



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

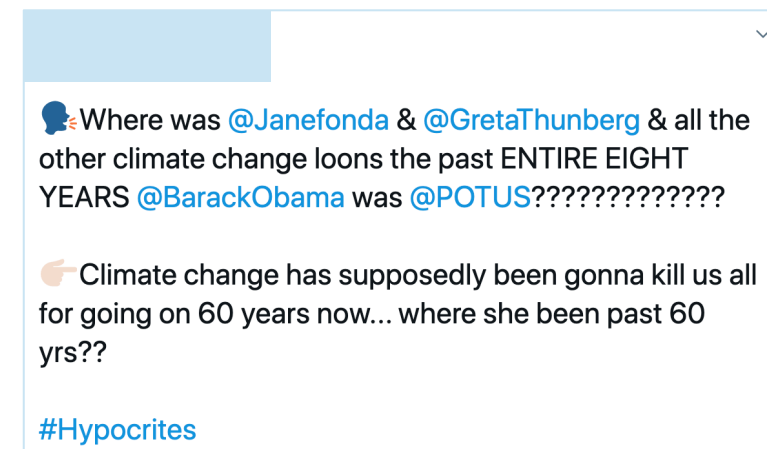
Data: Twitter climate discussions

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 **?** Tweet virality

4. Relationship: How to model?

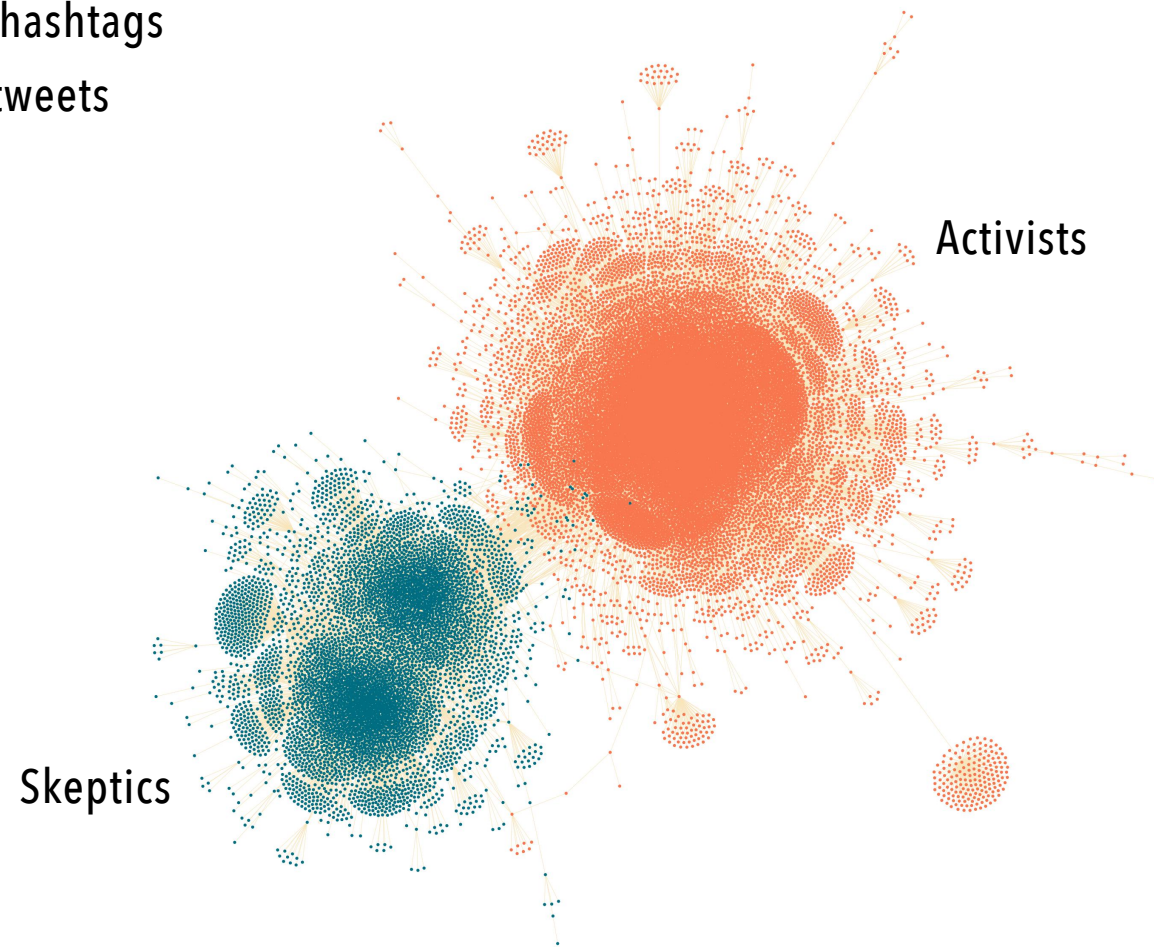


# 1. Groups: How to identify?

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

Built user retweet network using "climate" tweets

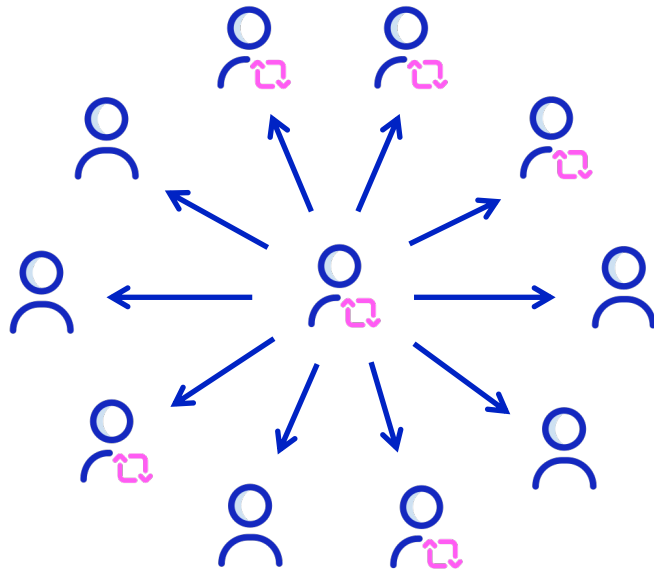
Ran partitioning algorithm (METIS)



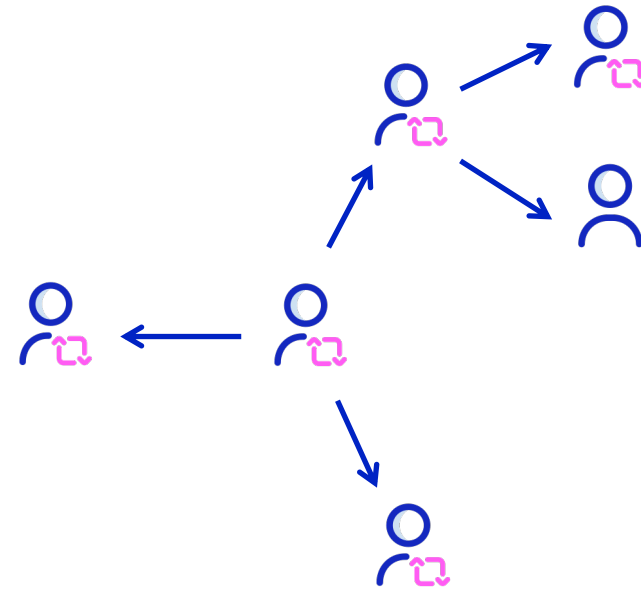


## 2. Virality: How to measure?

#RT?



#RT=6



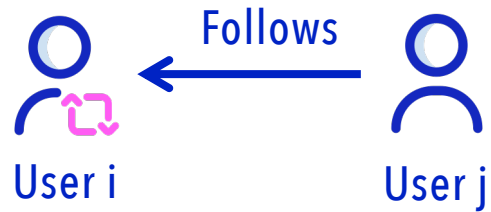
#RT=5

But more viral?



## 2. Virality: The spreading model

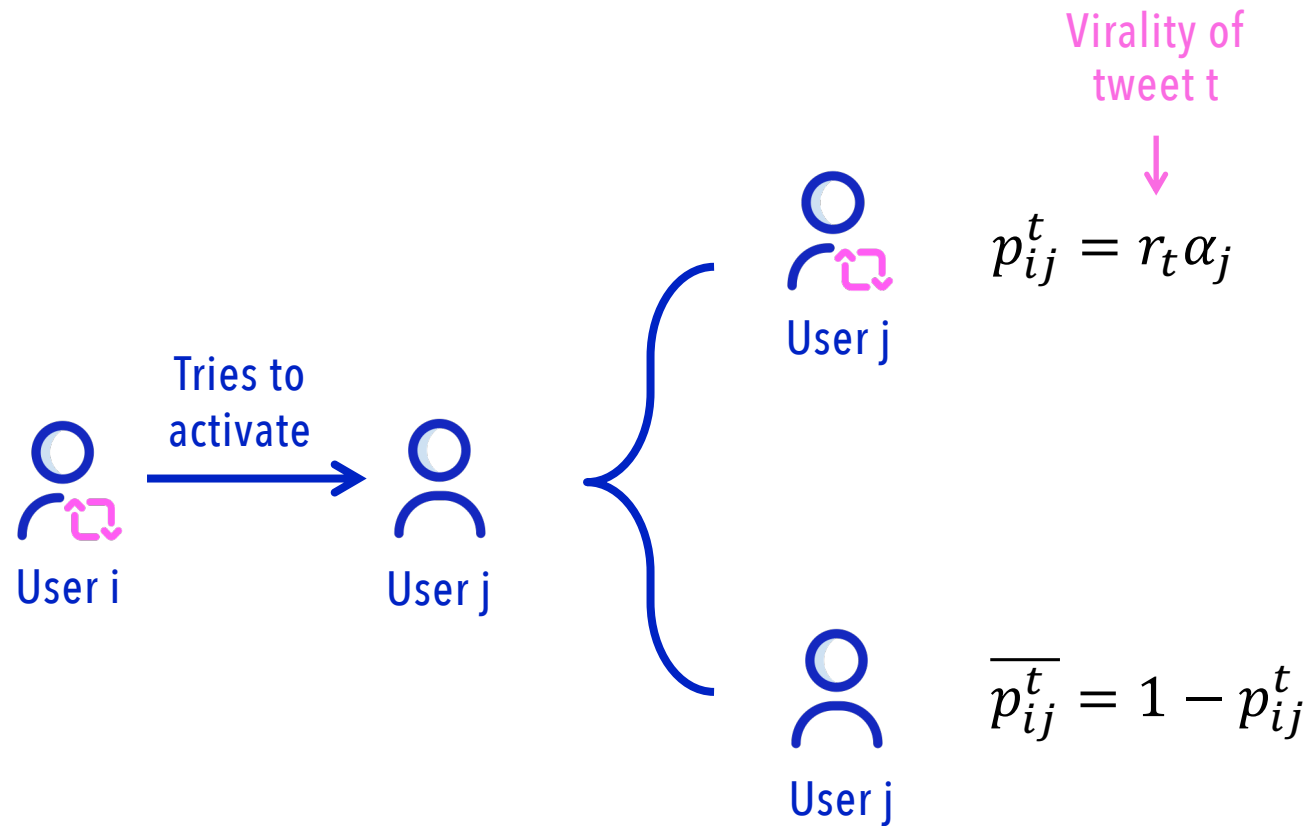
Tweet t.





## 2. Virality: The spreading model

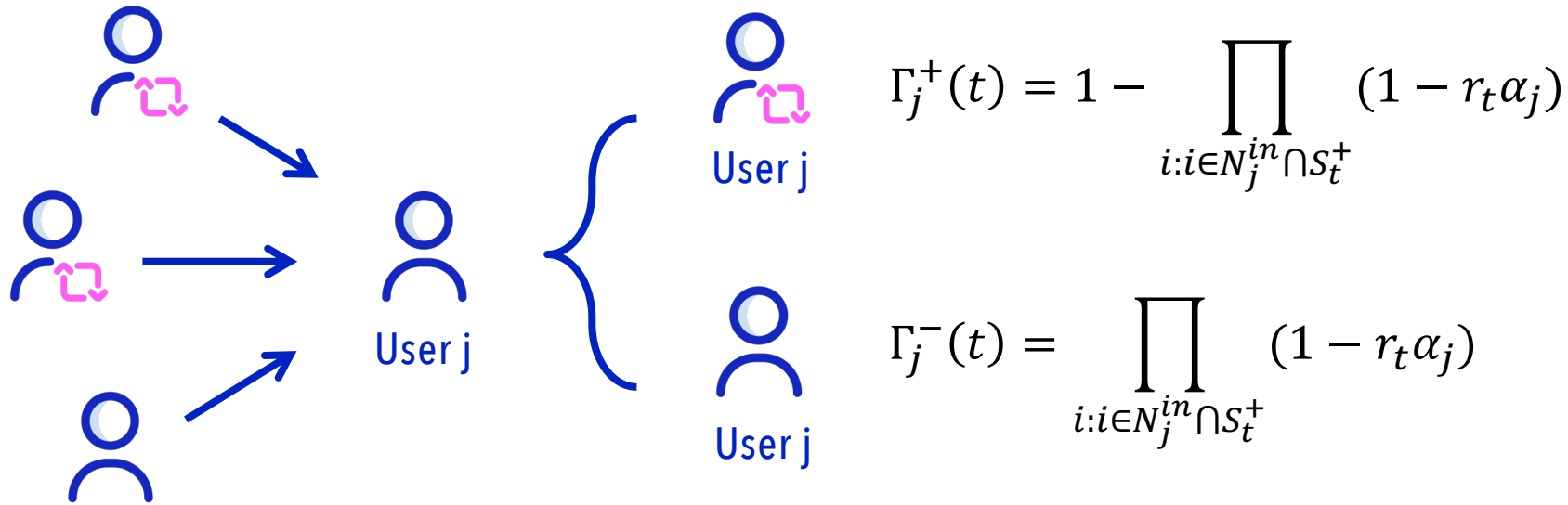
Tweet t.





## 2. Virality: The spreading model

Tweet  $t$ .



Maximize

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





### 3. Type: How to quantify?

#### Manual binary coding

Coding scheme developed by  
identifying common themes

Feature	Coding Rule
<b>Universal (Style)</b>	
Mocking	Does the tweet make fun of an entity at its expense? (yes/no)
Incivility	Does the tweet contain uncivil language? (yes/no)
<b>Universal (Content)</b>	
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.
<b>Activists</b>	
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)
<b>Skeptics</b>	
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

Tweet characteristics  $\xrightarrow{?}$  Tweet virality

Response variable

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
<b>Ingroup Praise</b>	0.9
<b>Outgroup Criticism</b>	1.5
Science	-2.7
<b>Movement</b>	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
<b>Incivility</b>	16.2
<b>Call to Action</b>	14.5
Ingroup Praise	0.0
<b>Outgroup Criticism</b>	-7.9
Science	0.0
/	/
/	/
Anti-international	0.0
<b>Hypocrisy</b>	10.1
Co	0.0

Where was @Janefonda & @GretaThunberg & all the other climate change loons the past ENTIRE EIGHT YEARS @BarackObama was @POTUS??????????????

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