

NORDIS SYMPOSIUM

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Examining the Spreading Virality of Tweets in Climate Discussions

Yan Xia

Aalto University

Collaborative work with **Ted Chen** and **Mikko Kivelä**



Motivation?

Phenomenon: Polarization in online climate discussions

Activists vs. skeptics

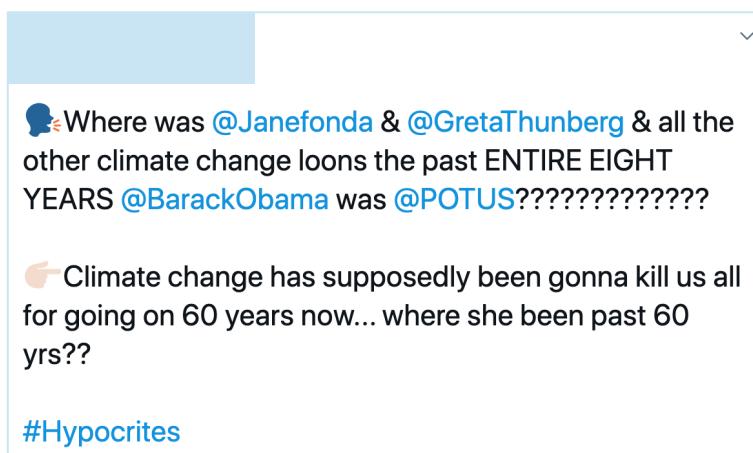
Data: Twitter climate discussions

2019 Nobel Peace Prize

Greta Thunberg

Lens: Within-group item spreading (retweeting)

RQ: What types of tweets go viral in each group?





3. Type: How to quantify? 2. Virality: How to measure?

What types of tweets go viral in each group?

1. Groups: How to identify?

Tweet characteristics $\stackrel{?}{\rightarrow}$ Tweet virality

4. Relationship: How to model?

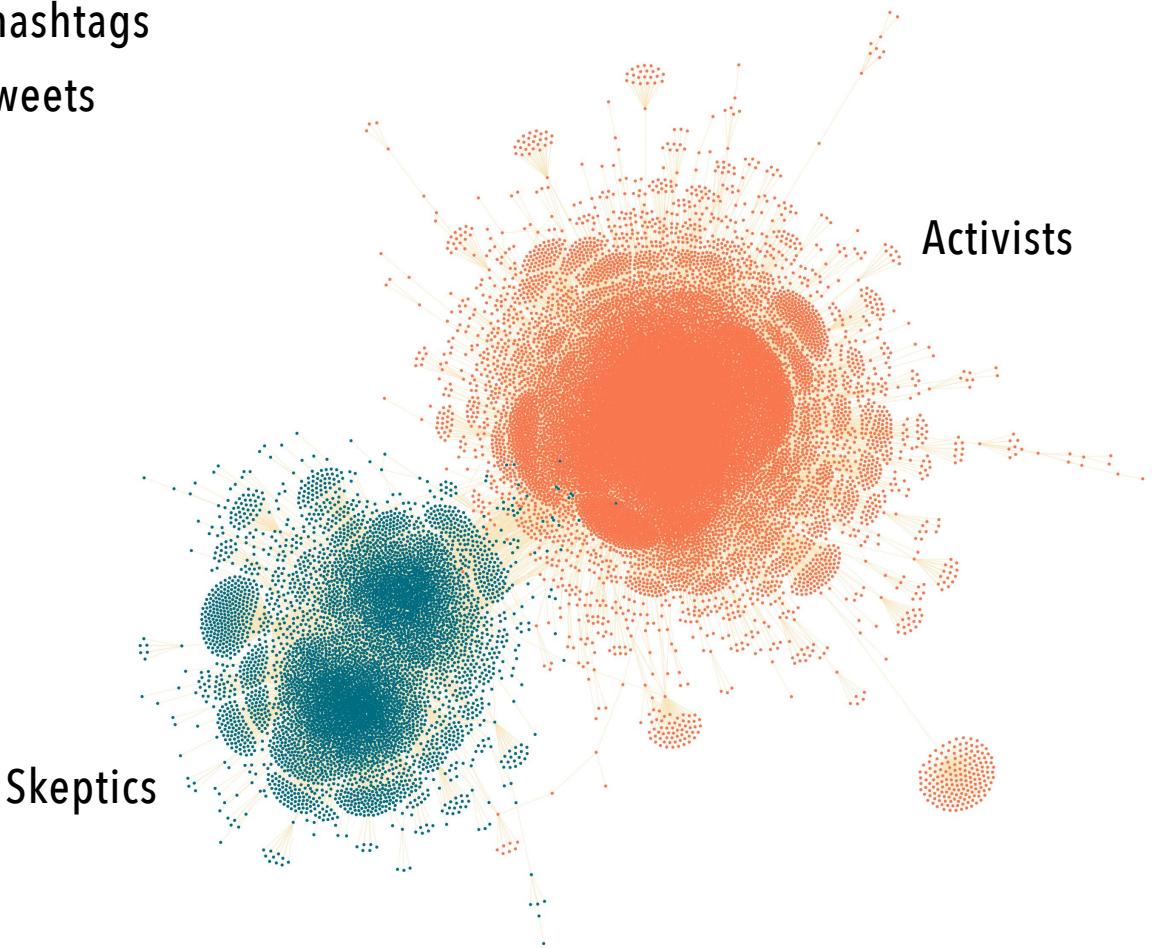


1. Groups: How to identify?

Selected users of "climate"+"crisis"/"hoax" hashtags

Built user retweet network using "climate" tweets

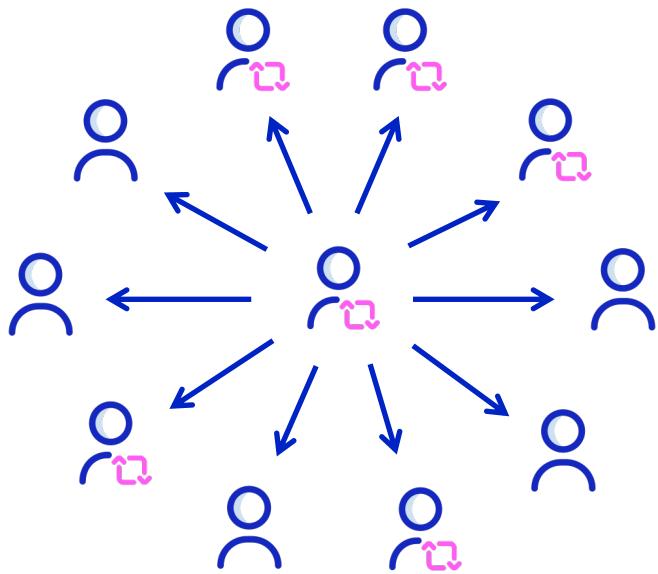
Ran partitioning algorithm (METIS)



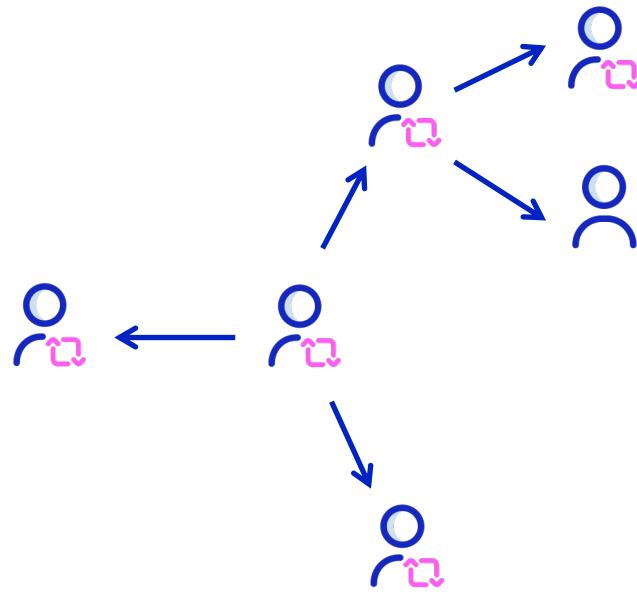


2. Virality: How to measure?

#RT?



#RT=6



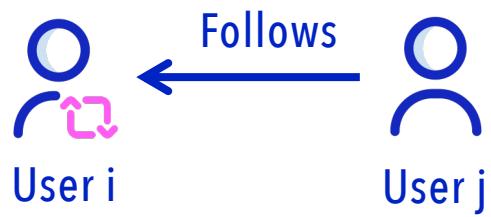
#RT=5

But more viral?



2. Virality: The spreading model

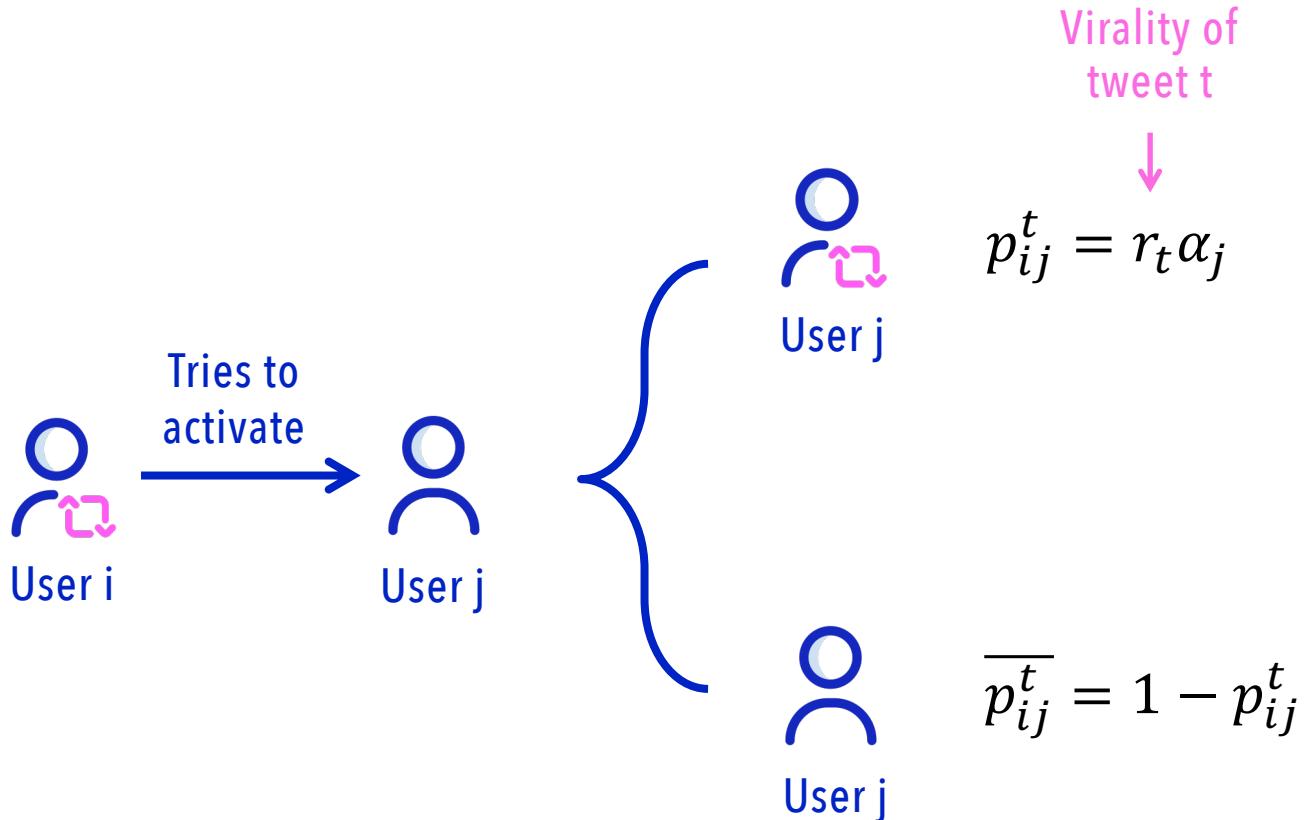
Tweet t.





2. Virality: The spreading model

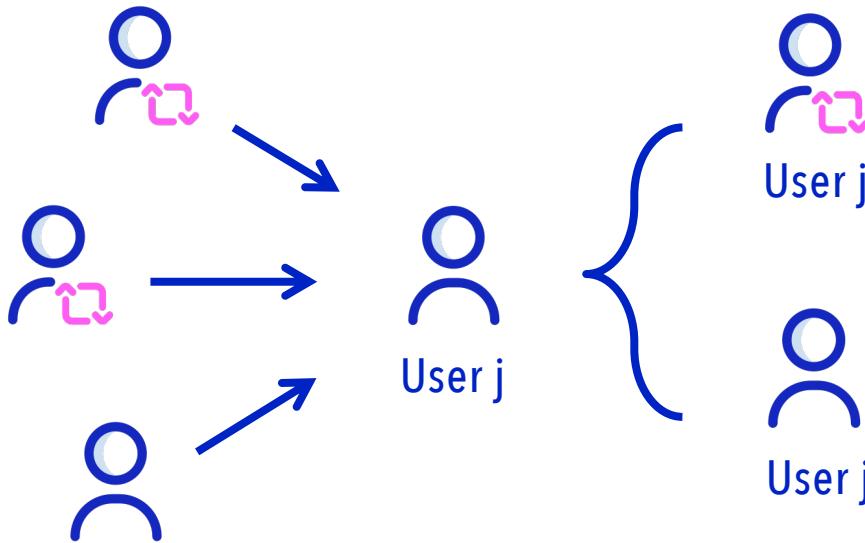
Tweet t.





2. Virality: The spreading model

Tweet t.



Maximize

$$\mathcal{L}(t; r_t) = \prod_{m:m \in S_t^+} \Gamma_m^+(t) \prod_{n \notin S_t^+} \Gamma_n^-(t)$$

$$\Gamma_j^+(t) = 1 - \prod_{i:i \in N_j^{in} \cap S_t^+} (1 - r_t \alpha_i)$$

$$\Gamma_j^-(t) = \prod_{i:i \in N_j^{in} \cap S_t^+} (1 - r_t \alpha_i)$$



3. Type: How to quantify?

Manual binary coding

Coding scheme developed by identifying common themes

Feature	Coding Rule
Universal (Style)	
Mocking	Does the tweet make fun of an entity at its expense? (yes/no)
Incivility	Does the tweet contain uncivil language? (yes/no)
Universal (Content)	
Call to Action	Does the tweet call on others to behave in a certain way? (yes/no)
Ingroup Praise	Does the tweet speak of the ingroup in a positive manner? (yes/no)
Outgroup Criticism	Does the tweet speak of the outgroup in a negative manner? (yes/no)
Science	Does the tweet invoke 'science' or 'facts' as support? (yes/no)
Hashtags*	Machine extracted count of hashtags used in the tweet.
Mentions*	Machine extracted count of users mentioned in the tweet.
Activists	
Solutions	Does the tweet present solutions to addressing climate change? (yes/no)
Movement	Does the tweet emphasise the strength of the pro-climate movement? (yes/no)
Skeptics	
Anti-international	Does the tweet speak negatively of international organisations? (yes/no)
Hypocrisy	Does the tweet claim that supporters are hypocritical or inconsistent? (yes/no)
Conspiracy	Does the tweet claim that climate policy is a front for other agendas? (yes/no)

* Coded 261 tweets from the activist group, 128 tweets from the skeptic group



4. Relationship: How to model?

Explanatory variables

Response variable

Tweet characteristics $\stackrel{?}{\rightarrow}$ Tweet virality

Lasso model

Linear regression model

+

Regularization

(Improved generalizability of model & validity of result interpretations)



Results: What types of tweets go viral in each group?

Activist Group (n=261)	
Explanatory Variable	Predicted Change in Virality (%)
Mocking	0.0
/	/
Call to Action	0.0
Ingroup Praise	0.9
Outgroup Criticism	1.5
Science	-2.7
Movement	12.3
Solution	0.0
	/
	/
	/
	0.5
	1.7
	.3~46.4



Skeptic Group (n=128)	
Explanatory Variable	Predicted Change in Virality (%)
Mocking	0.0
Incivility	16.2
Call to Action	14.5
Ingroup Praise	0.0
Outgroup Criticism	-7.9
Science	0.0
/	/
/	/
Anti-international	0.0
Hypocrisy	10.1
Co	0.0
Ha	Where was @JaneFonda & @GretaThunberg & all the other climate change loons the past ENTIRE EIGHT
M	YEARS @BarackObama was @POTUS???????????????
A	Climate change has supposedly been gonna kill us all for going on 60 years now... where she been past 60 yrs??
	#Hypocrites

Enhancing ingroup ties &
Repulsing outgroup engagement



Exacerbating polarization