# How **popularity** diffuses?

## Twitter analysis on CHUANG2021 Contestant's popularity

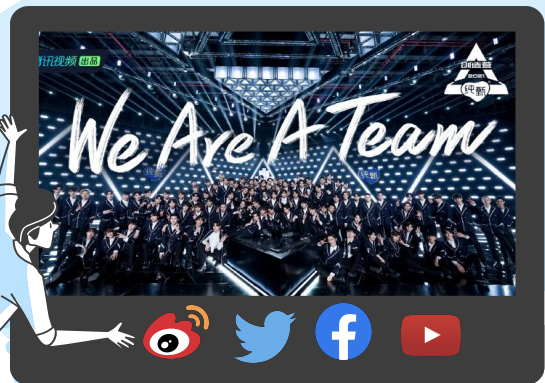Jo Pan, tul02009@temple.edu

# 1. Background

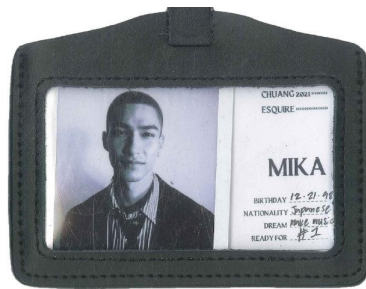Motivation: New buzz-figures appears everyday

Chinese male group survival reality show
Premiered on 02/17/2021
90 trainees

Problem: How new digital influencers' popularity diffuses in social media?

Why this dataset?
- Global influences → accessible data
- Apparent change in popularity
- Short time frame for scrapping

# 1. Related works & contributions

## Related works' datasets

No specific theme



Political figures        Events

## Current popularity measures

- # fans
- # tweets
- Sentiment analysis
  Etc.

## Contributions

My dataset: New digital influencers

👁 Cared by most entertainment agencies and advertising departments.

- Network related measures
- Fan leaders identification
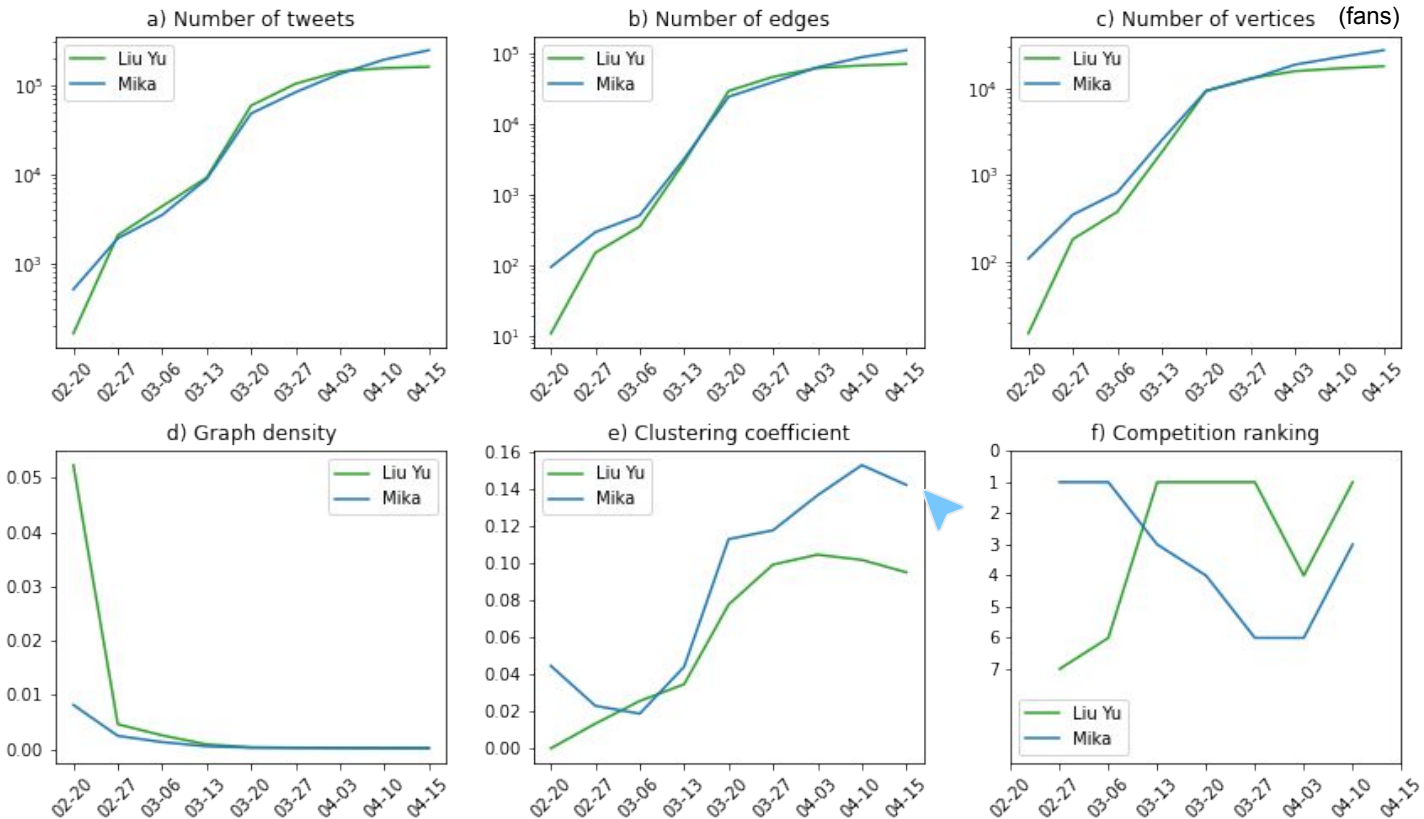
# 2. Data scraping and preprocess

02/17 - 04/15

380K

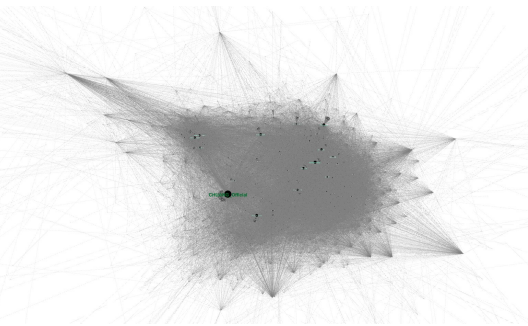| id | date | content | username | keyword | Liu Yu | Mika | mentioned | node | m_node |
|---|---|---|---|---|---|---|---|---|---|
| 13710----- | 2021-03-14 10:32:48+00:00 | RT @CHUANG_Official: #ChuangThemeSong #CHUANG2... | zydea----- | liuyu #CHUANG2021 | True | False | [CHUANG_Official] | 33618 | [33854] |
| 13803----- | 2021-04-09 01:48:25+00:00 | RT @Mika_THOfficial: ชุ้มของมิกะสำหรับงานวันนี้... | bkpmk----- | mika #CHUANG2021 | False | True | [Mika_THOfficial] | 34935 | [34285] |
| 13790----- | 2021-04-05 10:37:59+00:00 | RT @LiuyuThailand: 210405 | 今朝_刘宇 Weibo Update... | vivin----- | liu yu #创造营2021 | True | False | [LiuyuThailand] | 31636 | [34213] |
| 13705----- | 2021-03-13 03:14:27+00:00 | RT @liuyuarchive: — liuyu dancing to Dose 🕺 ye... | itskm----- | liuyu #CHUANG2021 | True | False | [liuyuarchive] | 35487 | [35769] |

# 3. Topological analysis
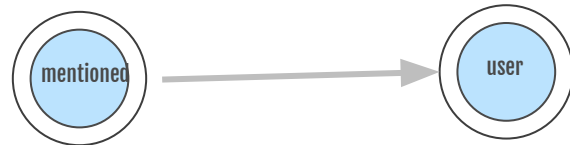
| | Liu Yu | Mika |
|---|---|---|
| Number of vertices | 17,963 | 27,461 |
| Number of edges | 72,467 | 113,118 |
| Average degree | 8.07 | 8.24 |
| Graph density | 0.00023 | 0.00015 |
| Number of connected components | 64 | 178 ◄ |
| Max number of vertices in a connected component | 17,826 | 27,077 |
| Max number of edges in a connected component | 72,391 | 112,905 |
| Clustering coefficient | 0.0948 | 0.1419 ◄ |

mentioned → user

# 3. Topological analysis



a) Number of tweets

b) Number of edges

c) Number of vertices (fans)

d) Graph density

e) Clustering coefficient

f) Competition ranking

# 3. Topological analysis

Fan leaders

Liu Yu

CHUANG_Official

Official account w. max k
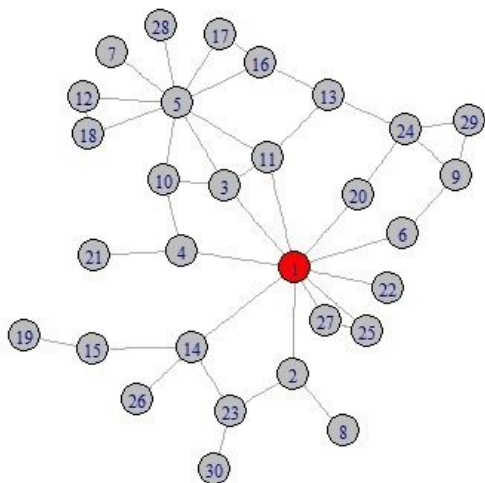(promotes the most)

Mika

CHUANG_Official
mikafiles
OkOkey007
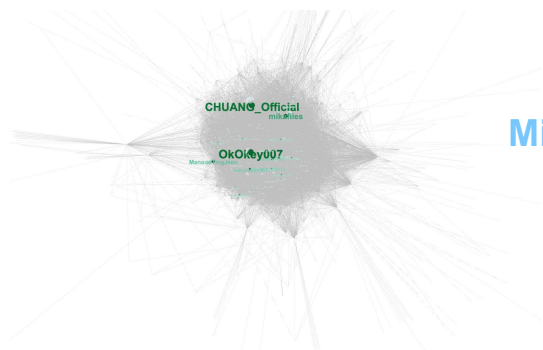
Non-official account w. Max k

# 4. Diffusion Models



**Threshold Model (TM)**
Activate if neighbors' influence > node's threshold (T=0.5)

**Independent Cascade Model (ICM)**
Activate if flip coin on edge and success (p = 0.5)

Initial active nodes selection policies:
- Degree
- Out-degree
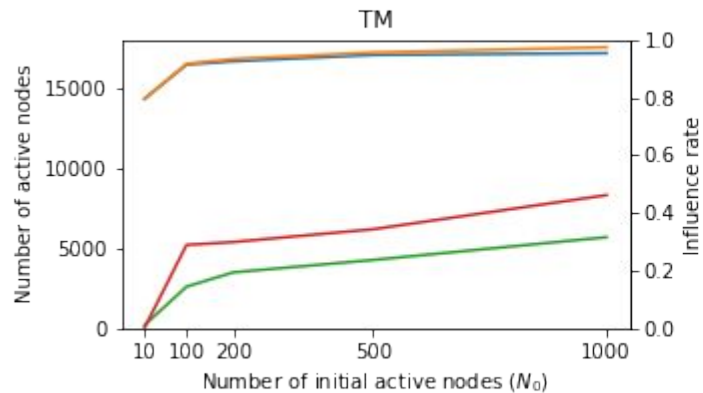- In-degree
- Random

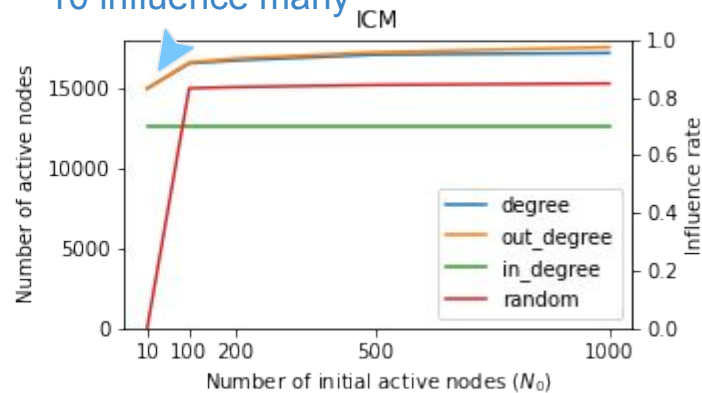Num. of initial active nodes tested:
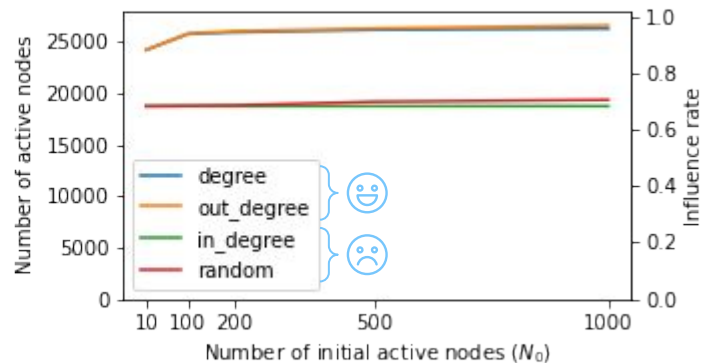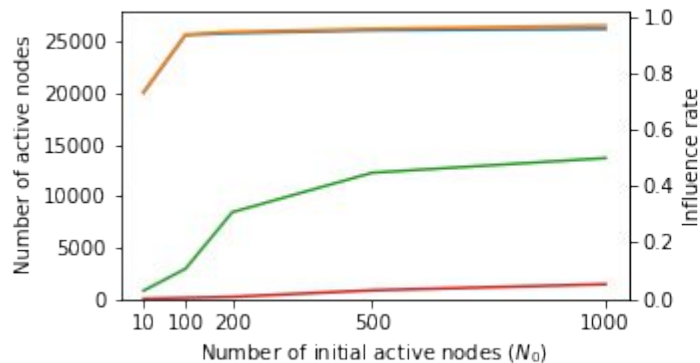10, 100, 200, 500, 1000
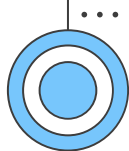
# 4. Diffusion Models



10 influence many

Liu Yu

Mika

# How popularity diffuses? 💬 🤍

ICM: "10 influential fans can contribute 80%."

# Who may win? 🏆

Topological characteristics may have an answer.



thank you!

CHUANG 2021

Jo Pan
CIS 5524