

# CHARACTERIZING NETWORK PROPERTIES OF GAB USERS

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A social network that champions free speech,  
individual liberty and the free flow of information  
online. All are welcome.

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# PROBLEM STATEMENT

Analyzing behavior of users with time-lapse and profiling their behavior on the basis of repost network.

Finding distribution of hateful and non-hateful users in community.

- 
- ❑ Community analysis
  - ❑ User Profiling

# OUR DATA

We used data from Gab.ai website and 21 timestamps from September 2016 to June 2018

So we have 21 snapshots of Gab network

# DEFINING SOME IMPORTANT TERMS

## 1) Degroot Score

Every user is assigned a degroot score between 0 and 1

If Degroot Score of user in a particular snapshot :

$\square < 0.07$  : User is non-hateful(**N**)

$\square > 0.56$  : User is hateful (**H**)

$\square$  otherwise : User is Neutral ( **M** )

## 2) Coreness:

The coreness of a node is measured by  $k$ -core decomposition

Larger coreness value indicates that the node is more centrally located in the network

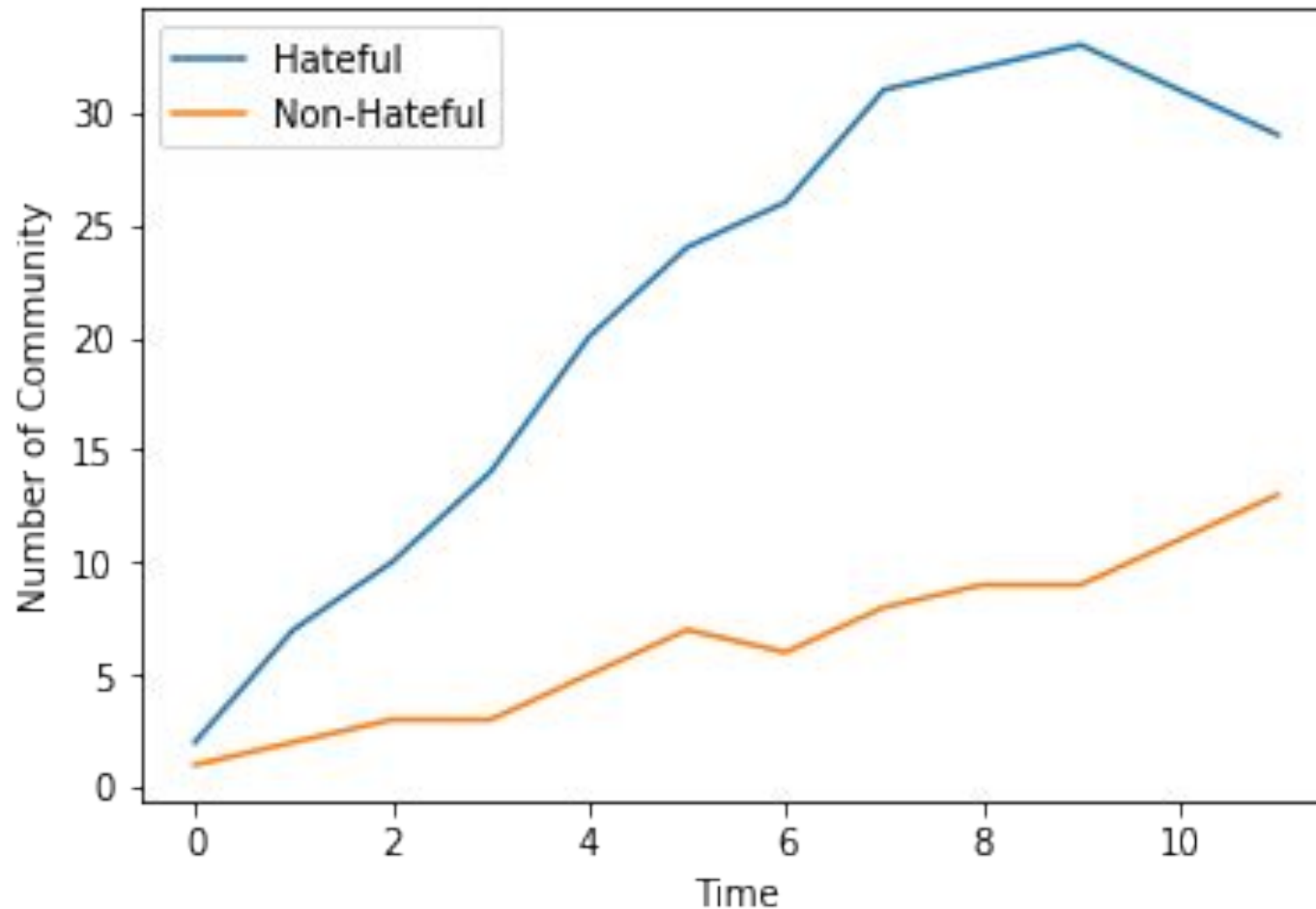
# COMMUNITY ANALYSIS

We found communities in our network using **Infomap method of Martin Rosvall and Carl T[3]** and analyzed the trend within communities.

We tracked 2 type of communities:

- 1) Communities with Higher proportion of hateful users (**Hateful Communities**)
- 2) Communities with Higher proportion of nonHateful users ( **NonHateful Communities**)

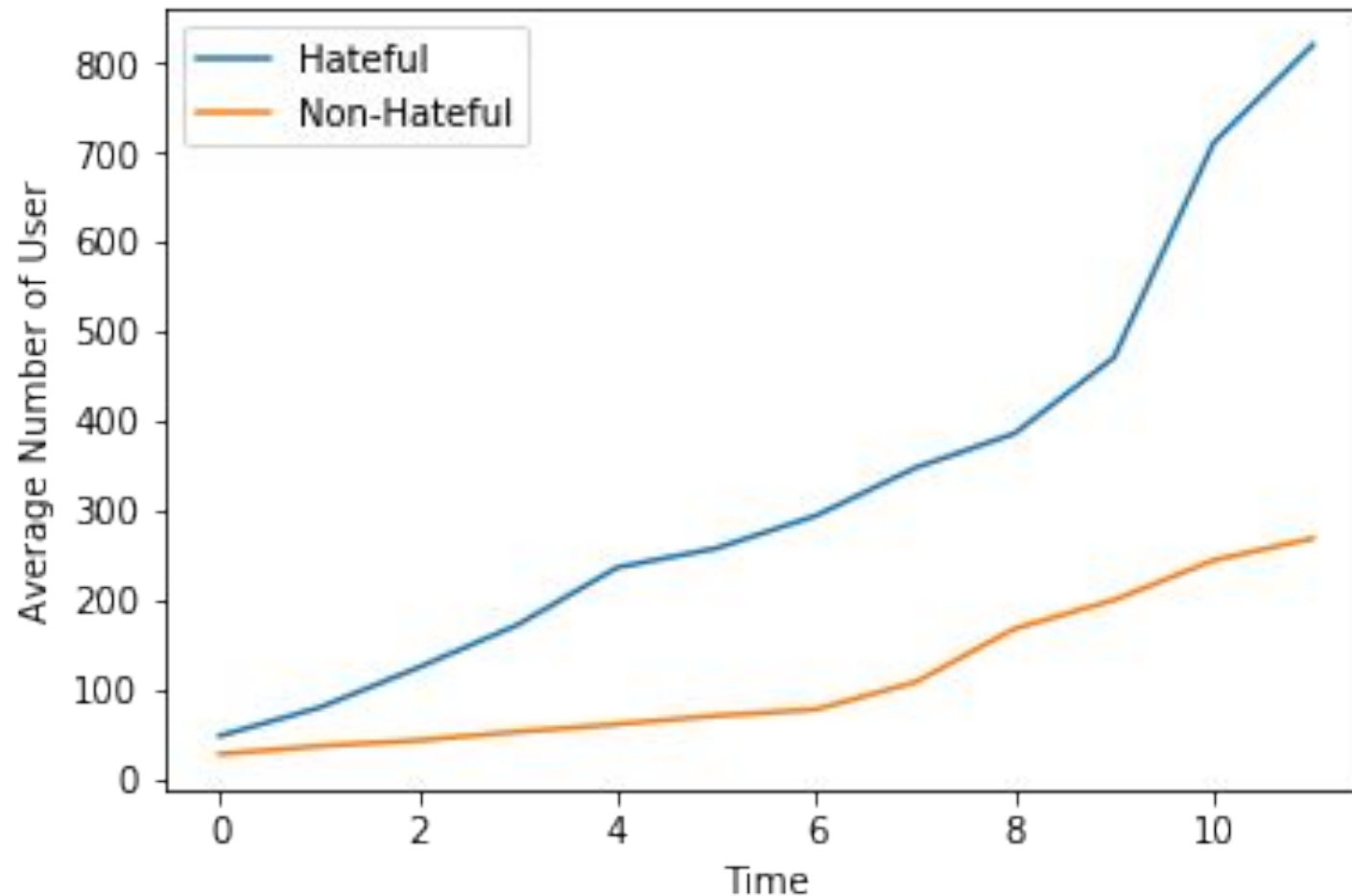
# GROWTH RATE OF NO OF COMMUNITIES



X axis scale  
2: 4 months

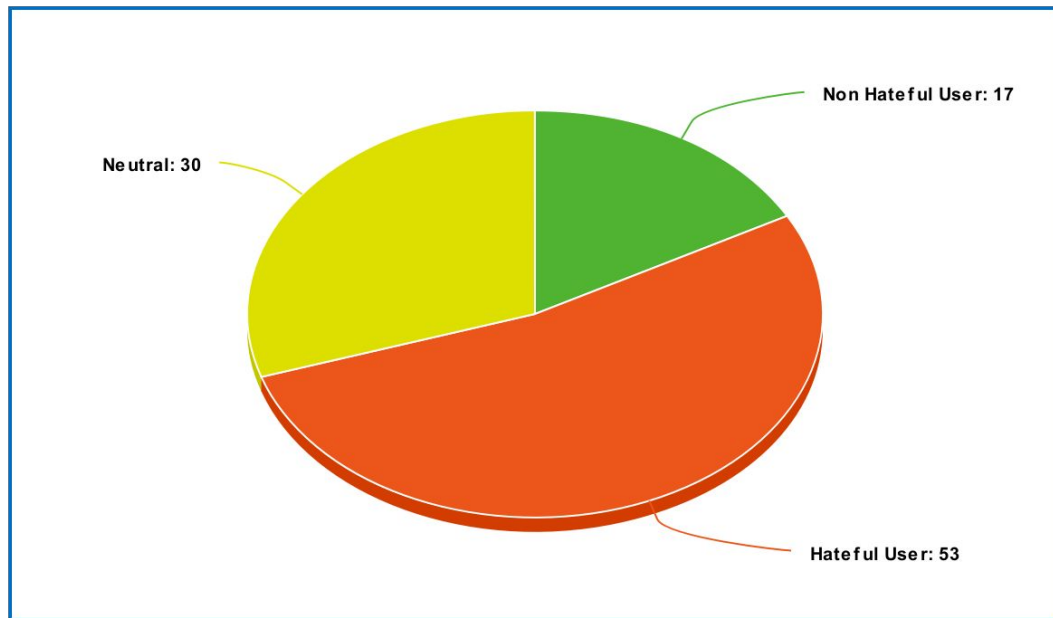


# AVERAGE NO OF MEMBERS IN COMMUNITY



X axis scale  
2: 4 months

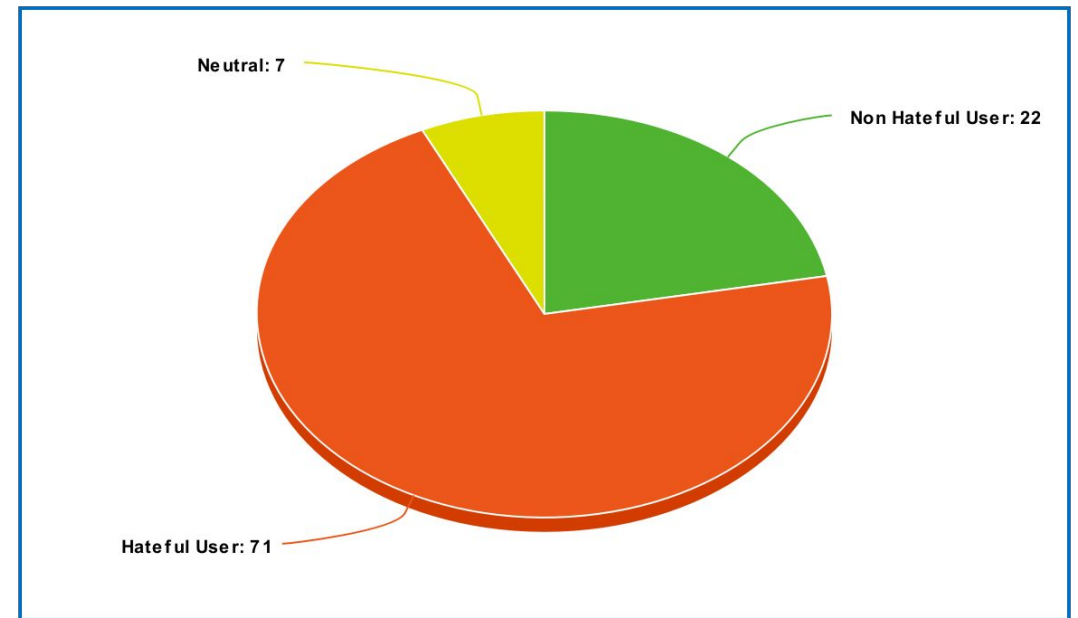
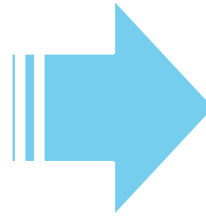
# AVERAGE DISTRIBUTION IN HATEFUL COMMUNITIES



Non Hateful User Hateful User Neutral

meta-chart.com

August 2017



Non Hateful User Hateful User Neutral

meta-chart.com

June 2018

# USER PROFILING

We considered the degroot score of each user for the period of 21 timestamps and labelled them in one of the 4 profiles:

1) L to L

2) L to H

3) H to L

4) H to H

Where L is nonHate and H is hate

We then analyzed the data after every 4 months.

# CONTD...

For every user in a profile,

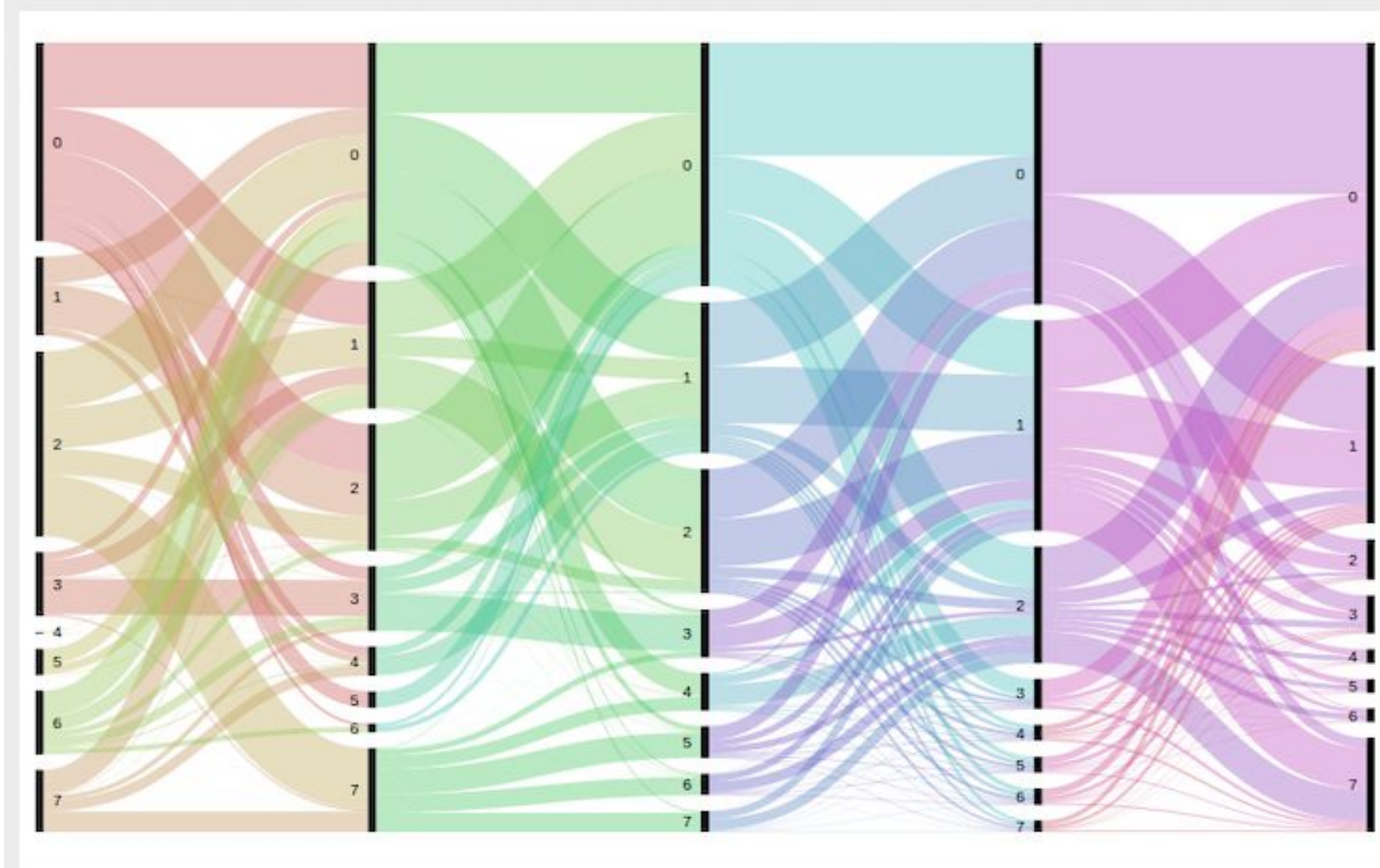
we calculated the coreness of the user on the following snapshots

[ Nov16, Apr17, Sept17, Feb18, June18]

Next we assigned a bin to each user in each of the above snapshots according to its coreness value.

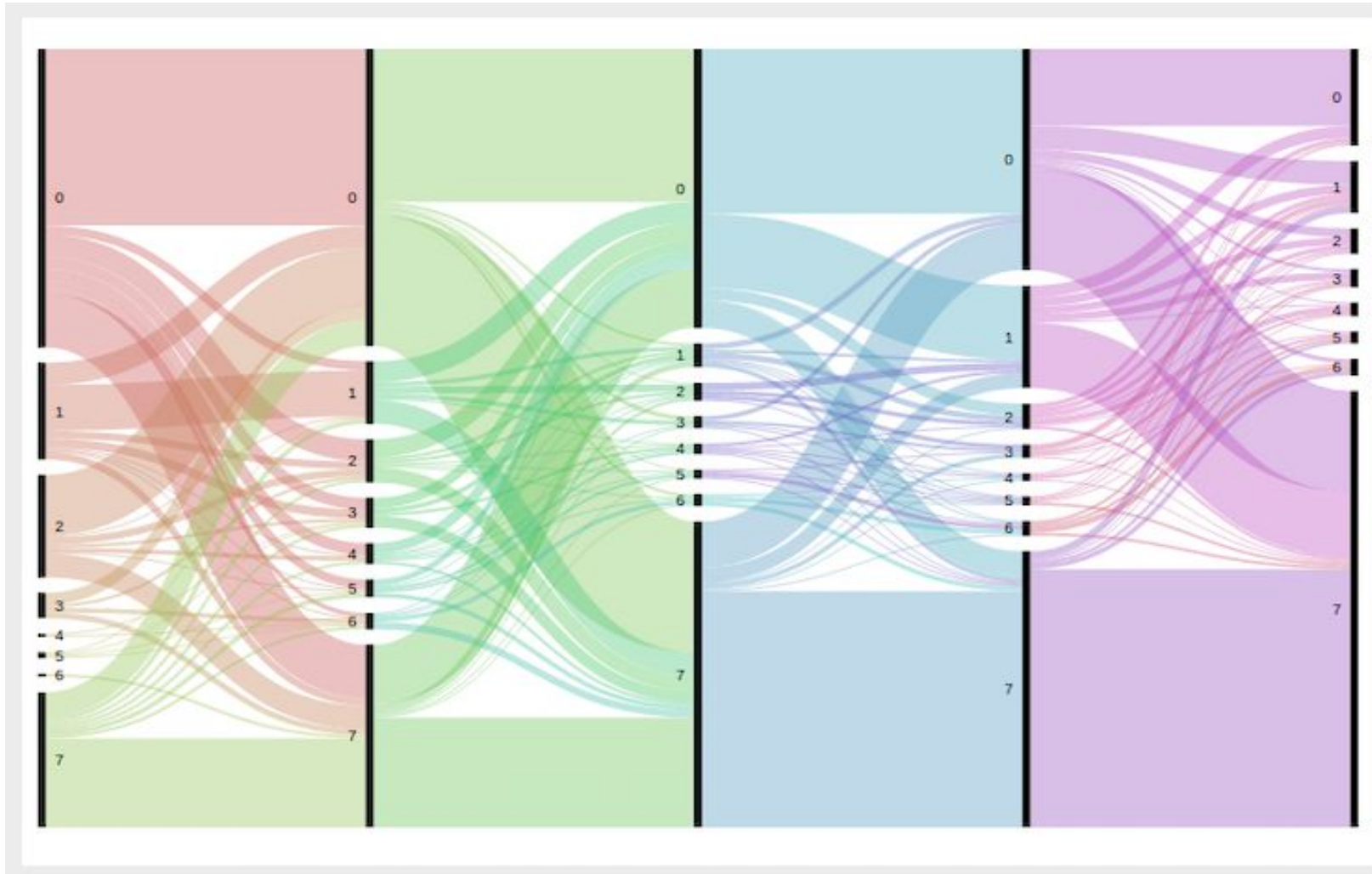
Eg [0,1,3,5,8]

# ALLUVIAL DIAGRAM FOR LL PROFILE



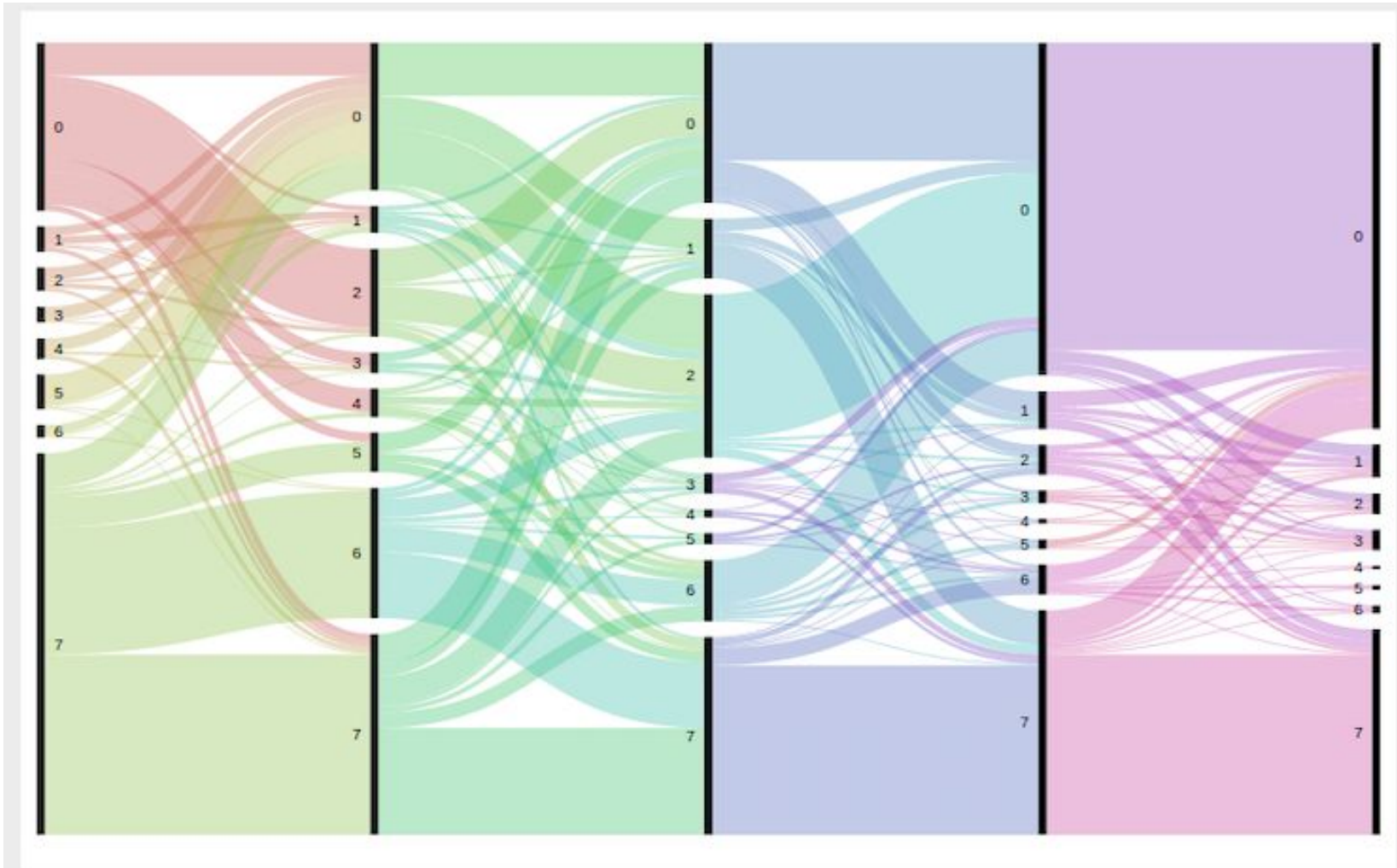
No of users:  
2963

# ALLUVIAL DIAGRAM FOR LH PROFILE



No of users:  
783

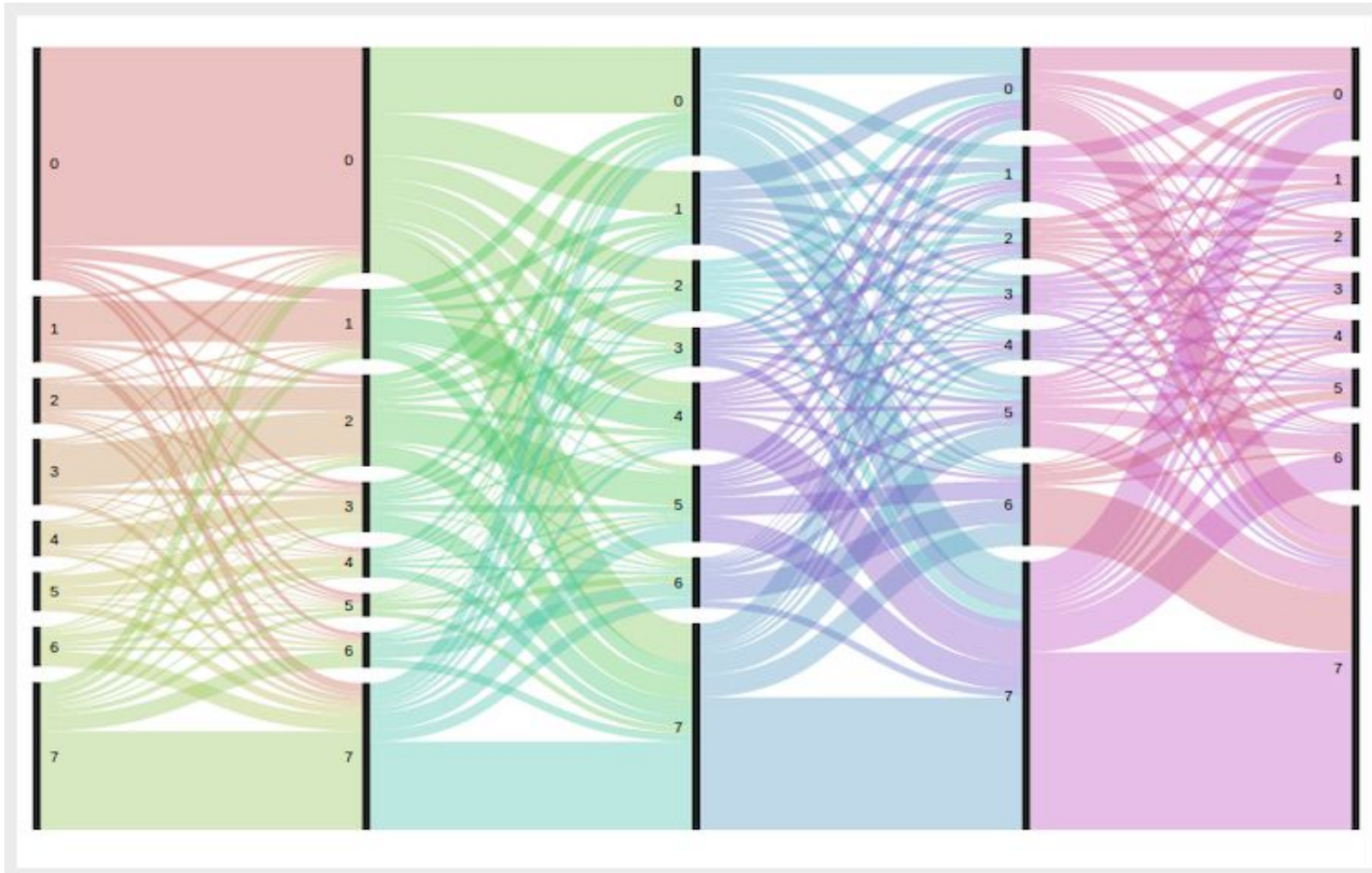
# ALLUVIAL DIAGRAM FOR HL PROFILE



No of users:  
439



# ALLUVIAL DIAGRAM FOR HH PROFILE



No of users:  
2698



# REFERENCES

- [1] We Know Who You Followed Last Summer: Inferring Social Link Creation Times In Twitter. Brendan Meeder, Brian Karrer, Amin Sayedi
- [2] Spread of hate speech in online social media Binny Mathew, Ritam Dutt, Pawan Goyal, Animesh Mukherjee
- [3] Maps of random walks on complex networks reveal community structure Martin Rosvall and Carl T. Bergstrom