Visualization of Social Media Flows with Interactively Identified Key Players

ChinaVis 2016 长沙

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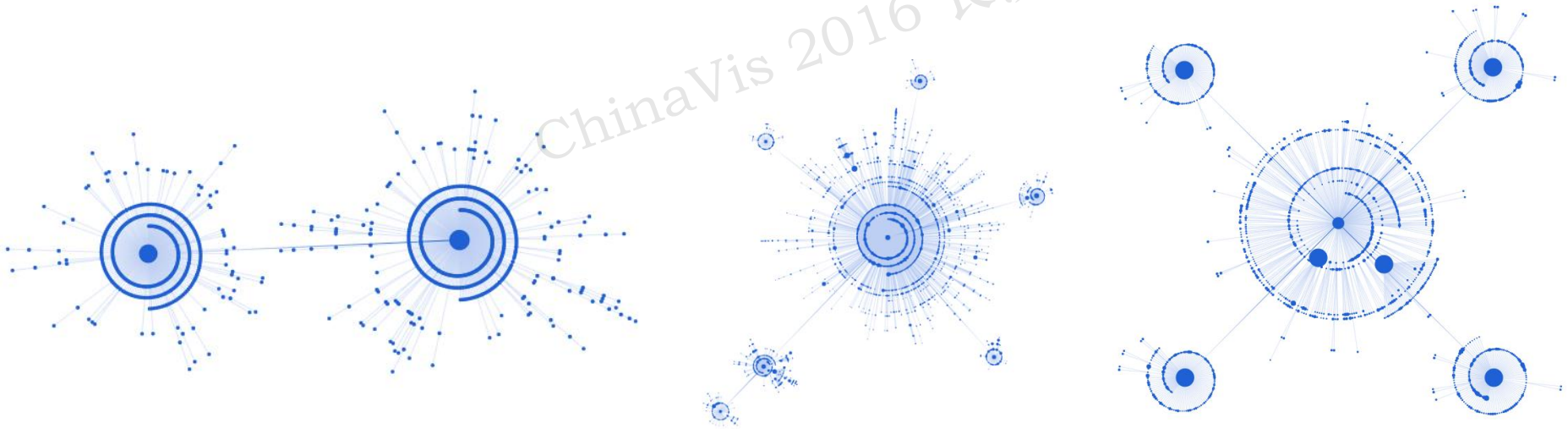
Propagation patterns



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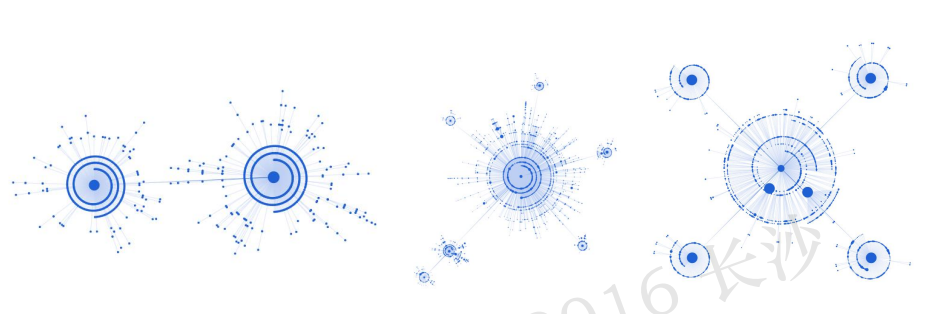
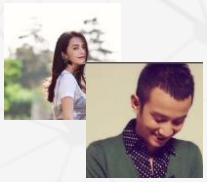
http://vis.pku.edu.cn/weibova/weiboevents

Introduction



- Who are the key players in the propagation process?



Celebrity

Opinion leader

Official account

- What roles do they play?

Introduction

- Developed a system to identify key players
  - Interactively filter to pick out key players
  - Explore the relationship and roles of key players

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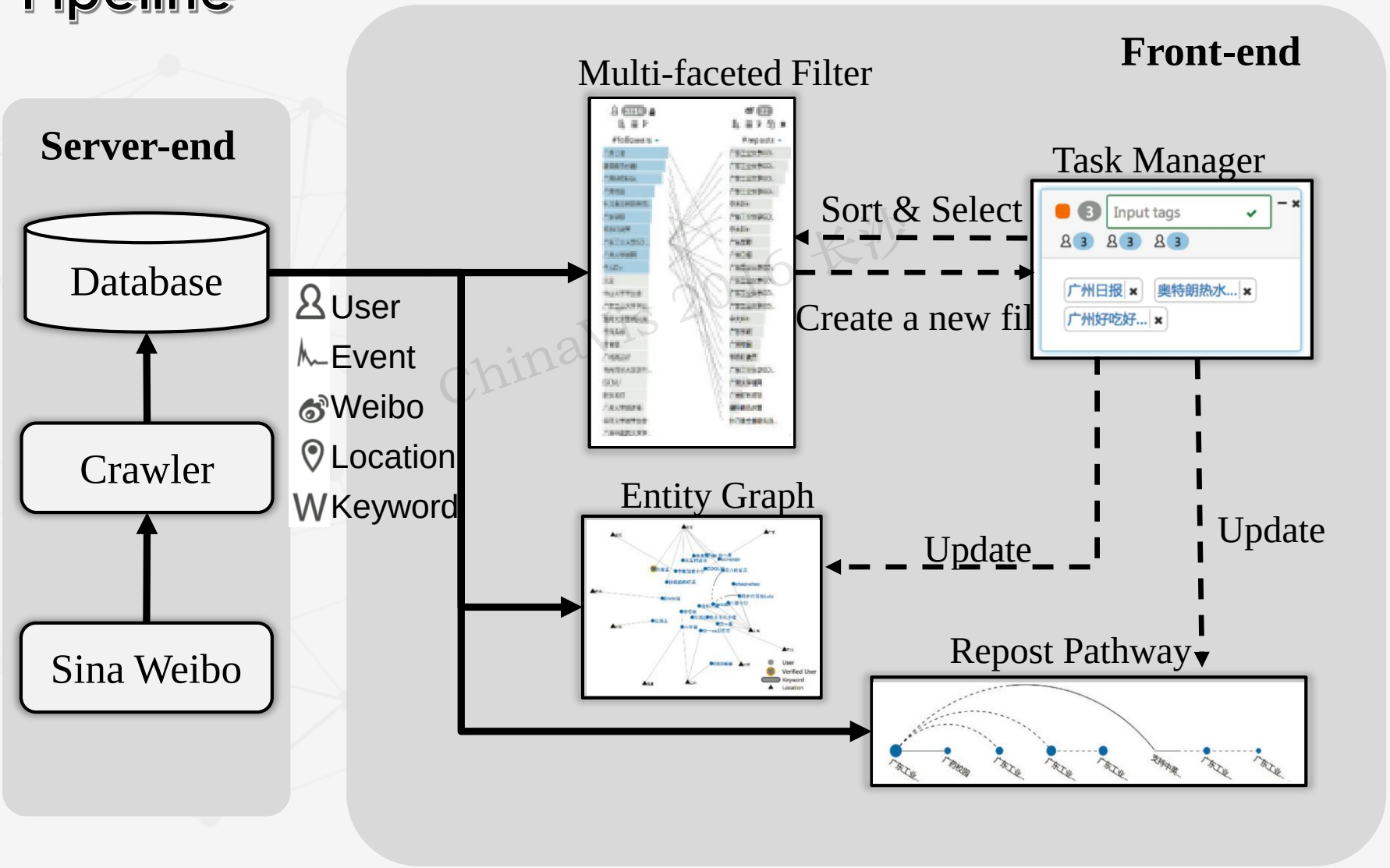
Pipeline


Server-end
Database
Crawler
Sina Weibo
User
Event
Weibo
Location
Keyword
Front-end
Multi-faceted Filter
Task Manager
Sort & Select
Input tags
广州日报
奥特朗热水...
广州好吃好...
Create a new fil
Entity Graph
Update
Update
Repost Pathway

Filter operations

- Entity – user, event, weibo, keyword, location

Entity	Attributes	Actions
User	#followers #following #following / #followers #mutual-following verified #events-involved #weibos #direct-reposted users #direct-reposted users / #reposted users	a1. select as a candidate a2. copy to a new list a3. list followers a4. list locations a5. list events the user participated in a6. list weibos the users posted

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Filter operations

- Entity – user, event, weibo, keyword, location

Entity	Attributes	Actions
Event	#tweets #participants	b1. list all weibos in the events b2. list all participants in the events b3. list all keywords in the events
Weibo	time #comments #likes text length #direct-reposts #reposts #direct-reposts / #reposts	c1. list all reposts of the weibos c2. list all direct reposts of the weibos c3. list authors of the weibos c4. list keywords of the weibos c5. list events the weibos belong to
Keyword	frequency	d1. list relevant weibos
Location	frequency	e1. list relevant users

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Filter operations

- Operation: (entity, sortingkey, distribution, action)
  - Entity: user, event, weibo, keyword, location
  - Sortingkey: attributes of entities
  - Distribution: places of selected players in the list ([0 – 10%], True/False)
  - Action: actions of entities

(user, # followers, [0 – 3%], list followers (a3))

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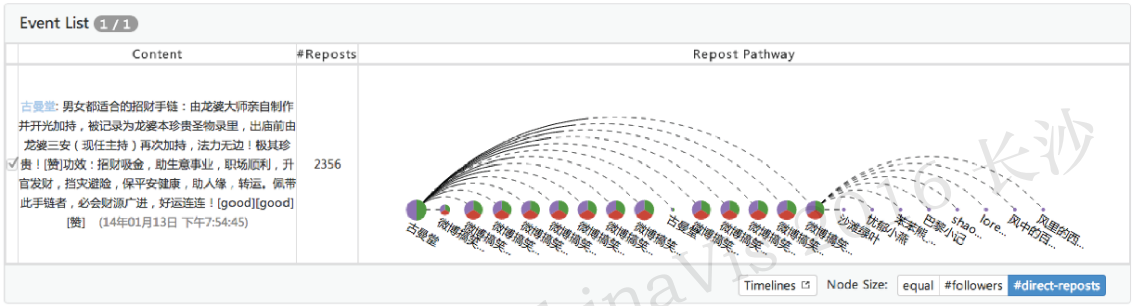
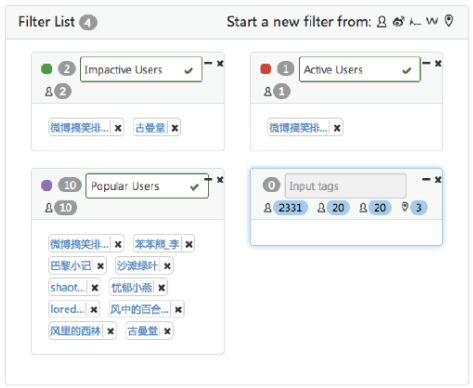
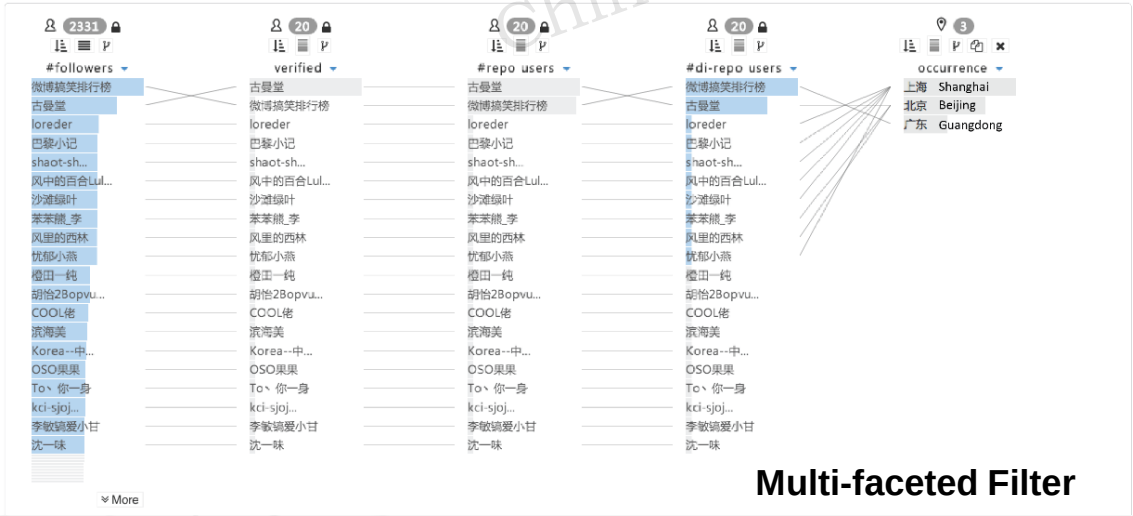
Visual interface

Event List & Repost Pathway

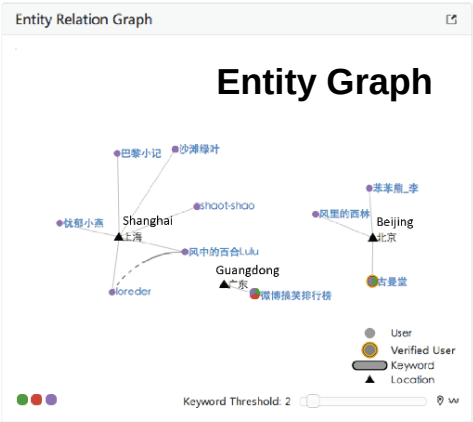


Task Management Panel



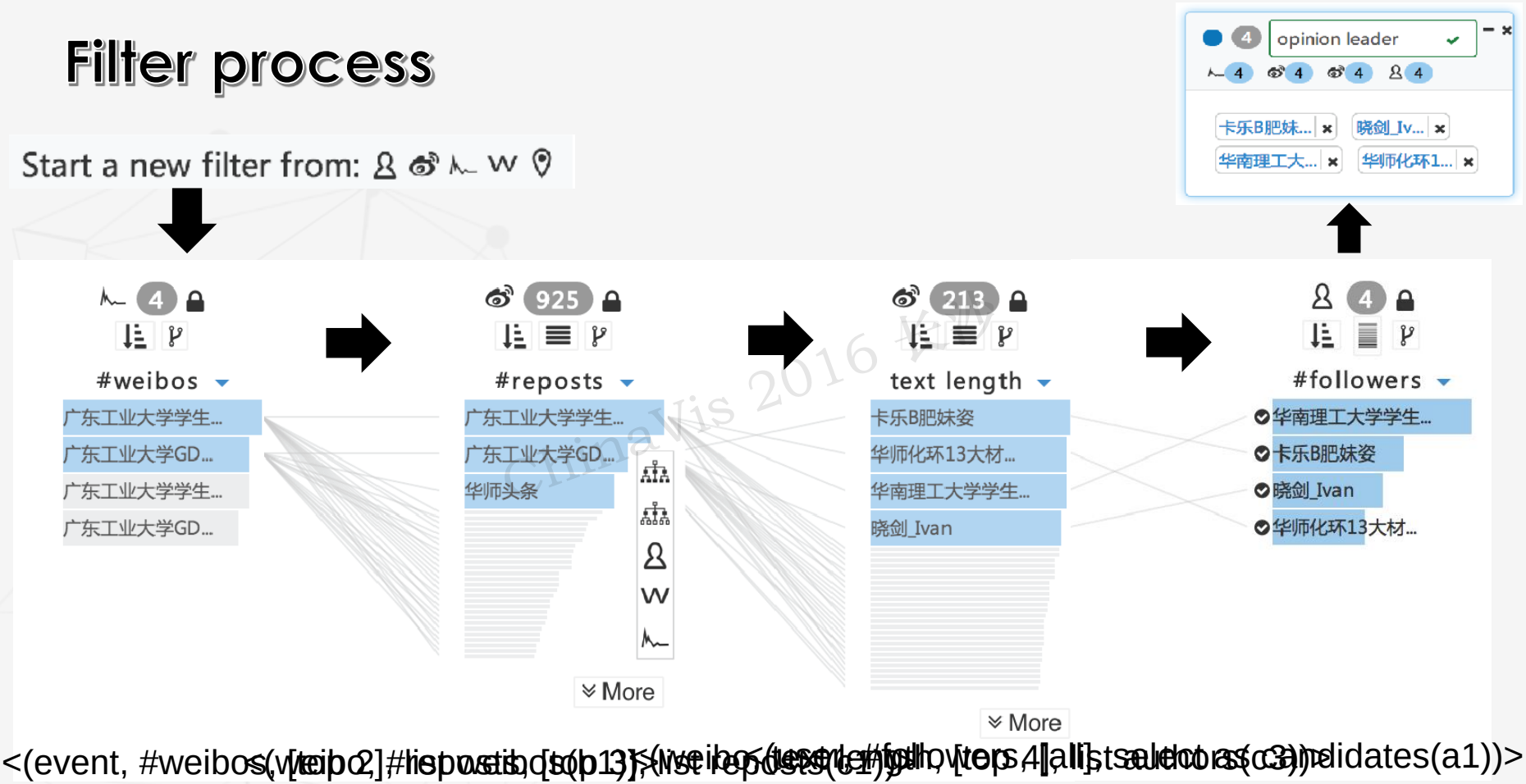


Multi-faceted Filter



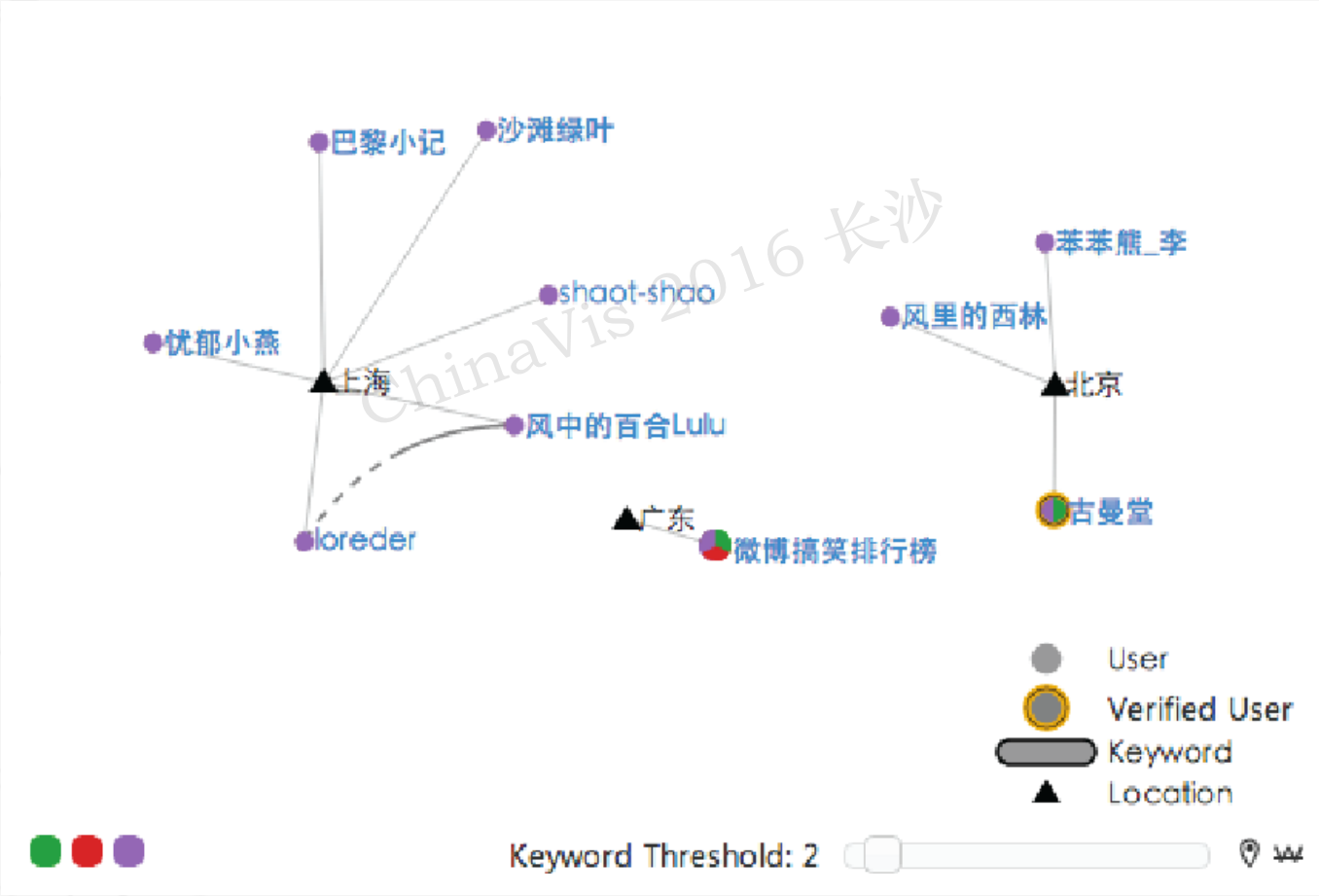
Entity Graph

Filter process



<(event, #weibos, [top 2], list weibos(b1))><(weibo, #reposts, [top 3], list reposts(c1))><(user, #followers, [top 4], list authors(c3))><(weibo, [all], select as candidates(a1))>

Visual interface: entity graph



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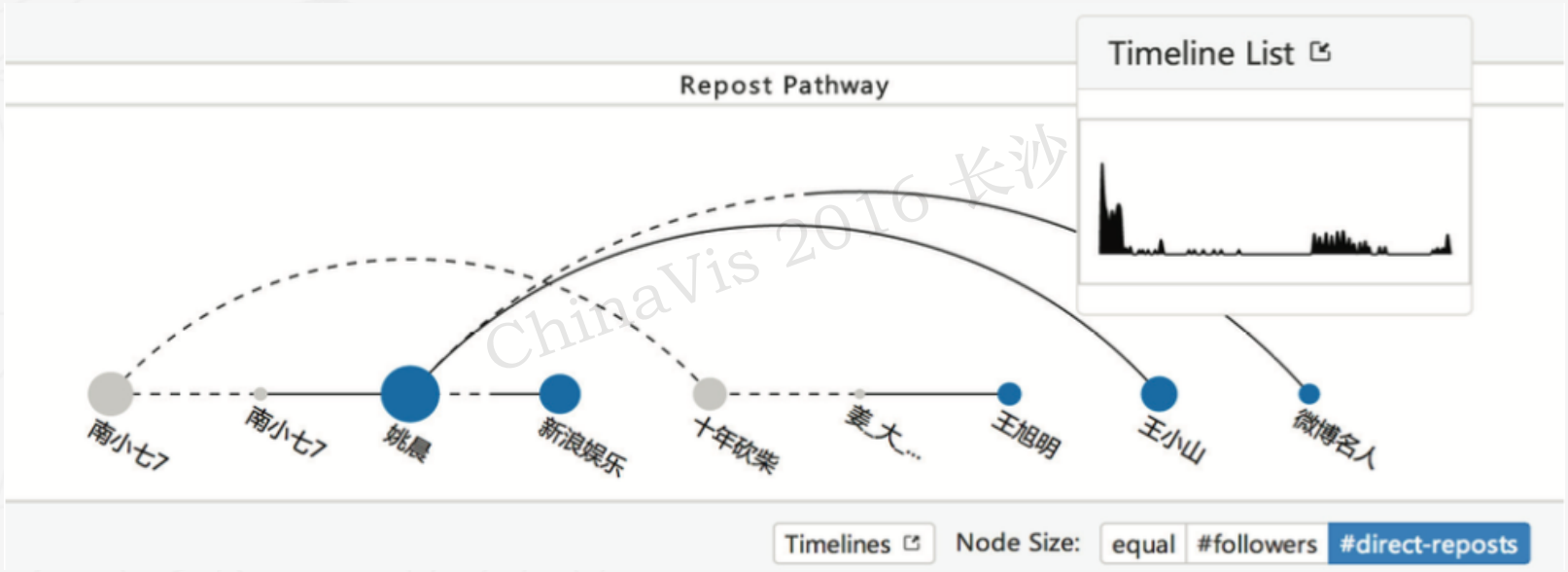
Visual interface: repost pathway



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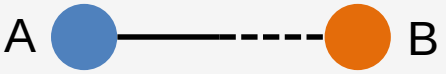
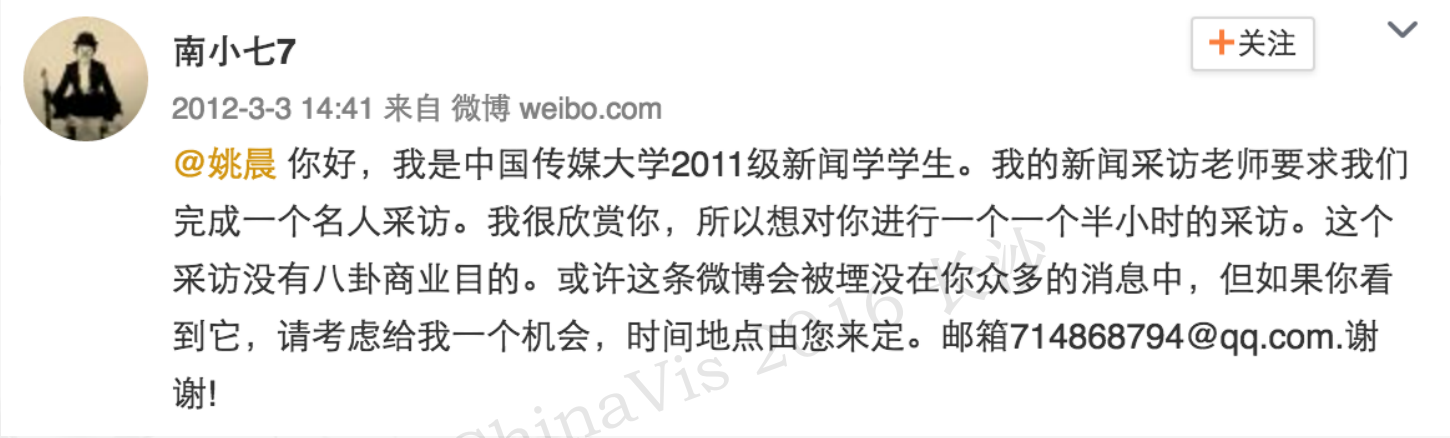
A & B: mutual follow

A & B: no follow



A follows B

Case 1: student asking for interview of TV Star



- Filters
  - Group A: most popular peoples
    - <(*user*, *#followers*, *top* 3, select as candidates(*a*1)>
    - 姚晨(User B), 新浪娱乐(User C), 微博名人(User D)
  - Group B: users brought most reposts
    - <(*user*, *#reposted−users*, *top* 3, select as candidates(*a*1)>
    - 南小七(User A), 姚晨(User B), 十年砍柴(User E)

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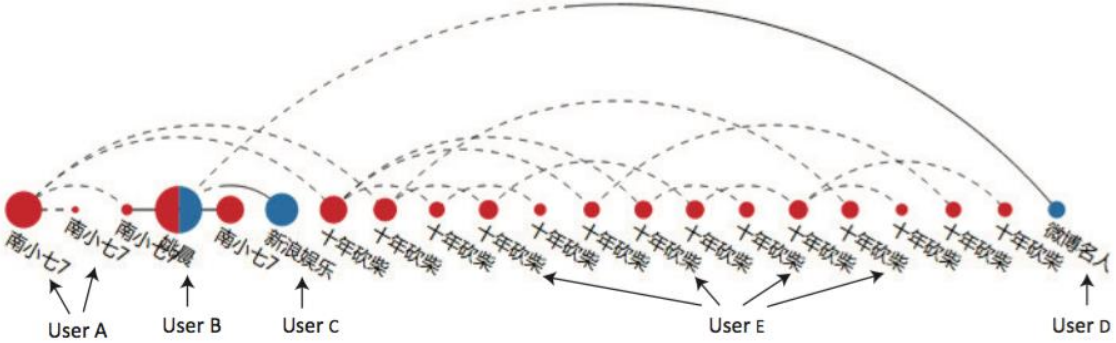
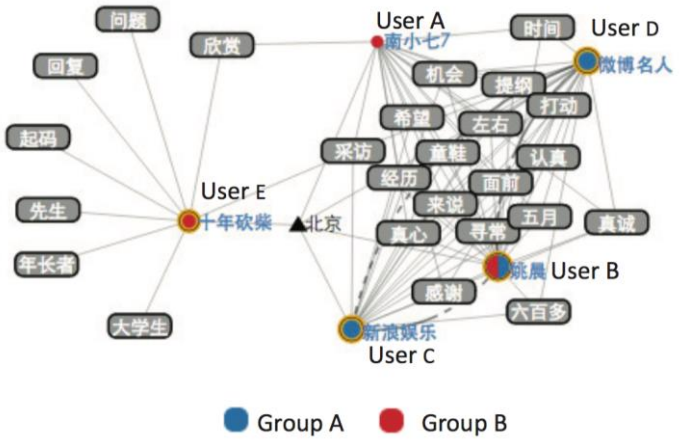
Case 1: student asking for interview of TV Star

- Analysis
  - 姚晨 (User B) triggered a burst of reposting
  - 十年砍柴 (User E) reposted many times and attracted much attention
  - 十年砍柴 (User E) criticized 南小七 (User A) for not being polite





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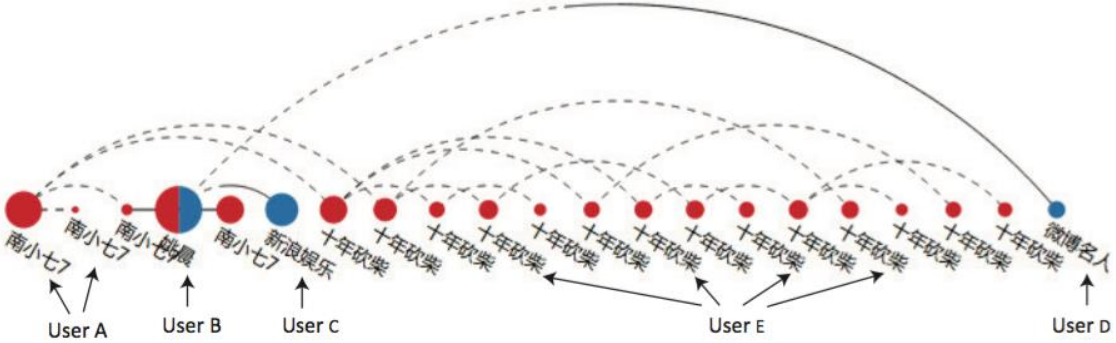
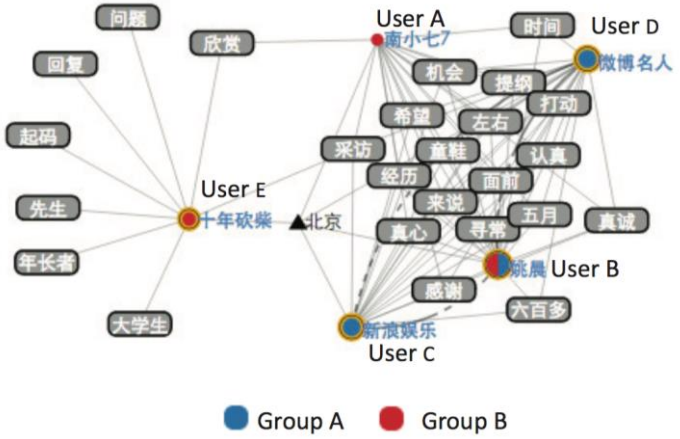
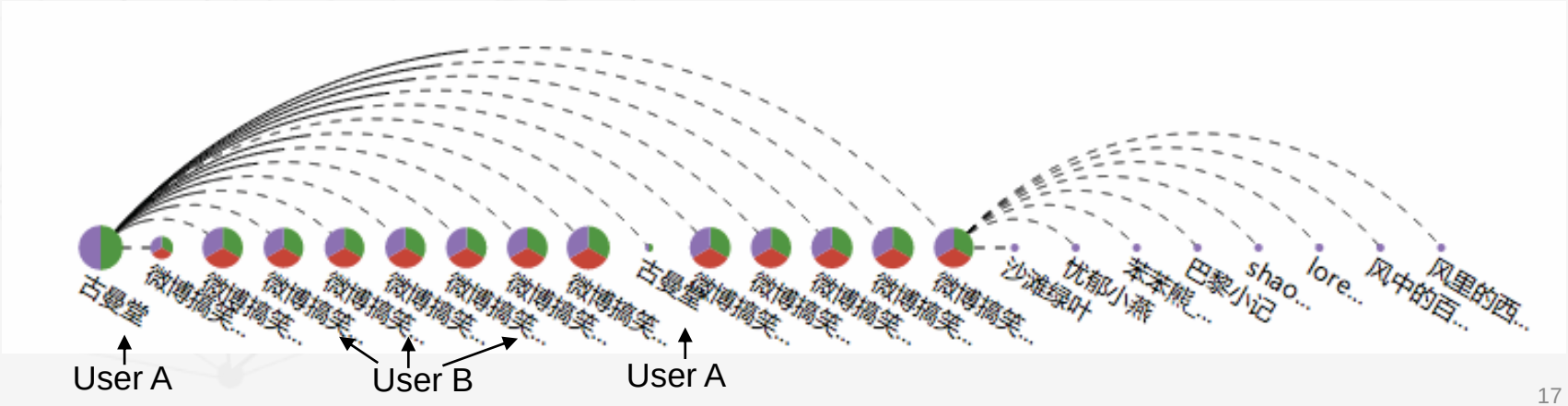




Case 2: advertising on Microblog

- Advertisement 1: 古曼堂 (User A)
  - Group A: <(*user*, *#reposted−users*, *top*2, select as candidates(*a*1)>
    - 古曼堂(User A), 微博搞笑排行榜(User B)
  - Group B: <(*user*, *#weibos*, *top*1, select as candidates(*a*1)>
    - 微博搞笑排行榜(User B)
  - Group C: <(user, #followers, top10, select as candidates(*a*1)>



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Case 2: advertising on Microblog

- Advertisement 2: 美妆搭配师Amy (User C)
  - Group A: <(user, #reposted−users, top10, select as candidates(*a*1)>
  - Group B: <(user, #followers, top10, select as candidates(*a*1)>

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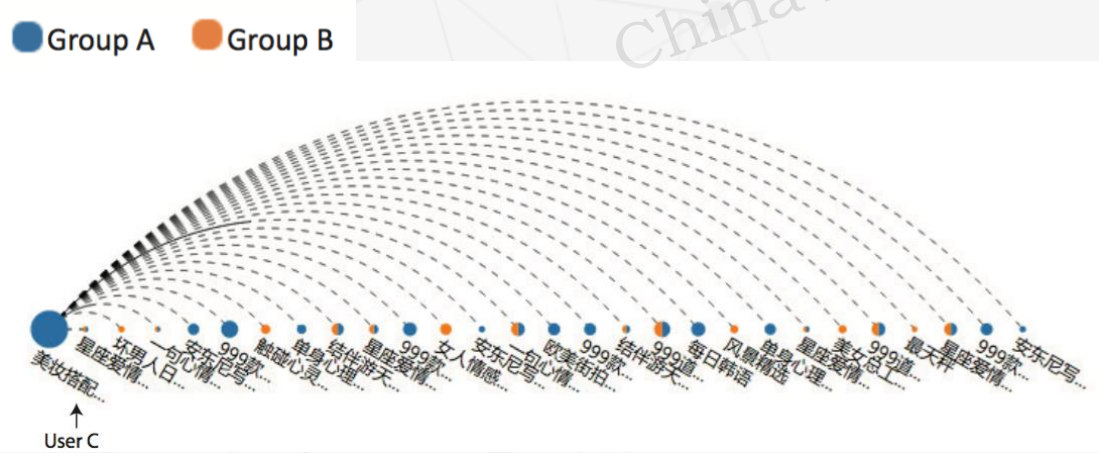

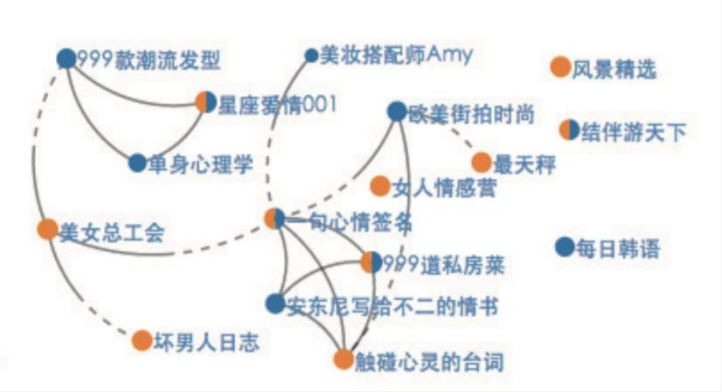

Case 2: advertising on Microblog

- Comparison of different advertising patterns
  - Advertisement 1: relied on a popular account
  - Advertisement 2: relied on lots of accounts special for marketing

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Conclusion and future work

- A visual analytics system to identify key players
  - Interactively filter to pick out key players
  - Analyze the roles of key players
- Future work
  - Support more entities and attributes to enhance compatibility
  - Provide a global sensing of the events' propagation

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Acknowledgements

- This work is supported by
  - NSFC No.61170204
  - NSFC Key Project No. 61232012
  - National Program on Key Basic Research Project (973 Program) No. 2015CB352500
  - PKU-Qihu Joint Data Visual Analytics Research Center.

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Thank You

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Filter operations

- Task: a series of operations

Feature	Task Vector	Label
A lot of followers	<(*user*, *#followers*, [0 − *x*%], *a*1)>	Popular user
A lot of weibos	<(*user*, *#weibos*, [0 − *x*%], *a*1)>	Active user
Users directly reposted UserA	<(*user*, ∗, User*A*, *a*6), (*weibo*, ∗, ∗, *c*2), (*weibo*, ∗, ∗, *c*3)>	Disseminator of A
Reposted by influential users	<(*weibo*, *#direct−repost/#reposted*, [0−*x*%], *c*3), (*user*,∗,∗,*a*1)>	Information bridge

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