SOSC4300

How Social Media data captures the evolvement of social movement

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Background

How can we observe the trend of the movement?

What are the dynamics of the movement?

How protestors utilize the social media?

Dataset 1: Existing Dataset

- Twitter data from Github
- 18 raw csv files
- 15000 tweets per files
- 03/11/2019 to 20/11/2019
- Tweets, hashtag, username, date created etc....

Dataset 2: Twitter API - follower list

- List of followers of the user appeared in the above data set
- Sample size of 300

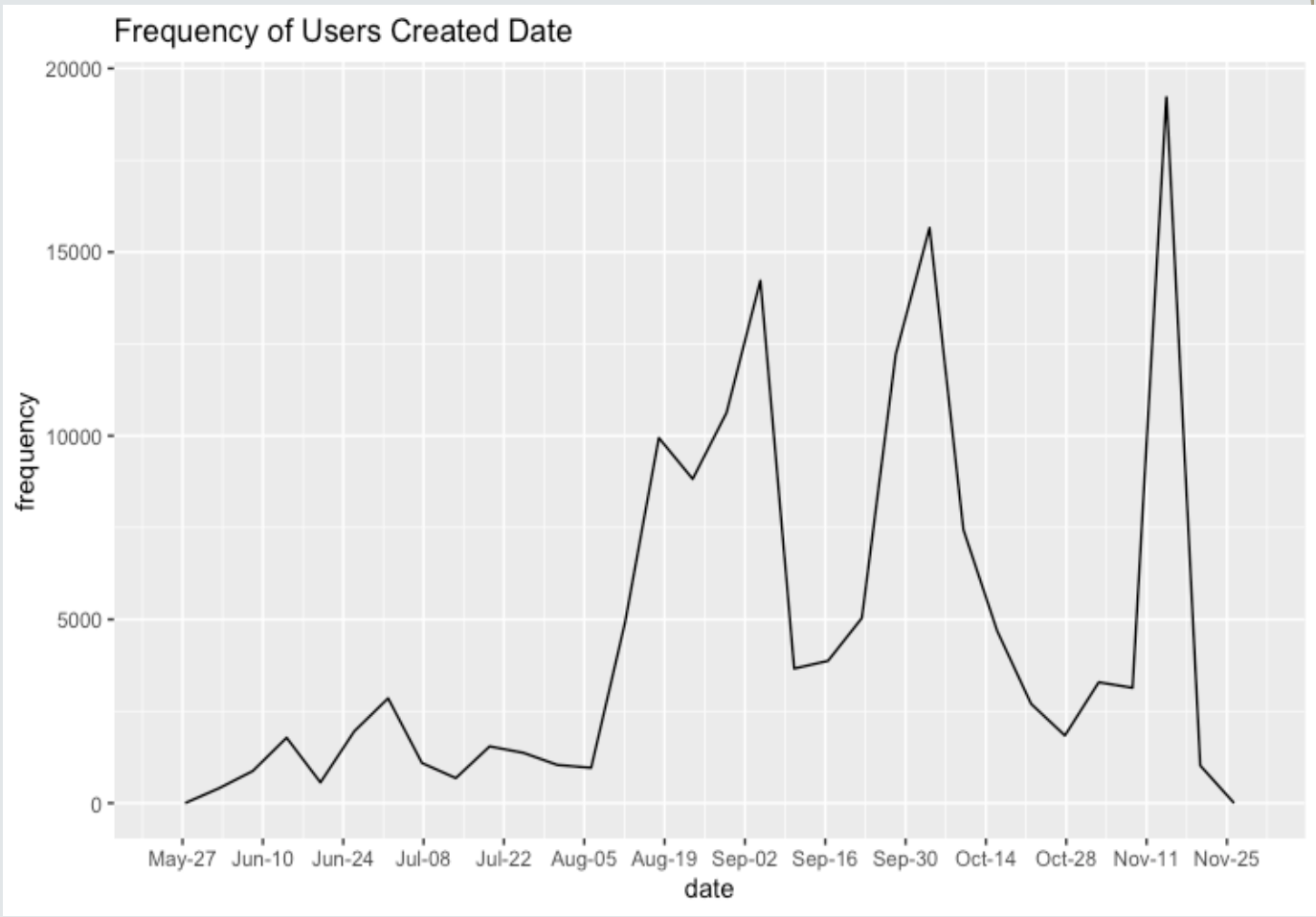
Dataset 3: Twitter API

- Searching data by keywords related to the movement
- Sample size around 500-1000
- (For R): Package Rtweet/TwitteR
- (For Gephi): Twitter streaming importer plugin

Date of creating the Twitter account

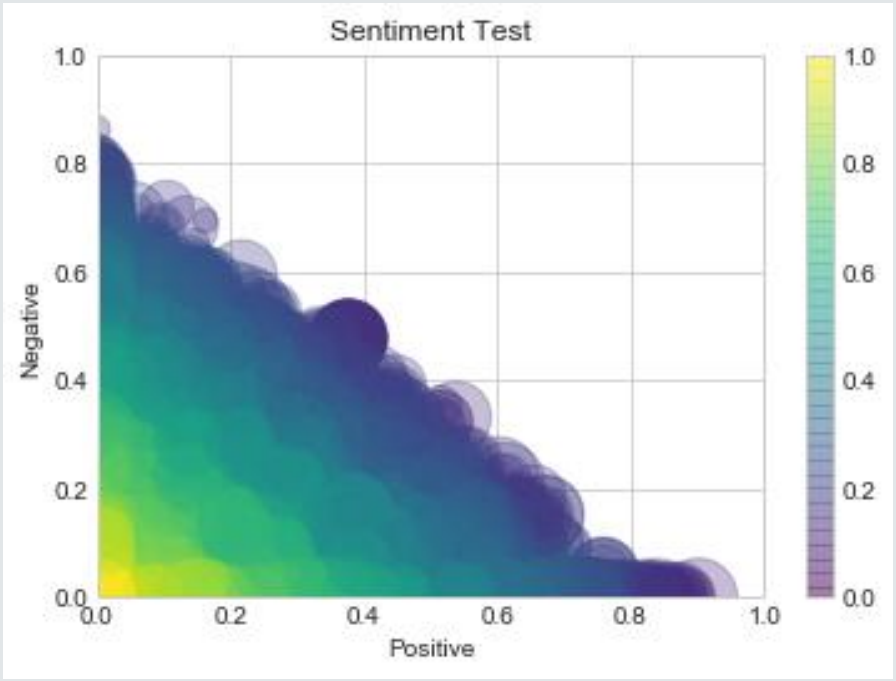
- Several peaks of creating the account

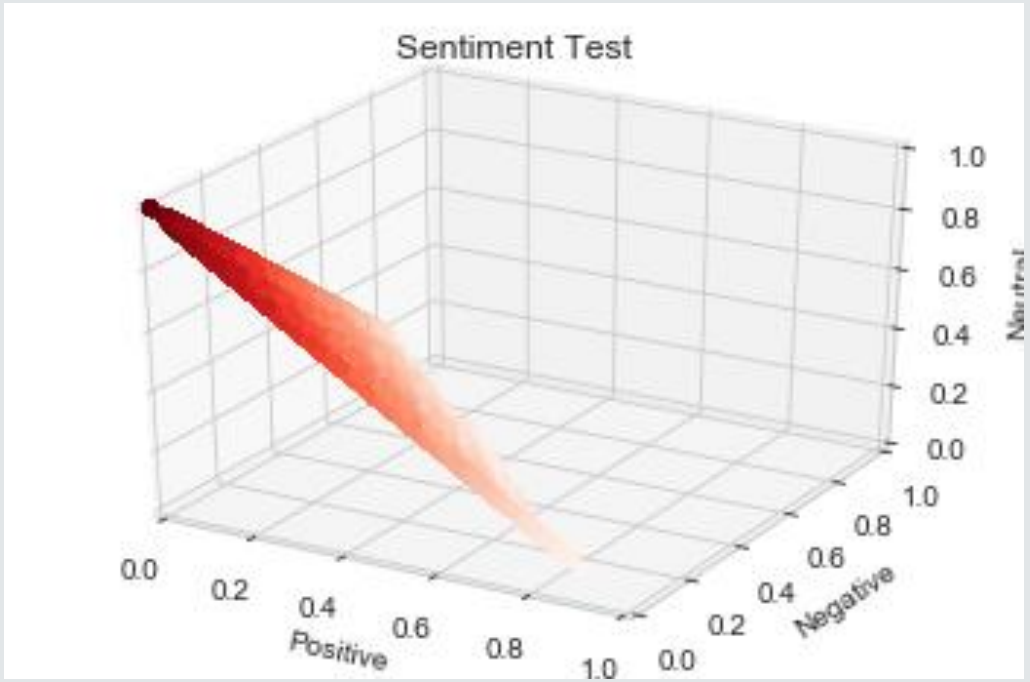
- Occupy Airport Incident
- "831" (Prince Edward Railway Station Incident)
- National Day
- Sieged PolyU & CUHK Incident



Sentiment classification

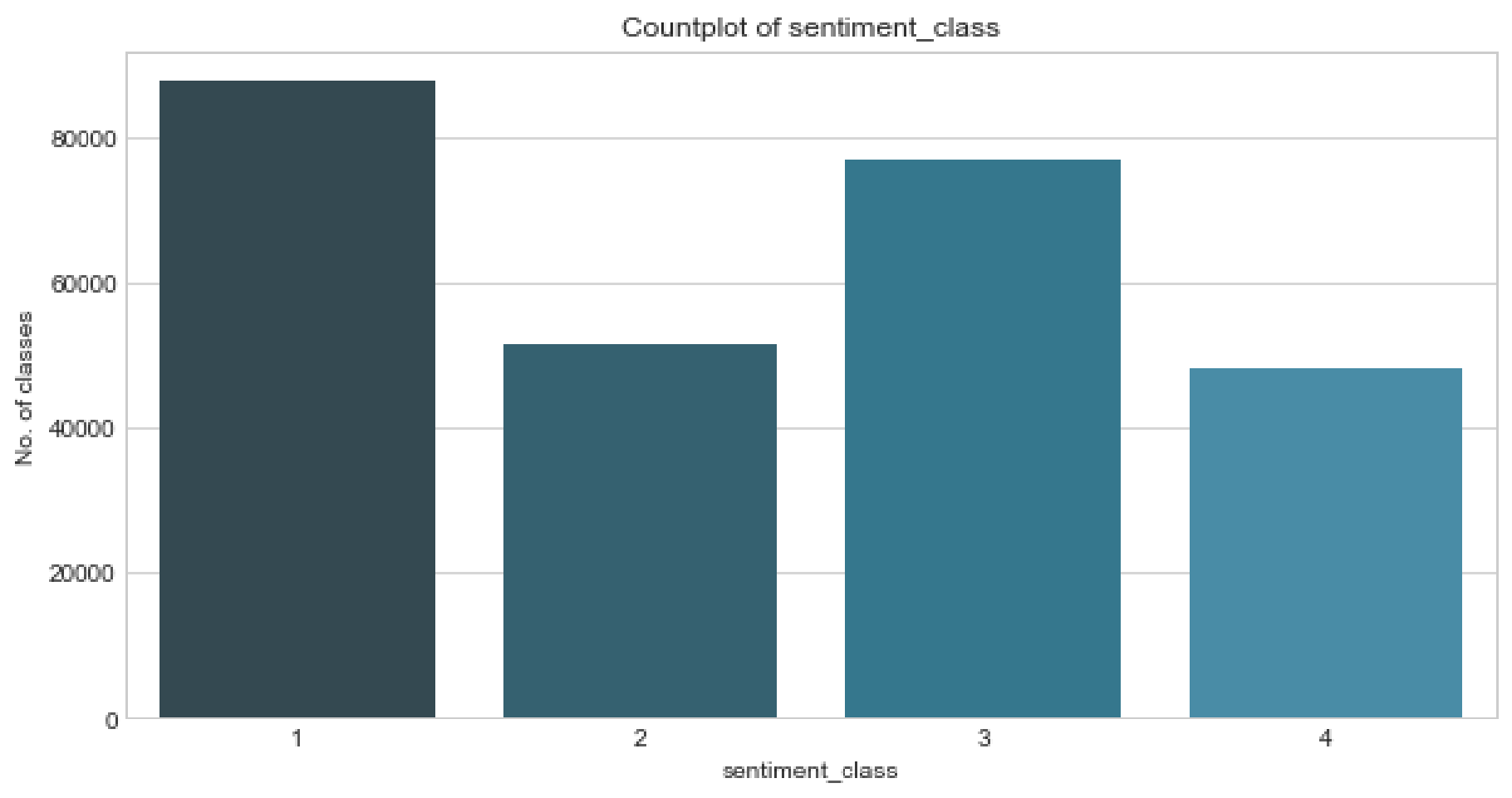
- Sentiment classification
  - NLTK Vader_Lexicon Library
  - Compound Score
- Word embedding
  - Skip-gram model
- Measure the Twitter user's sentiment



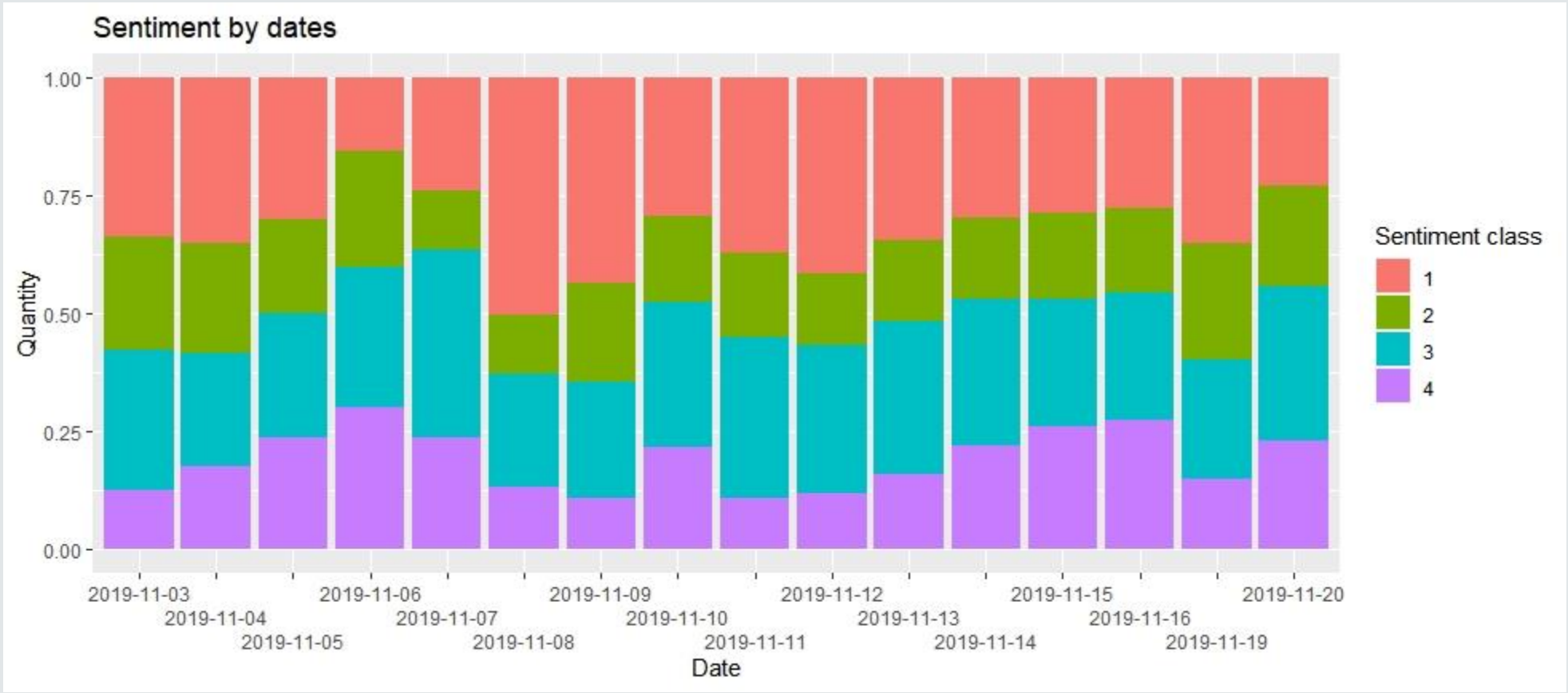


Sentiment Library
NLTK Vader_Lexicon Library

Sentiment Class



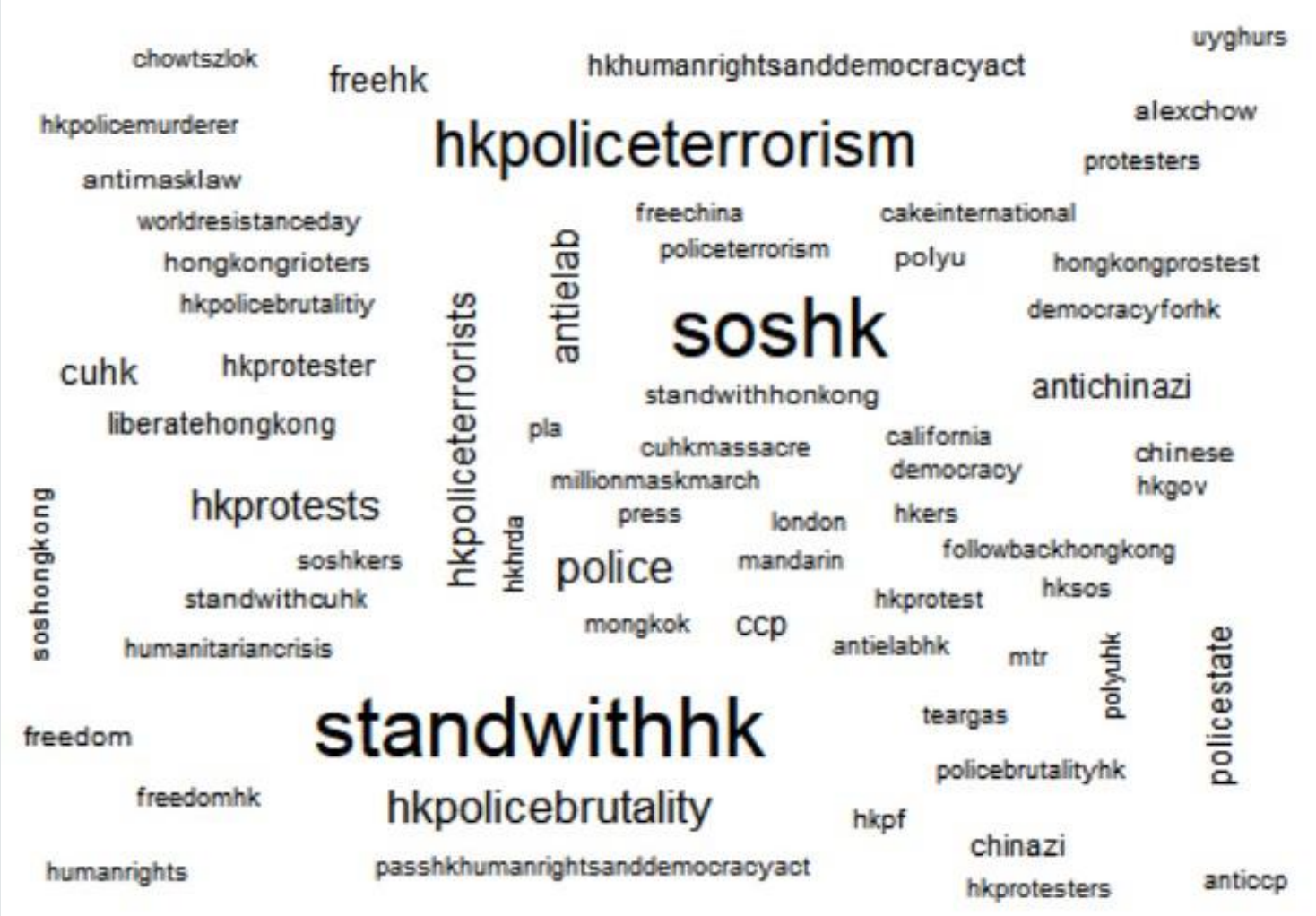
Proportion of sentiment by date



Word Embedding

- Skip-gram
- 'police'
  - 'riot', 0.5946824550628662
  - 'againsting', 0.517828643321991
  - 'force', 0.5115256905555725
  - 'bulletscuhk', 0.4930810332298279
- 'government'
  - 'afternoons', 0.6524575352668762
  - 'usstandwithhongkong', 0.6151518821716309
  - 'clarified', 0.5893750190734863

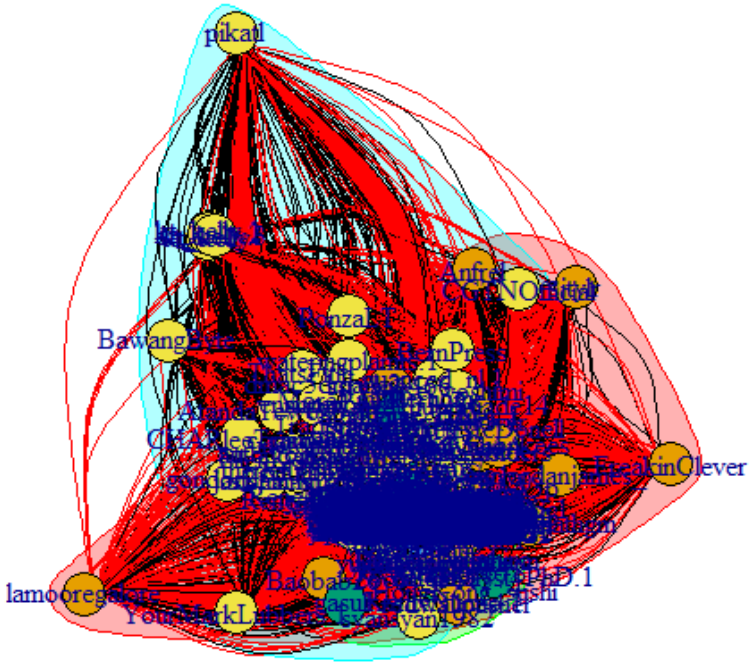
Word Cloud (hashtags)



Clustering by Shared audience

- Sample of 316 users
- No. Of common audience (follower) => weight = edges
- Louvain Community Detection method
- Modularity: measuring the density of connection within clusters compared to the density of connections between clusters (Blondel 2008)

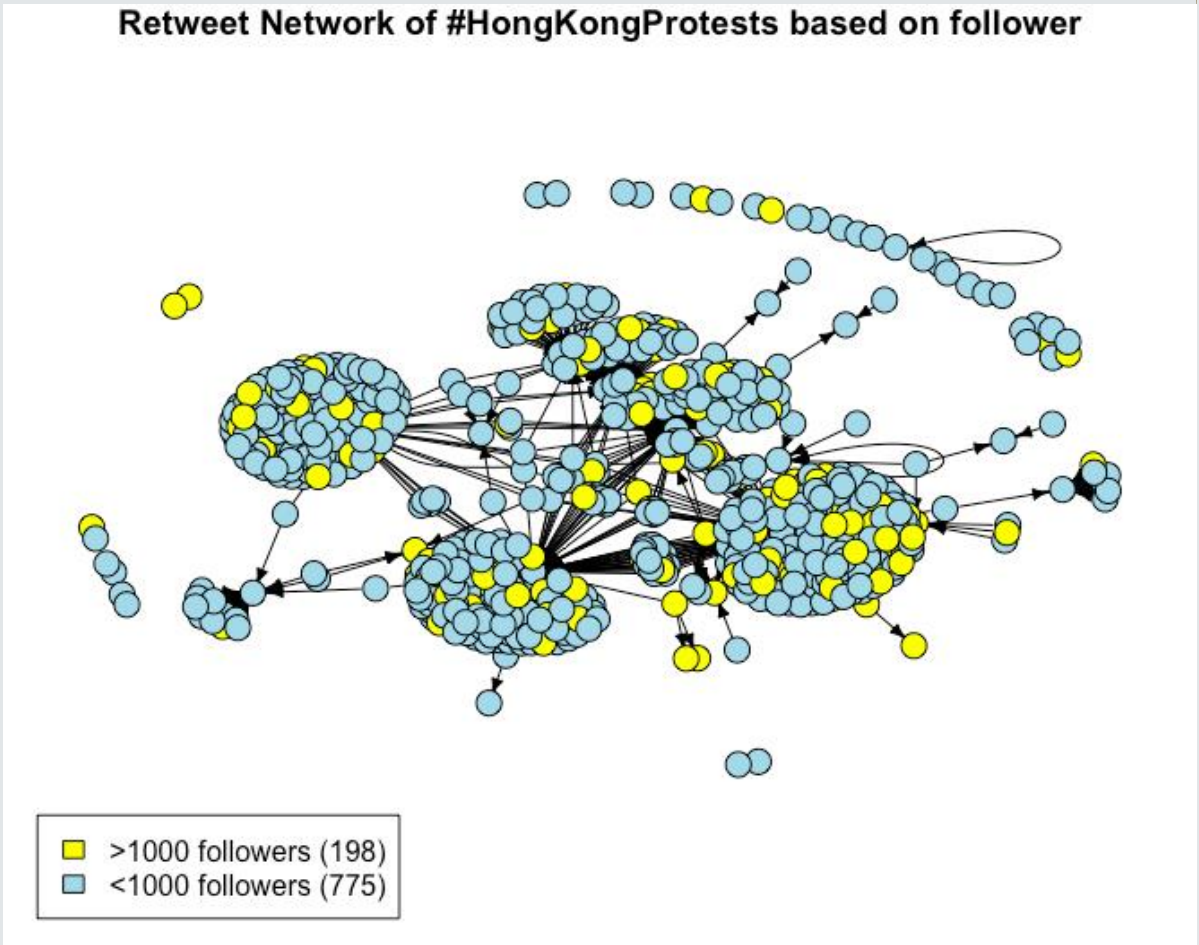
Clustering by Shared audience



- 6 distinct clusters of different size
- Largest cluster has 95 members
- Smallest cluster has only 2 members!

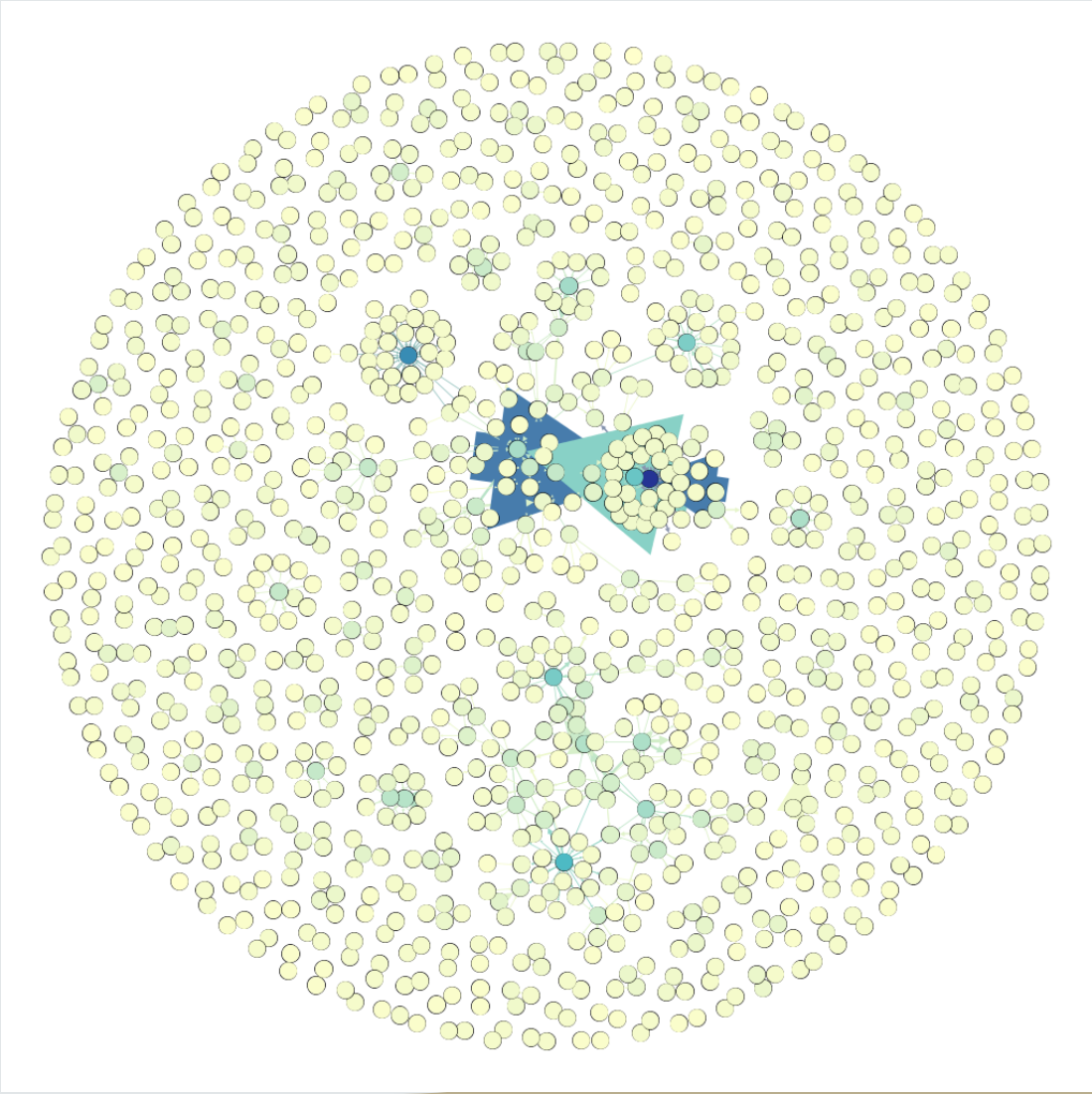
Retweet Network Analysis (Twitter API)

- Around 5 major cluster (N=971)
- Clusters are concentrated
- Only a few nodes are willing to retweet other cluster's post
- Yellow dots: influential users, which are in the center of the cluster, but also helping different cluster to connect



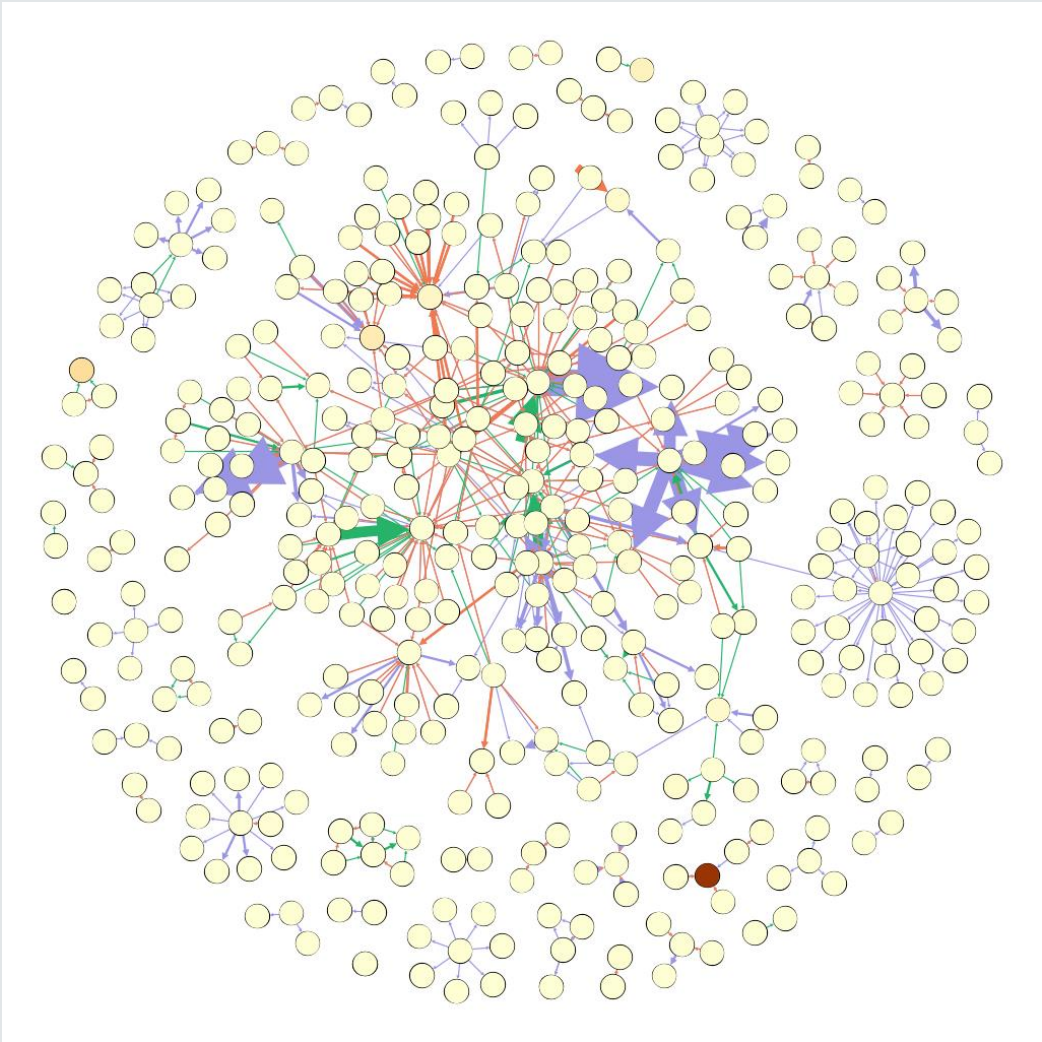
User Network: Twitter API (Gephi)

- Keyword: "China", "Hong Kong Protest", "Hong Kong", "Anti-ELAB"
- N=1216
- The node in the middle: @realdonaldtrump ; @llinwood
- Not exactly what we are looking for
- Refined result later on



User Network: Twitter API (Gephi)

- New Keywords: "721","831", "polyusiege","cuhksiege" + existing keywords
- N = 417
- Edge:
  - Purple = mention
  - Orange = retweet
  - Green = quote
- Color of node represent the follower count
  - The Red one is @bts_twt
  - The node in the middle: @quicktake (Bloomberg news), @eileenechang (activist/participant?), @studioincendo (web-based independent news media page)



Future Direction

- A better and more concise keyword for the twitter API
- Qualitative analysis on selected users who have great influence
- Larger sample for shared audience graph
- -> Explore some common characteristics between members within the communities.