Logic of Connective Action: Today's issue and cause networks are relatively **de-centered** (constituted by multiple organizations and many direct and cyberactivists), distributed, or flattened organizationally.



#SushantSinghRajput: Twitter Dataset

Total Tweets	1,027,213	Narrative	Hashtag Variants	#ofTweets
Original Tweets	76,781	#candleforssr	#candleforssr , #candle4ssr, #candleforsushant,	543.89
Retweets	950,432	-	#candle4sushant, #candles4s	
Total Users	67,822	#justiceforssr	#justiceforsushantsinghrajput, #ssrkoinsaafdo, #arrestculpritsofssr	11,622
Duration of Data collection	July 17, 2020, to October 21, 2020 (102 days)	#sushantsingh rajput	#sushantsinghrajpoot, #sushantinourheartsforever, #ssrians, #sushanthsinghra	20,48
Table 1: Data statistics		#bollywood / #media	#akshaykumar, #salmankhan, #kanganaranaut, #bollywoodpakisilink, #rheachakraborty, #ankitalokhande, #boycottkhans	4,064
		#cbiforssr	#cbienquiryforsushantsinghrajput, #cbiivestigationforsushant, #cbicantbedeniedforssr, #cbienquiryforssr	1,904
		Table 2 [.] with Hashtag	buckets. Buckets created with mutually exclusive occurrence of bash	tags as p 29

resent in the dataset. Variants of hashtags identified manually.

#SushantSinghRajput:Methodology



Three Mechanisms Underlying an emergent Connective-action Campaign

RQ1: What is the organizational structure of the social media counterpublic campaign around the death of Singh Rajput (SSR)?



#SushantSinghRajput: Analysis

Retweet Network: 79,170 nodes (users) and 490,910 directed and weighted edges (retweets)

Network density	0.000078	Sparse network (low value)
Average In-degree / Out-degree centrality	7.83	Average connection between activists for rt / being rt is equal
Average Clustering Coefficient	0.060	Activists are not well connected (very low value)
Out-degree centralization	0.29	Existence of users more frequently retweeted than others
Indegree centralization	00.65	Slacktivists

Information Generators (IG):

Work on content creation.

Top 1,000 users with a high out-degree centrality

Information Drivers (ID):

Engage in driving the discussion by retweeting the content. Top **1,000 users** with high in-degree centrality

#SushantSinghRajput: Analysis

	IG	ID	p\$	
Metric Mean		Mean	***	Analysis
Active Days	ve Days 7.65		***	Drivers were more active
# of Followers / # of Followees	8024.8 / 479.54	122.084 / 136.861	***	
Number of Tweets	⁸²² Evide	ence for Logic of	Conne	ective Action
Indegree Centrality	8.37	0.0013	*	
Betweenness Centrality	4.86	1.29	***	Generators are more likely to have a shorter path between two activists
Eigenvector Centrality	0.0012	0.0024	*	Drivers are more actively connected with other active activists

RQ2: How did hashtag-based storytelling evolve during the counterpublic campaign?



#SushantSinghRajput: Analysis



RQ3: How did the campaign activists with different perspectives achieve issue alignment on the topic?



#SushantSinghRajput: Analysis



- CNM algorithm for community detection = Found 6 sub-communities
- Retweet network of top generators and top 10 Information Driver are densely connected
 - Leaderless Information Sharing
- Few nodes are present with centralized sharing structure
 - Presence of organizational structure

Connective Action - Organizational Enabled Networks

#SushantSinghRajput: Analysis

Just	ice	singh, world, justice, protest, digita			
Candle supporting, hope, smile, many, stand					
SupportT tweets, guys, digital, protest, million			Protest	protest, want, world, justice, digital, love, tweets	
Sup	oortC	comment, below, million, reach, pos			
Med	Issue a	lignment present between sub-commu	initie	es - Different	sub-communities were d),
	Ionnet	l, but all discussed similar narratives.			
	Ionnec	l, but all discussed similar narratives.			
Sup	port	d, but all discussed similar narratives. dead, watching, where, living, duty, suicide		Nepotism	money, huge, production, extract, houses, handle
Sup	port	d, but all discussed similar narratives. dead, watching, where, living, duty, suicide		Nepotism	money, huge, production, extract, houses, handle

Campaign showed evidence for Logic of Connective Action through descriptive statistics

Narratives present in the Hashtag buckets were majorly talking about Justice

Retweet Network shows Organizational Enabled Connective Action Networks

Different sub-communities were formed, but all discussed similar narratives

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Research Focus



A Tale of Two Sides: Study of Protesters and Counter-protesters on #CitizenshipAmendmentAct Campaign on Twitter

Accepted at ACM WebSci, 2022



Protesters: social media users who reject the Act

Counter-protesters: social media users who support the Act

Inauthentic User: Bots, Suspended and Deleted users



RQ1: How protesters & counter-protesters conduct campaign wrt authentic and inauthentic users?

RQ2: What did the users in the discourse discuss about?

RQ3: What was the network structure of the users?

#CAA: User Characterization



Ammar Rashed, Mucahid Kutlu, Kareem Darwish, Tamer Elsayed, and Cansın Bayrak. 2021. Embeddings-Based Clustering for Target Specific Stances: The Case of a Polarized Turkey. Proceedings of the International AAAI Conference on Web and Social Media 15, 1 (May 2021),

	Suspended Users	Deleted User
Counter-protesters	8655 (62.39%)	7440 (56.16%)
Protesters	5216 (37.60%)	5806 (43.83%)

Table 8: Distribution of suspended and deleted accounts in protesters and counter-protesters in the dataset.

Total Users	53, 227
Suspended Users	13, 871
Deleted Users	13, 246
Bots (CAP score>=0.8)	4, 664
Authentic Users	21, 446

Table 9: Distribution of authentic and inauthentic users in dataset.

#CAA: User Characterization



#CAA: User Characterization



(Bot score >=0.5), Suspended Users, Deleted Users, Authentic Users

Inauthentic users on both sides

#CAA: Online (Twitter) Vs. offline (on-ground) activity)



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#CAA: Content Characterization



#CAA: Network Characterization



Follower-followee network of the protesters and counter-protesters.

Follow network was obtained for 226,412 users

- 5,000 followers were retrieved from Twitter API for each user
- Directed edge from user x to user y exists if x follows y

Finding:

- Presence of homophily in the network
- Low betweenness centrality: users don't appear in many shortest paths
- High Eigenvector centrality : users are more likely to be connected to influential users.

#CAA: Network Characterization

	Authent	ic Users	Inauthentic		
Metric	Mean	SD	Mean	SD	p
Number of Followers	22.91	43.84	27.57	46.49	$* * * (5.5e^{-32})$
Number of Followees	22.43	61.00	29.70	72.50	$* * * (9.07e^{-09})$
Eigenvector Centrality	0.002	0.006	0.003	0.007	$* * * (2.55e^{-26})$
Betweeness Centrality	0.00011	0.0004	0.0001	0.00038	** (0.01)

Table 10: Network descriptive statistics for the authentic and bot accounts who participated in the discourse. *p < 0.05, ** p < 0.01,*** p < 0.001 analyzed using unpaired Mann–Whitney U test. SD stands for Standard Deviation.

- Inauthentic users tend to have a higher follower and followee than the authentic counterparts.

Eigenvector centrality shows a significant difference among the authentic and inauthentic users,

- Bot being prominent in both the measures.
- Inauthentic users are more reachable than authentic users and have a stronger influence in the network as compared to the authentic users.

#CAA: Summary

- We were able to cluster stance in low-resource & code-mixed setting
- Content-wise inauthentic actors post similar content to authentic counter-parts
- Social media users show homophily, which paves way for inauthentic actors to become part of protest
- Network-based methods are most effective to distinguish between authentic and inauthentic users

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• Summary & Future Work

- Timeline
- Publications
- References

Conclusion

We leverage connective-action framework to understand strategies adopted by counterpublics to conduct #ShushantSinghRajput protests.

- Different sub-communities were formed, but all discussed similar narratives
- Retweet Network shows **Organizational Enabled** Connective Action Networks

We develop an unsupervised narrative detection model across protests

• Call-to-Action are most dominant narrative across protests

We identify inauthentic actors involved in protest-conduct

• Network-based method were found to be most effective indicator of Inauthetic actors during protests.

Future Work

- Foster Secure society from online threats
 - Use network-based method for better understanding of Inauthentic actors
 - Identification of Coordination during protest

- Foster Secure society from offline threats
 - Detection of On-ground Protest Activity During Protests

Timeline

		2022		2023					
S.No	Task	Oct	Nov	Dec	Jan	Feb	Mar		July
1	Co-ordination Detection across campaigns								
1.1	Build a co-ordination detection algorithm				~				
1.3	Result assesment								
1.4	Paper Submission								
2	Prediction of Offline Protest activities								
2.1	Creation of dataset from available protest								
2.2	Build a prediction classifier for protest prediction								
2.4	Paper Submission								
3	Journal Writing								
4	Thesis Writing								
5	Defense								

Publications

Neha, K., Mohan, T., Buduru, A. B., & Kumaraguru, P. (2021, November). Truth and travesty intertwined: a case study of #SSR counterpublic campaign. In Proceedings of the 2021 IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining (pp. 643-648).

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Neha, K., Agrawal, V., Buduru, A. B., ... & Kumaraguru, P. The Pursuit of Being Heard: An Unsupervised Approach to Narrative Detection in Online Protest. In Proceedings of the 2022 IEEE/ACM International Conference on Advances in Social Network Analysis and Mining.

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Research Gaps

- Protests are usually morollay unique, each one imposing a different origin
 - Understanding the narratives such as grievances comes unique to a protest
 - Unsupervised setting as labels might not be present
- Low resource language based analysis limited:
 - English -Hindi only considered from Indian context
- Interplay of different kind of inauthentic activities during protest-like situation in under-explored





- Understand Protest Objective
- Tackle Online Threats
- Tackle Offline Sabotage



Research Objective I: Extracting actionable and concise knowledge from the online ecosystem



Information Loop

"Confirmation bias"

 Feedback loop intensifies during protest (or movement)

 We can leverage Social media to demystify opinions shared during the protest

Research Objective II: counter threats that pollute the online and offline ecosystem



- Socio-technical convergence unveils unparalleled opportunities to manipulate users

- Involvement of hate content
- propaganda,
- paid trolls,
- inauthentic users (bots / coordinated users)
- Users show tendency to adjust interests,
 cosystem opinions, and actions according to the recent observations

"Selective exposure mechanism"

Extracting actionable and concise knowledge from the online ecosystem



- The dynamics of protest recruitment through an online network.[González-Bailón, Sandra, et al., 2011]
 - Trigger: Political response on financial crisis in Spain (Policy Reform demanded)
 - Alias: 15-M, Indignados Movement
 - **Target:** Organize a mass mobilization on May 15
 - Research Question: To identify recruitment pattern in the protest
 - **Methodology:** Network study on Retweet and Follow network
 - **Finding:** Exposure from multiple sources are more important factor in user recruitment than multiple exposure from a source

(How) will the revolution be retweeted? Information diffusion and the 2011 Egyptian uprising. [Starbird, Kate, and Leysia Palen., 2012]

- **Trigger:** To overthrow Egyptian president Mubarak (Policy Reform demanded)
- Alias: Arab Spring
- **Research Question:** To understand the interplay of users on the Twitter-verse and people present on-ground
- Methodology: Network study on Retweet network
- **Finding:** Co-ordination was witnessed for similar tweet content from users who participated, reporting of on-ground activity by local users



Evolution of online user behavior during a social upheaval.[Varol, Onur, et al., 2014]

- **Trigger:** Destruction of Gezi park for luxurious residence and malls
- **Research Question:** How did the topics of protest evolve during the time of protest
- Methodology: Quantitative analysis

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• **Findings:** Online behaviour of users were greatly affected by the ongoing activity. The event attracted worldwide attention, analyzed through geo-spatial data.

It is not only about grievances: emotional dynamics in social media during the Brazilian protests. [Costa, Jean, et al., 2015]

- Trigger: Raised prices of public transport, political corruption and police brutality on protesters
- **Research Question:** What are the emotional dynamics of activists during the protest
- **Methodology:** Trained a SVM classifier to identify protest-related tweets. Trained a Multinomial Naive Bayes classifier for manually annotated positive/negative/neutral sentiments.
- **Finding:** Analysis of emotions on protest tweets showed presence of both positive and negative sentiments





- Research Question: To find relation between Twitter mood and referendum outcome and most influential users in pro- and anti- stance
- Data: 4.5M tweets, from almost 1M around Brexit from May 12, 2016 to June 24, 2016, poll data
- Methodology: Sentiment based stance-classification, h-index for Influence
- **Findings:** Opinion polls shows similar results to opinion mining on Twitter (Twitter can be a good proxy for opinion), Leave group is found to be considerably more active than Remain

Examining Protest as An Intervention to Reduce Online Prejudice: A Case Study of Prejudice Against Immigrants[Wei, Kai, Yu-Ru Lin, and Muheng Yan., 2020]

- **Research Question:** Can we reduce prejudice towards a community using protest as as intervention
- Data: Tweets collected from control focus group before and after immigrants based protest
- Methodology: XGBoost model with best accuracy
- **Results:** Protests leads to both positive and negative change in people's prejudice over immigrants

Drivers of Polarized Discussions on Twitter during Venezuela Political Crisis [Horawalavithana, Sameera, Kin Wai Ng, and Adriana lamnitchi., 2021]

- **Research Question:** How does internal and external factors influence Venezuela political crisis
- Data: Twitter data, ACLED and GDELT dataset
- Methodology: Stance classification (BERT), clustering technique to guage influence
- **Results:** Anti-Maduro campaign was led by media, Pro-Maduro campaign was led by politicians. anti-Maduro community related more with ACLED and pro- with GDELT

Extracting actionable and concise knowled from the online ecosystem

Counter threats that pollute the online and offline ecosystem

Predicting Online Extremism, Content Adopters, and Interaction Reciprocity [Ferrara, Emilio, et al., 2016]

- **Research Question:** Can we predict **extremist ISIS groups** in Twitter? Can we predict user consumption and reciprocity to extremist contents?
- **Dataset:** 25,538 pre-identified ISIS accounts with 3,395,901 tweets generated. 29,193,267 tweets by random 25K users from followers of ISIS accounts.
- Methodology: Logistic Regression & Random Forest (over greedy selection of tweet and user features)
- **Findings:** Prediction capabilities for feature based model for extremist groups, their exposed users and adopters.

Who falls for online political manipulation? [Badawy, Adam, Kristina Lerman, and Emilio Ferrara., 2019]

- **Research Question:** Can we predict who falls for online manipulation?
- Data: Russian Troll user accounts, 43M tweets from 5.7M users between Sep 16 & Nov 9, 2016
- Methodology: Feature extraction with user-based, LIWC and political ideology. Gradient boosting
- **Findings:** Political Ideology is the most important feature for finding who Russian trolls can manipulate

The spread of propaganda by coordinated communities on social media [Hristakieva, Kristina, et al., 2022]

- **Research Question:** To study spread of propaganda through co-ordinated communities during 2019 UK elections
- Data: 11M tweets by 1M users around UK 2019 elections
- Methodology: Network based community detection, Proppy for propaganda detection
- **Results:** Distinct party based communities could be identified, Larger communities tweeted less original content as compared to smaller communities, Different degrees of propaganda found in co-ordinated communities.

Research Gaps

- Protests are morally unique, each one imposing a different origin
 - Awareness of political and moral values in the country of origin
 - Understanding the narratives such as grievances comes unique to a protest
 - Unsupervised setting as labels might not be present

- Low resource language based analysis are limited
 - English -Hindi only considered from Indian context

• Interplay of different kind of inauthentic activities during protest-like situation in under-explored

#CAA : Motivation

- Citizenship Amendment Act 2019 (CAA) led to
 - a divergent discourse on social media
 - offline protests at different parts of the country
- authenticity of tweets online manipulation
- interplay with offline-counterpart
- opinion mining







Radar plot to show the 4 set of users and their plutchik-8 emotions

Two new direction of Social Movement Research includes:

- Movement-Media Relationship
- Social Movement Strategy

#SushantSinghRajput: Literature Survey

The Development of Connective Action during Social Movements on Social Media [Mirbabaie, Milad, et al., 2021]

- A case study of communication on Twitter of #metoo movement between 2017 and 2019
- A comparative study of various Influential users in the campaign

The Development of Connective Action during Social Movements on Social Media

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In recent years, the development of information communication technologies, such as social media, has changed the way people communicate and engage in social movements. While conventional movements were fought in the streets, social media has enabled movements to take place online. In this article, we aim to investigate the role of social media during social movements that evolve online under the scope of the theory of connective action. Specifically, we examined Twitter communication during the #metoo debate. To this end, we examined two datasets (2017 and 2019) and combined methods from social media analytics to identify influential users, with a manual content analysis to classify influential users into roles. Likewise, a manual classification found distinct communication categories. Through regression analysis, we were able to gage the individual contribution of these categories and roles based on the retweet probability. This study introduces for the first time the terms of connective action starters and maintainers.

 $\texttt{CCS Concepts:} \bullet \textbf{Applied computing} \rightarrow \textbf{Sociology}; \bullet \textbf{Information systems};$

Additional Key Words and Phrases: Connective action, social media, social movements, Twitter

ACM Reference format:

Milad Mirbabaie, Felix Brünker, Magdalena Wischnewski, and Judith Meinert. 2020. The Development of Connective Action during Social Movements on Social Media. ACM Trans. Soc. Comput. 4, 1, Article 3 (April 2021), 21 pages. https://doi.org/10.1145/3446981

#SushantSinghRajput: Analysis

RQ1: What is the organizational structure of the social media counterpublic campaign around the death of

Singh Rajput (SSR)?

Metric	Top Information Generator		Top Information Drivers	
	Mean	SD	Mean	SD
Active Days	7.65	20.19	12.05	24.94
# of Followers / # of Followees	8024.8 / 479.54	107137.7 / 3278.9	122.084 / 136.861	351.87 / 336.64
Number of Tweets	8225.29	22076.6	9204.433	14673.42
Indegree Centrality	8.37	0.0002	0.0013	0.0052
Betweenness Centrality	4.86	1.50	1.29	0.00013
Closeness Centrality	0.003	0.0012	0.01	0.016
Eigenvector Centrality	0.0012	0.003	0.0024	0.0097

#SushantSinghRajput: Analysis



#justice4SSR

#candle4SSR

#CBI4SSR

#Bollywood

- Narratives present in the Hashtag buckets were majorly talking about Justice
- #Bollywood bucket mocks actors and despises nepotism

#SushantSinghRajput: Analysis

RQ2: How did hashtag-based storytelling evolve during the counterpublic campaign?

Narrative	Hashtag Variants	#ofTweets
#candleforssr	#candleforssr , #candle4ssr, #candleforsushant, #candle4sushant, #candles4s	543,89
#justiceforssr	#justiceforsushantsinghrajput, #ssrkoinsaafdo, #arrestculpritsofssr	11,622
#sushantsinghrajput	#sushantsinghrajpoot, #sushantinourheartsforever, #ssrians, #sushanthsinghra	20,48
#bollywood / #media	#akshaykumar, #salmankhan, #kanganaranaut, #bollywoodpakisilink, #rheachakraborty, #ankitalokhande, #boycottkhans	4,064
#cbiforssr	#cbienquiryforsushantsinghrajput, #cbiivestigationforsushant, #cbicantbedeniedforssr, #cbienquiryforssr	1,904

Table 3: with Hashtag buckets. Buckets created with mutually exclusive occurrence of hashtags as present in the dataset. Variants of hashtags identified manually.

- A. Is there any formation of sub-community within the network
 - a. Are these sub-communities share different narratives?
- CNM algorithm for community detection = Found 6 sub-communities



#SushantSinghRajput: Methodology

The Logic of Collective Action: When people get involved in collaboration with one another to achieve a common goal [Marwell and Oliver, 1993]

Collective Action

Strong organizational coordination (organization present in foreground)

Social technologies used by organization for participation & co-ordination

Communication content centers on collective action frames

Example: G20 London Summit protests

<u>Connective Action</u> (Self Organized)

Little or no organizational coordination

Large-scale personal access to social technologies

Communication content centers on emergent inclusive action frames

Example: Anti-austerity movement in Spain

#CAA: Content Characterization



100

#CAA: Data Collection

Protest	#CABProtest, #IndiaRejectsCAB, #Hin-			
#tags	dusAgainstCAB, #SCSTOBC_Against_CAB,			
	#IndiansAgainstCAB, #IndiaAgainst-			
	CAA, #CAA_NRC_Protest, #CAAprotests,			
	#CAA_NRCProtests			
Counter-	#IsupportCAB2019, #HindusSupportCAB, #In-			
protest	diaSupportsCAB, #ISupportCAA_NRC, #Mus-			
#tags	limsWithNRC, #CAA_NRC_support, #ISupport-			
	CAA			
Ambiguous	#CAB, #CABBill, #cab, #CAB2019, #Citizen-			
#tags	shipAmendmentAct, #caa, #CABPolitics, #Citi-			
	zenshipAmmendmentAct			

Table 7: Hashtag used for data collection in CAA

Duration: December 07, 2019, & February 27, 2020

Tweets: 11,350,276

Unique Tweets: 1,543,805

Retweets: 9,806,471

Users: 931,175

Date	Tweets	On-ground activities	
December 11	158, 134.33	CAB passed by the upper house	
		of parliament [19].	
December 16	376, 788.00	Student protests in Delhi [71].	
December 17	379, 699.00	Protest turns violent in Uttar	
		Pradesh, Delhi, West Bengal and	
		relaxed in Guwhati [9, 34].	
December 20	436, 616.33	Protesters turn violent with	
		stone pelting in Gujarat, police	
		vehicle burnt in UP, journalists	
		detained in Kerala [4].	
December 22	783, 662.33	Protesters arrested, Women	
		protest in Guwhati [59].	
December 24	503, 779.00	Protesters die due to bullet in-	
		jury in UP [2].	
December 30	276, 724.33	Counter-protest rally in Mad-	
		hya Pradesh, Indian-American	
		protests in Washington [3, 33].	
December 31	312569.66	Nation wide protests [5, 35].	

The Citizenship Amendment , 2019 (CAA 2019) allowed minority communities to apply for citizenship in India Caveat:

- Migrants (minorities in their country) who have faced *religious persecution* in Afghanistan, Bangladesh or Pakistan
- Migrants who entered India on or before December 31, 2014



CAA: **Skepticism** and **Questioning** in CAA reveal the contention in the online social media about the Act

FP: Protest was more in harmony with opposing the bill, with narratives formed majorly towards CTA and OGA

KTB: CTA was most prominent narrative in the protest

RQ 1: What are the different narratives present in a protest?







Converging narratives across protests

Protest	Narra-	Total	Tweet	Retweet
	\mathbf{tive}	Tweets		
	CTA	154,926	2,926	152,000
CAA	OGA	98,221	1,580	96,641
	CTA	40,631	925	39,706
FP	OGA	66, 660	879	65,781
	CTA	178,499	4,546	173,953
KTB	OGA	20,557	868	19,689

Table 6: Converging narratives across protests

#SushantSinghRajput: Literature Survey



The Development of Connective Action during Social Movements on Social Media

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In recent years, the development of information communication technologies, such as social media, has changed the way people communicate and engage in social movements. While conventional movements were fought in the streets, social media has enabled movements to take place online. In this article, we aim to investigate the role of social media during social movements that evolve online under the scope of the theory of connective action. Specifically, we examined Twitter communication during the #metoo debate. To this end, we examined two datasets (2017 and 2019) and combined methods from social media analytics to literific information between the surface the information during the street interval to the information of the second secon Hashtag activism and connective action: A case study of #HongKongPoliceBrutality [Wang, Rong, and Alvin Zhou., 2021]

- A case study of communication on #HongKongPoliceBrutality (2019-2020)
- Mix of centralized and decentralized sharing found.

The Development of Connective Action during Social Movements on Social Media [Mirbabaie, Milad, et al., 2021]

- A case study of communication on Twitter of #metoo movement between 2017 and 2019
- A comparative study of various Influential users in the campaign