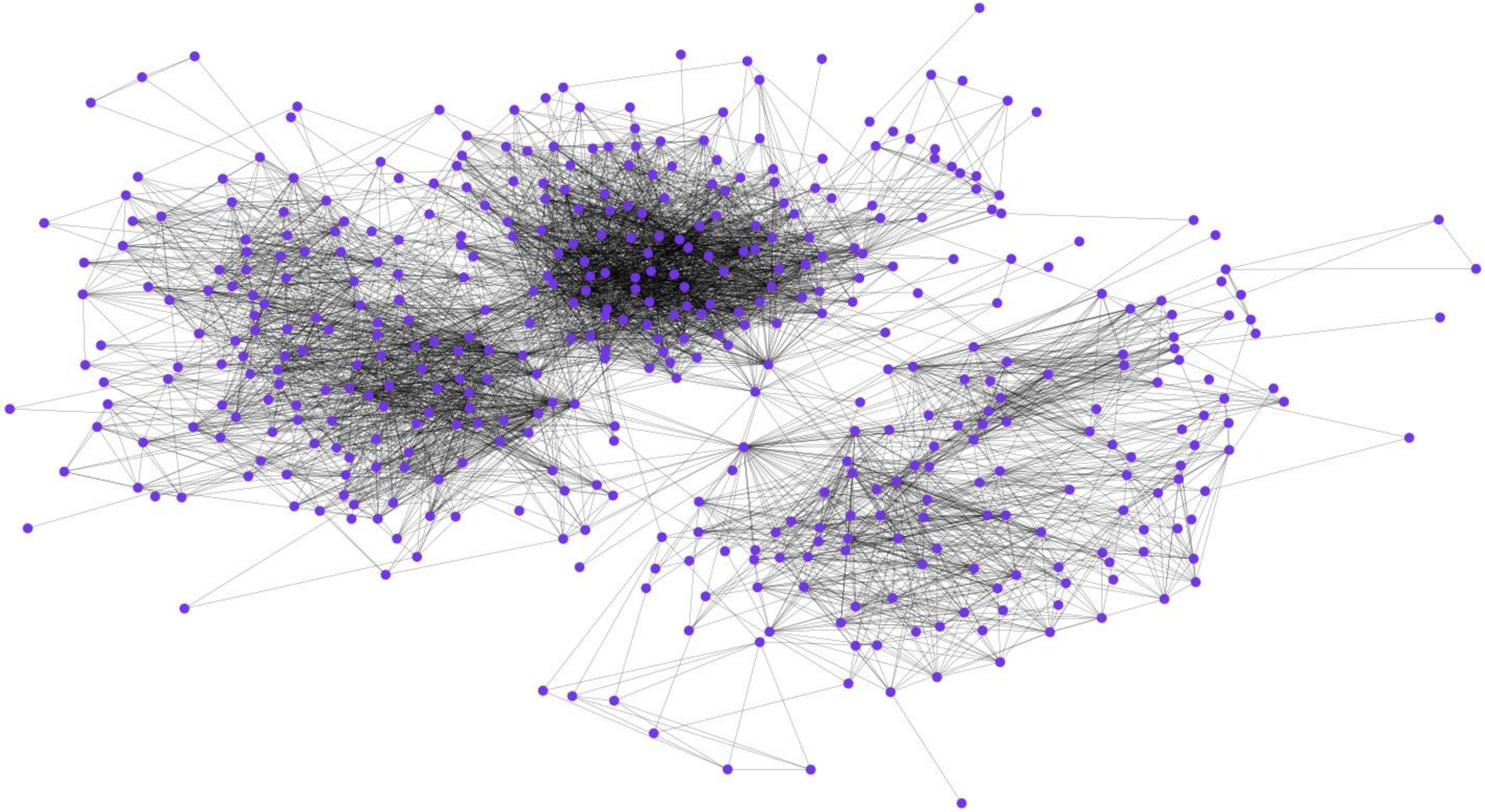
Social Network Analysis Project

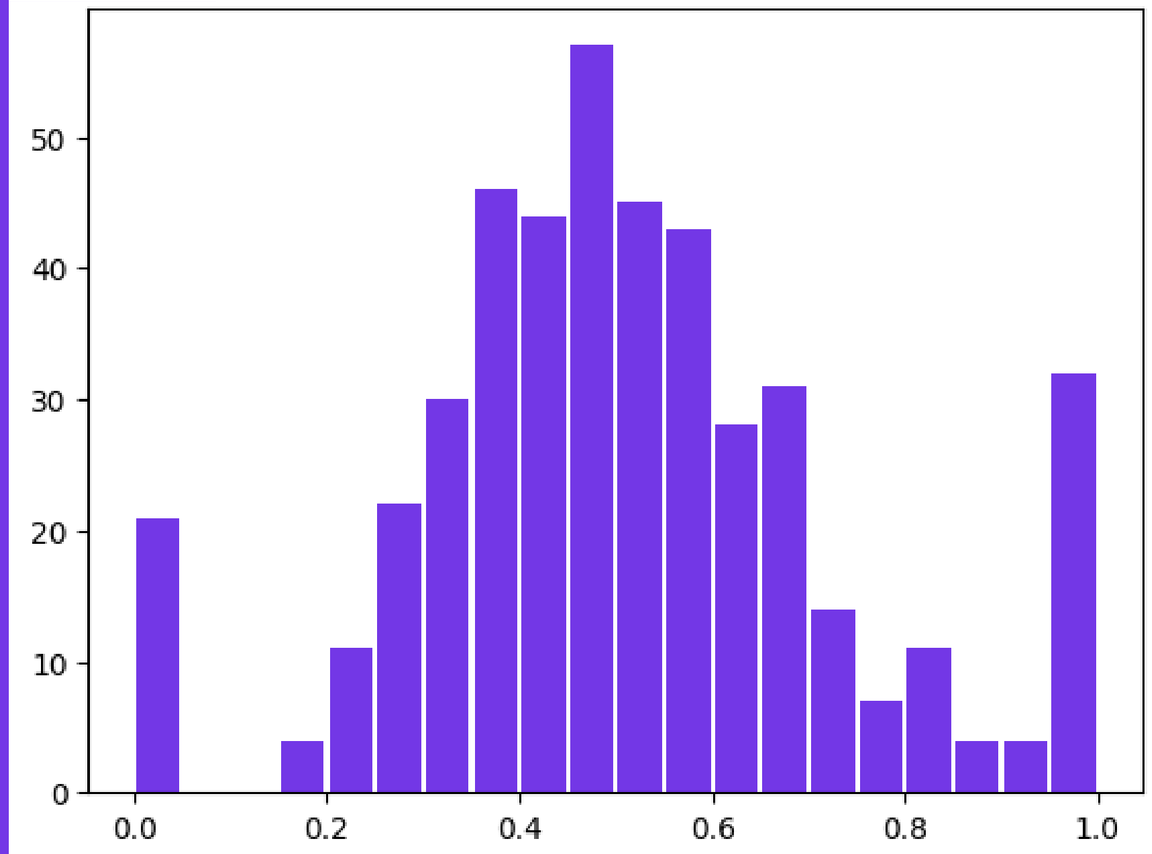
Author: Makhmudov Orkhan

Network Summary



Network Summary

Clustering coefficient distribution



Node attributes

- Label
- Name
- Surname
- Nickname
- Sex

Network Statistics

- Size = 4830
- Order = 454
- Diameter = 7
- Radius = 4
- Deleted nodes - 7

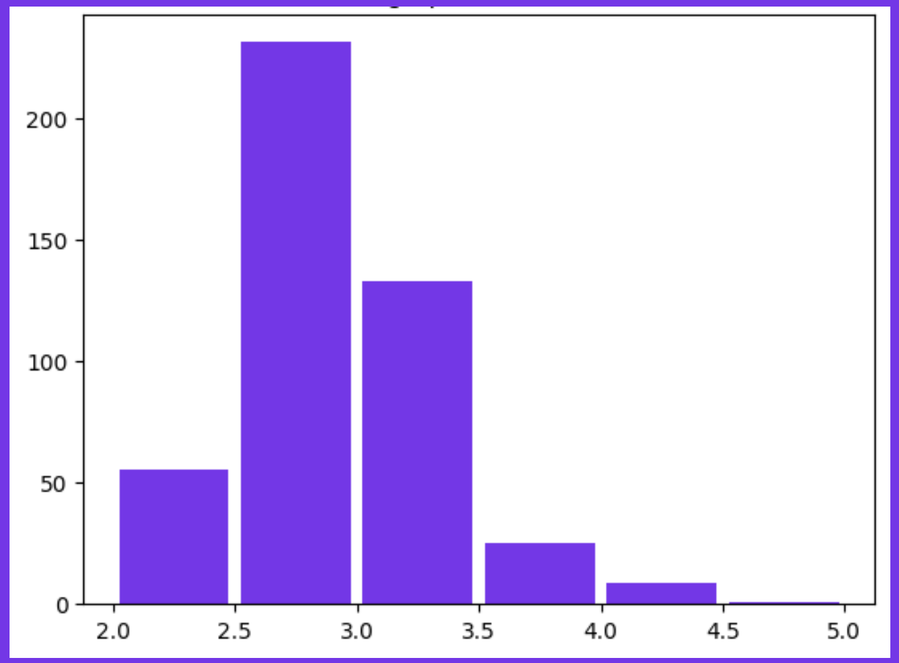
Clustering coefficient

- Average clustering = 0.5128
- Global clustering = 0.3899

Network Summary

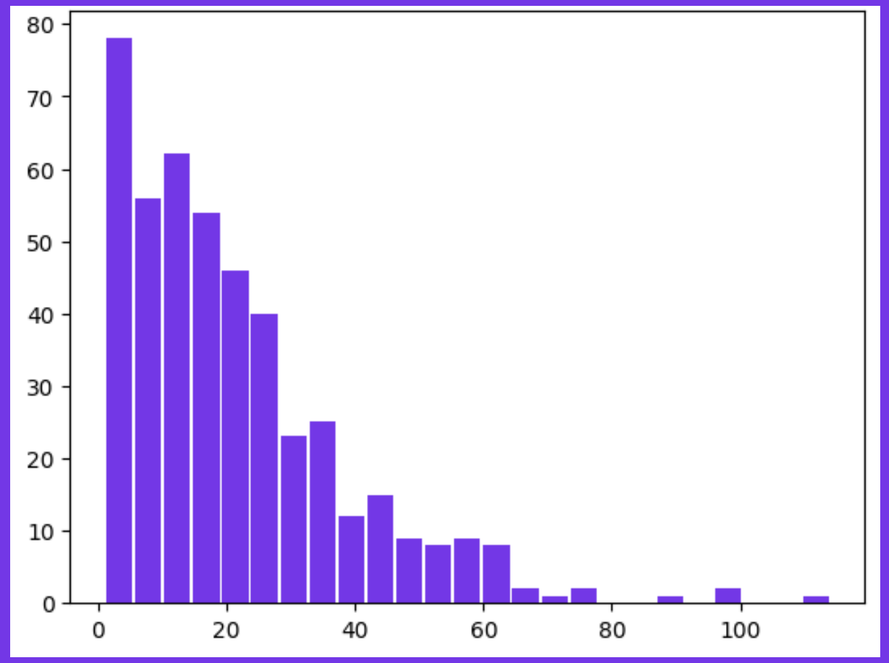
Average path length distribution

- Average shortest path length = 2.95



Degree distribution

- Average degree = 21.2775



Structural Analysis

The closest random graph model

1. My network
- diameter = 7
- radius = 4
- average clustering = 0.5128
- average degree = 21.2775

2. Random network
- diameter = 3
- radius = 3
- average clustering = 0.0512
- average degree = 22.7269

3. Preferential attachment
- diameter = 74
- radius = 2
- average clustering = 0.1139
- average degree = 21.467

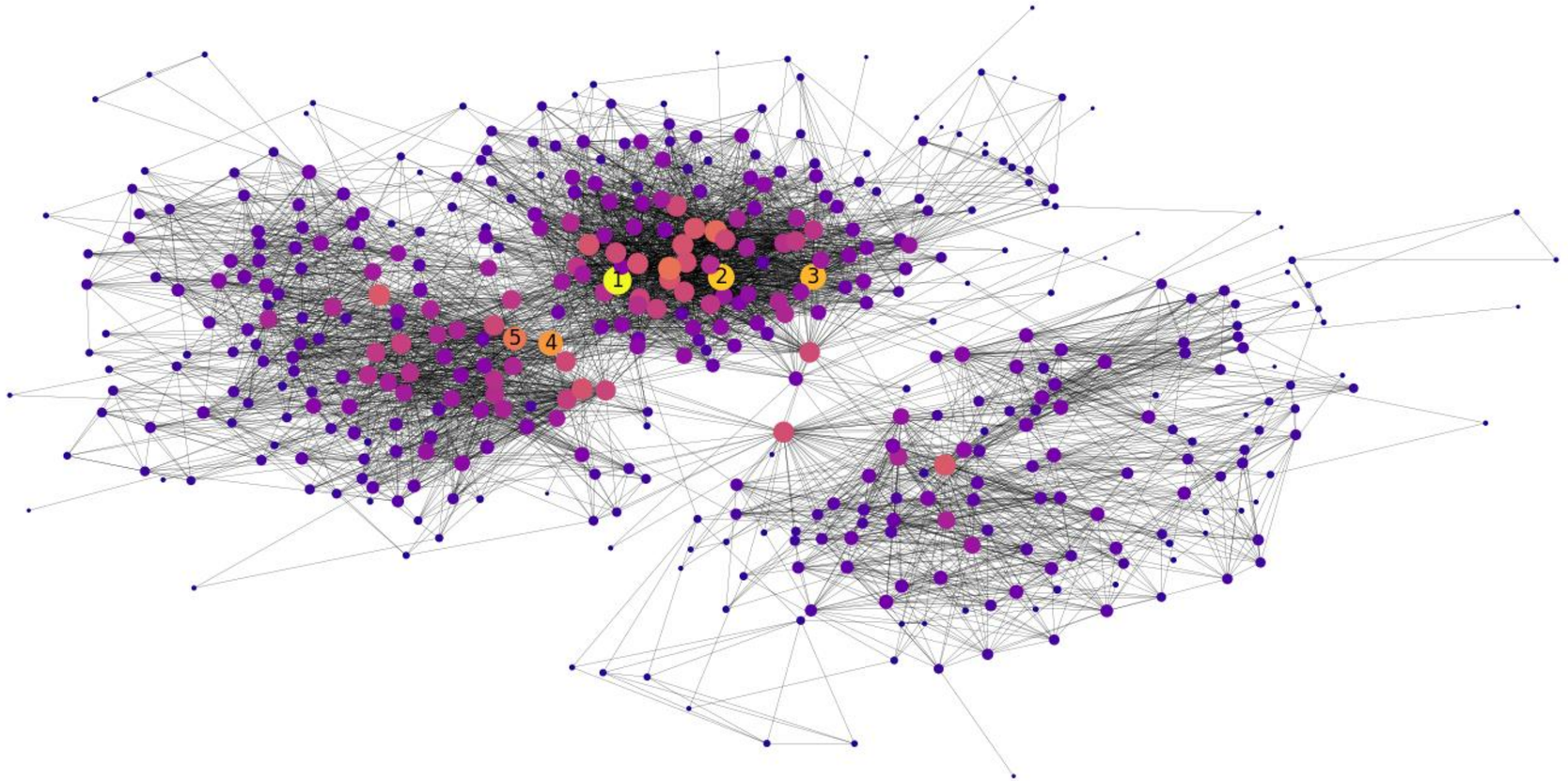
4. Small world
- diameter = 4
- radius = 3
- average clustering = 0.5253
- average degree = 22

Structural Analysis

Centrality measures: degree

Top 5 nodes:

1. Sergey Parshikov – my friend from MAI, very popular person
2. Ivan Zakharov – my friend from MAI
3. Nikita Potebnya – my friend from MAI
4. Anya Egorova – we studied on the same stream at MAI
5. Ekaterina Yasko – my classmate from MAI

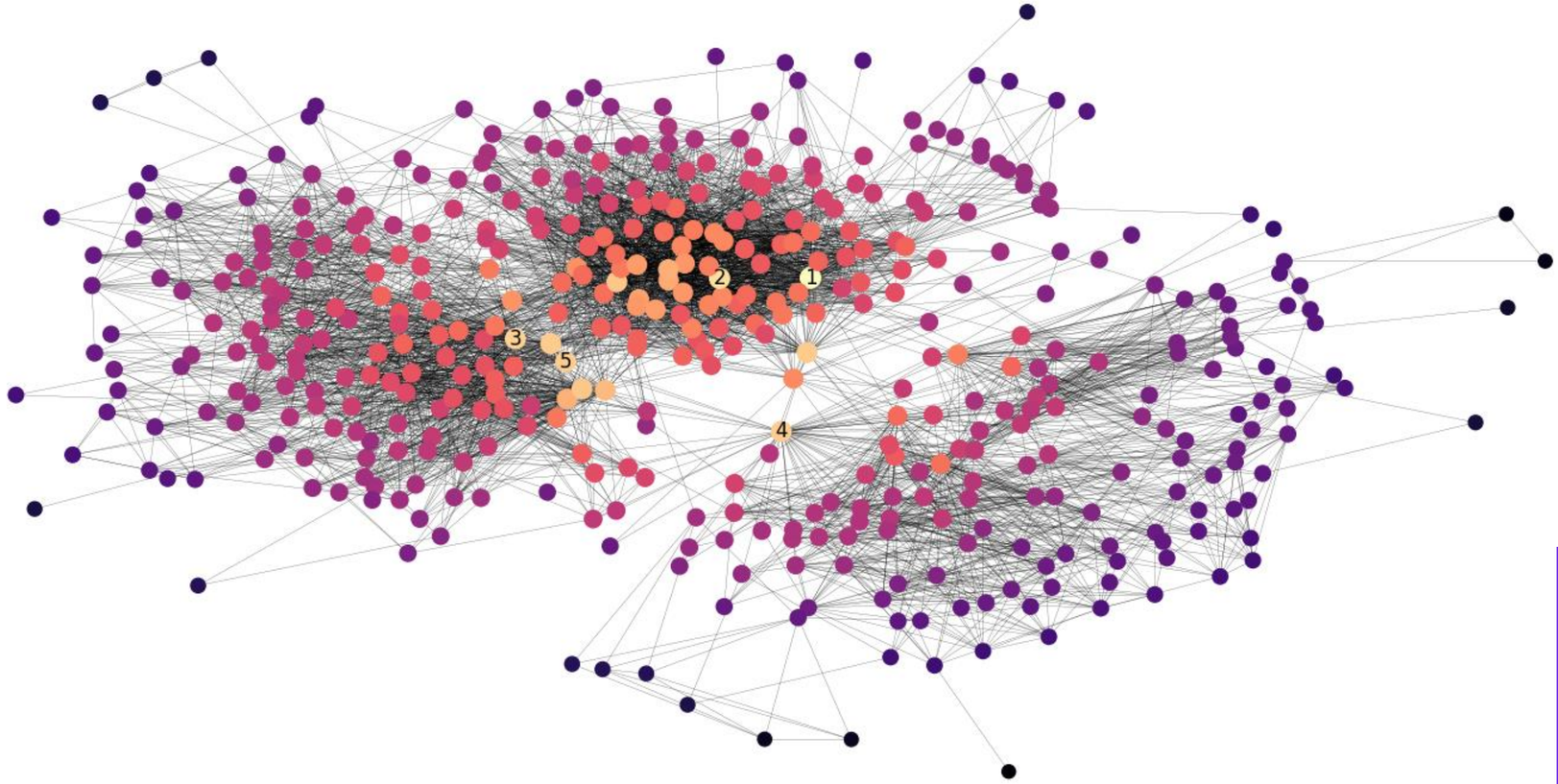


Structural Analysis

Centrality measures: closeness centrality

Top 5 nodes:

1. Nikita Potebnya
2. Ivan Zakharov
3. Ekaterina Yasko
4. Max Dukhin – my best school friend
5. Mikich Esayan –we studied on the same stream at MAI

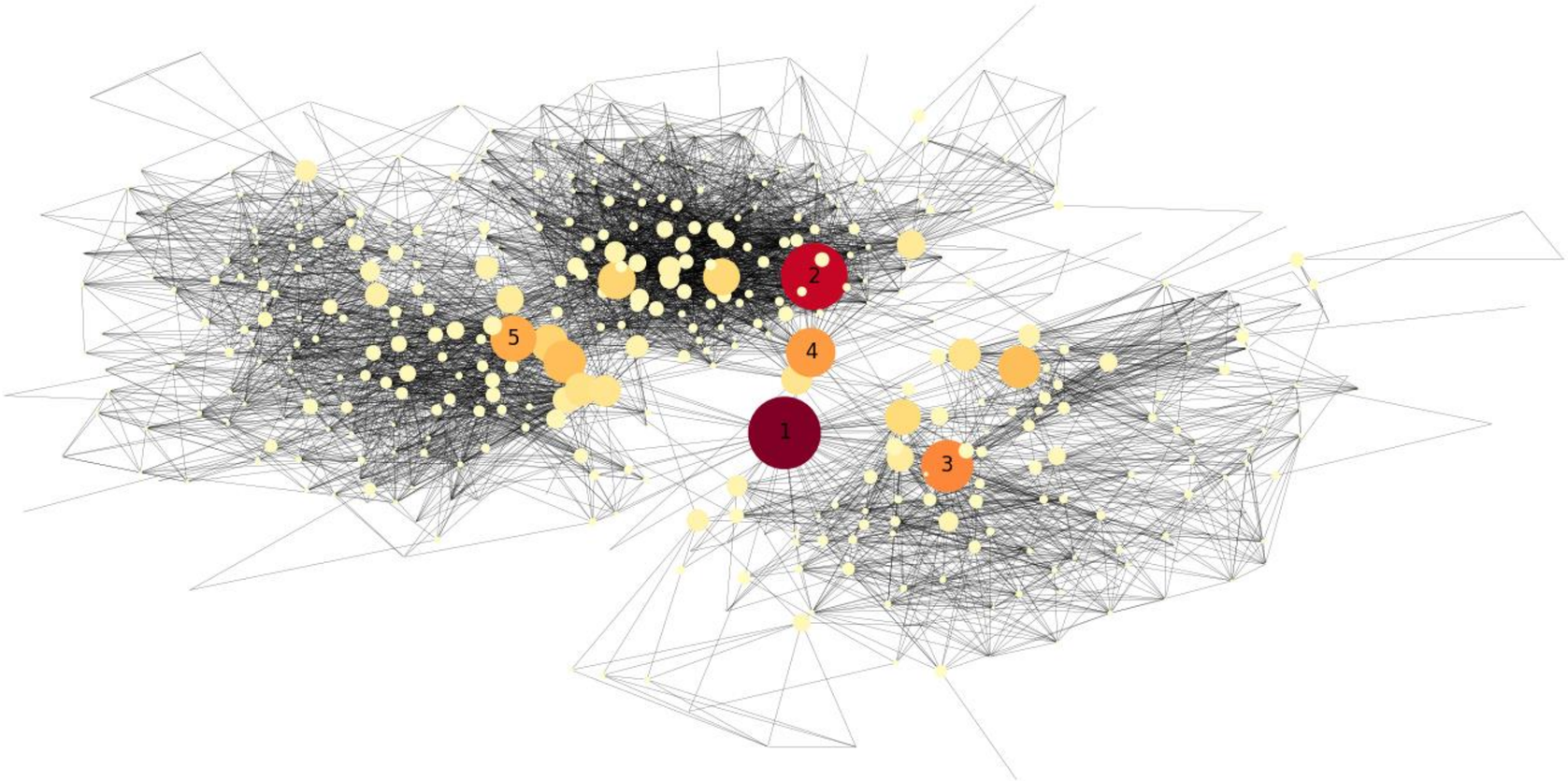


Structural Analysis

Centrality measures: betweenness centrality

Top 5 nodes:

1. Max Dukhin
2. Nikita Potebnya
3. Max Nikulin –my best school friend
4. Katya Kusakina – my friend from MAI
5. Ekaterina Yasko

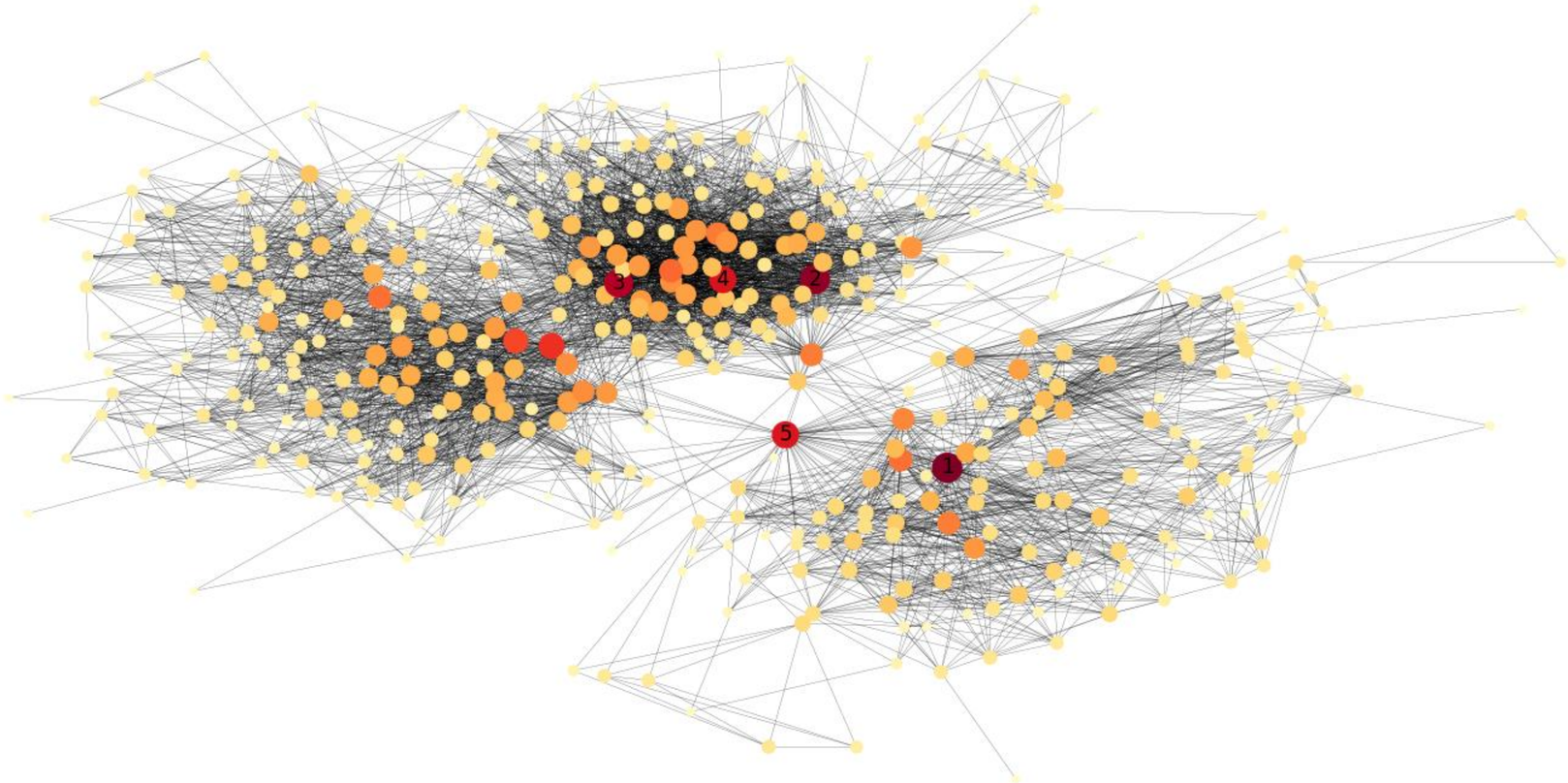


Structural Analysis

Page rank

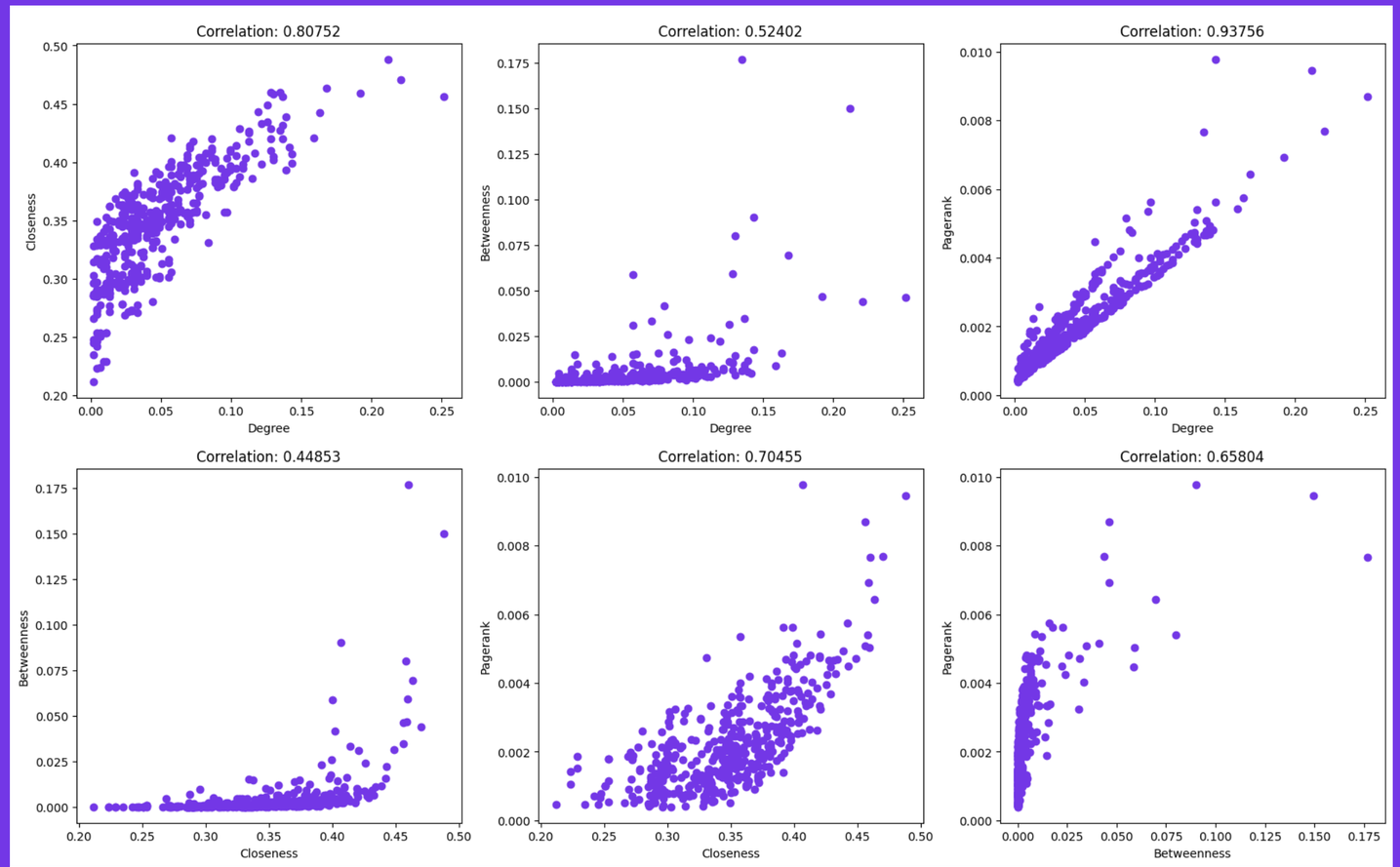
Top 5 nodes:

1. Max Nikulin
2. Nikita Potebnya
3. Sergey Parshikov
4. Ivan Zakharov
5. Max Dukhin



Structural Analysis

Correlation comparison



	centralities	degree	closeness	betweenness	pagerank
0	degree	1.00000	0.80750	0.52418	0.93763
1	closeness	0.80750	1.00000	0.44855	0.70456
2	betweenness	0.52418	0.44855	1.00000	0.65811
3	pagerank	0.93763	0.70456	0.65811	1.00000

Strong correlation between page rank and degree centrality.

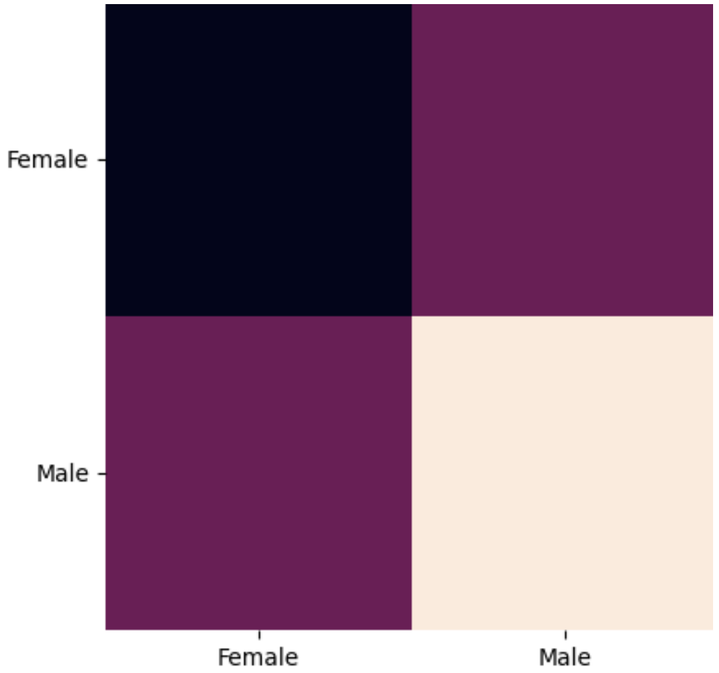
Top nodes:

1. Nikita Potebnya
2. Ivan Zakharov
3. Max Dukhin
4. Ekaterina Yasko
5. Sergey Parshikov

Structural Analysis

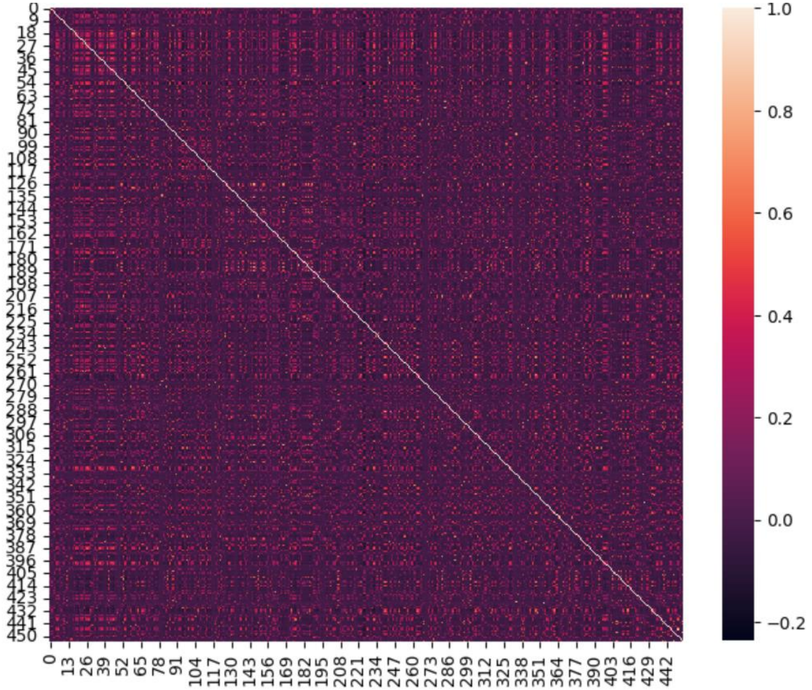
Assortative Mixing

Attribute: Sex

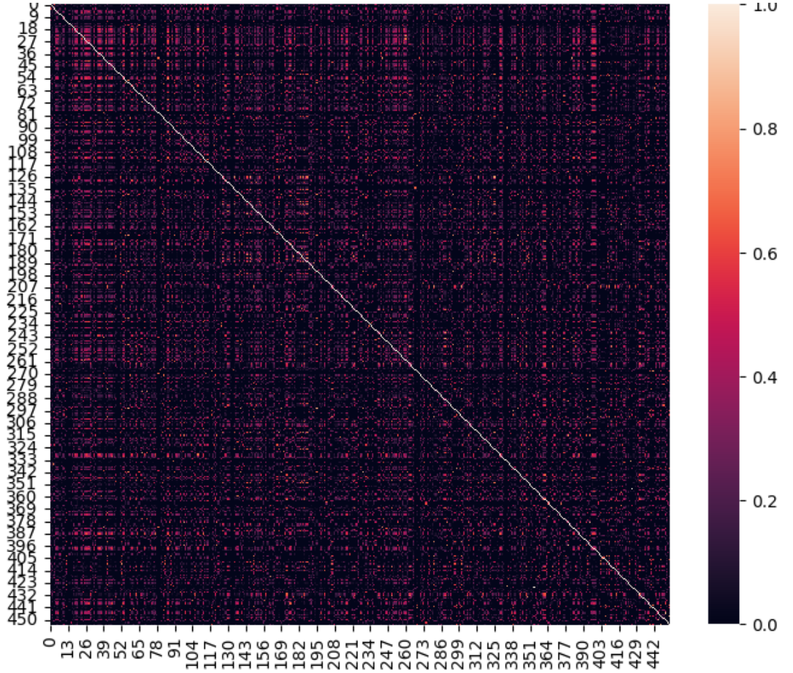


Node structural equivalence

Pearson correlation



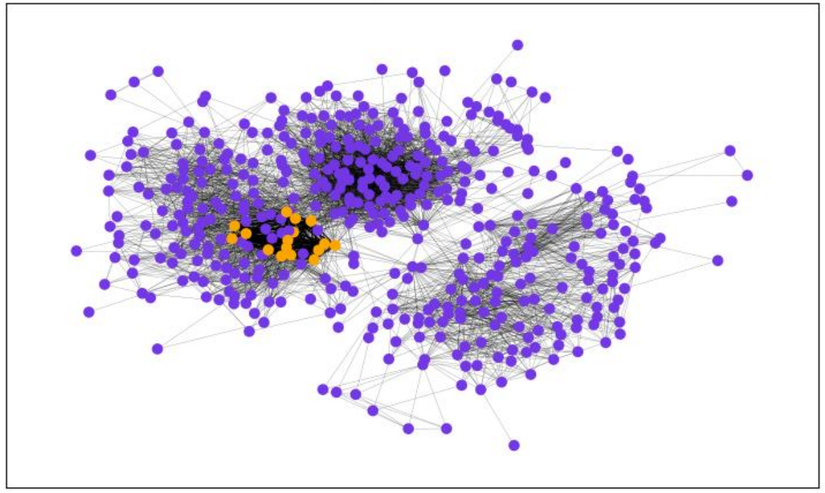
Cosine correlation



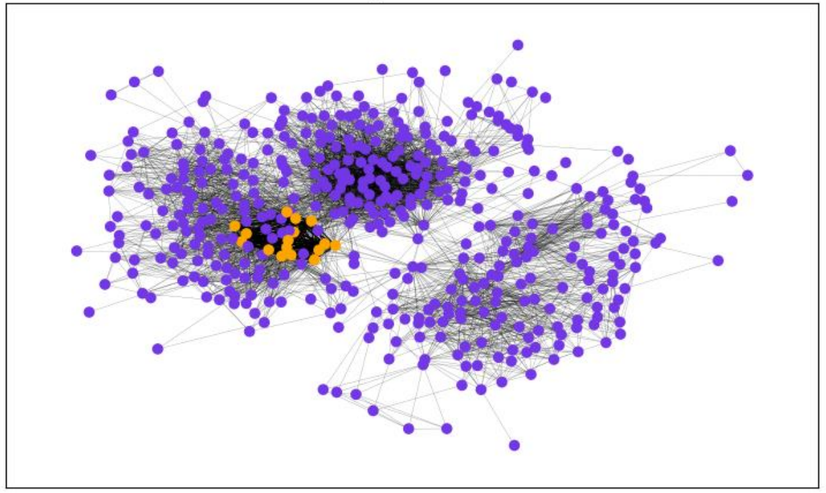
Community Detection

Clique search

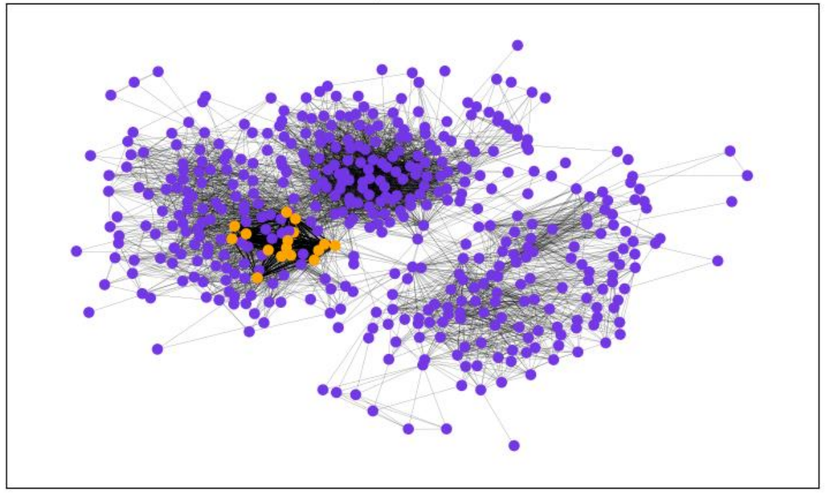
Clique size: 16



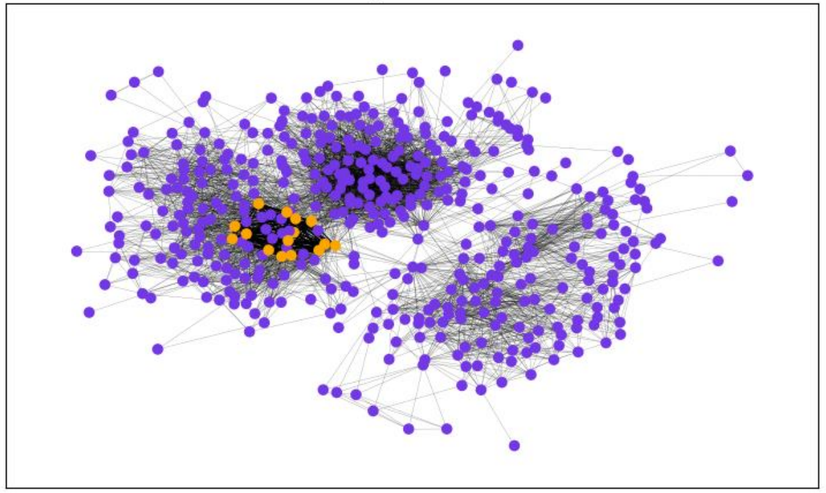
Clique size: 16



Clique size: 16



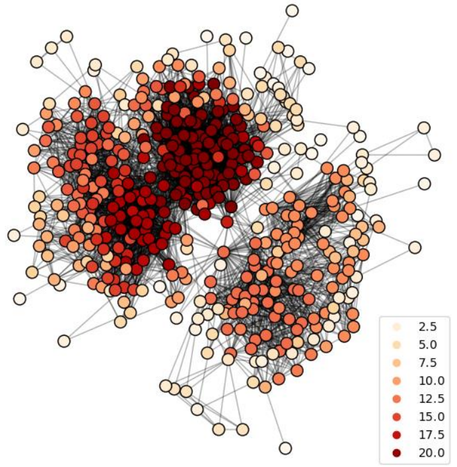
Clique size: 15



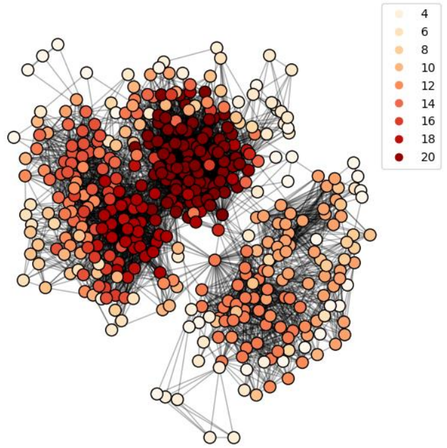
Community Detection

k-cores visualization

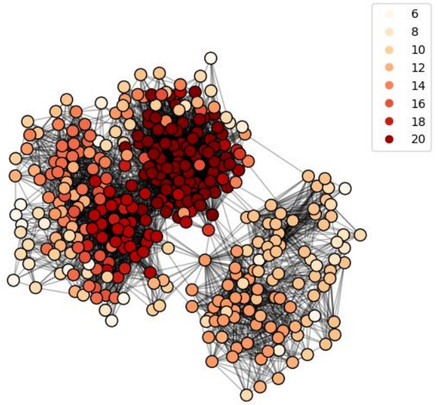
k-shells on 0-core



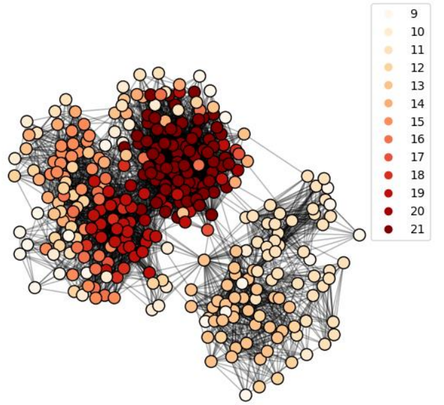
k-shells on 3-core



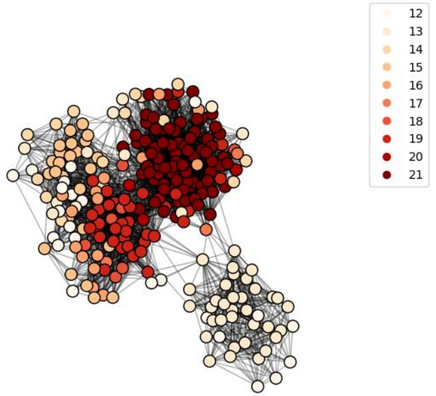
k-shells on 6-core



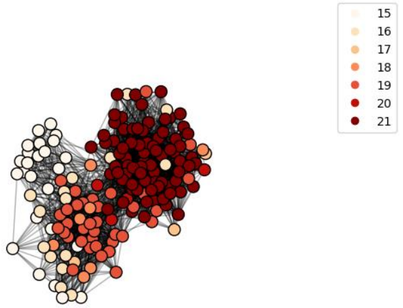
k-shells on 9-core



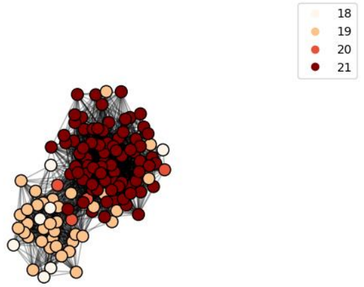
k-shells on 12-core



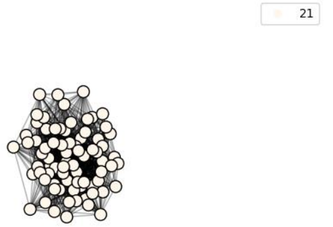
k-shells on 15-core



k-shells on 18-core

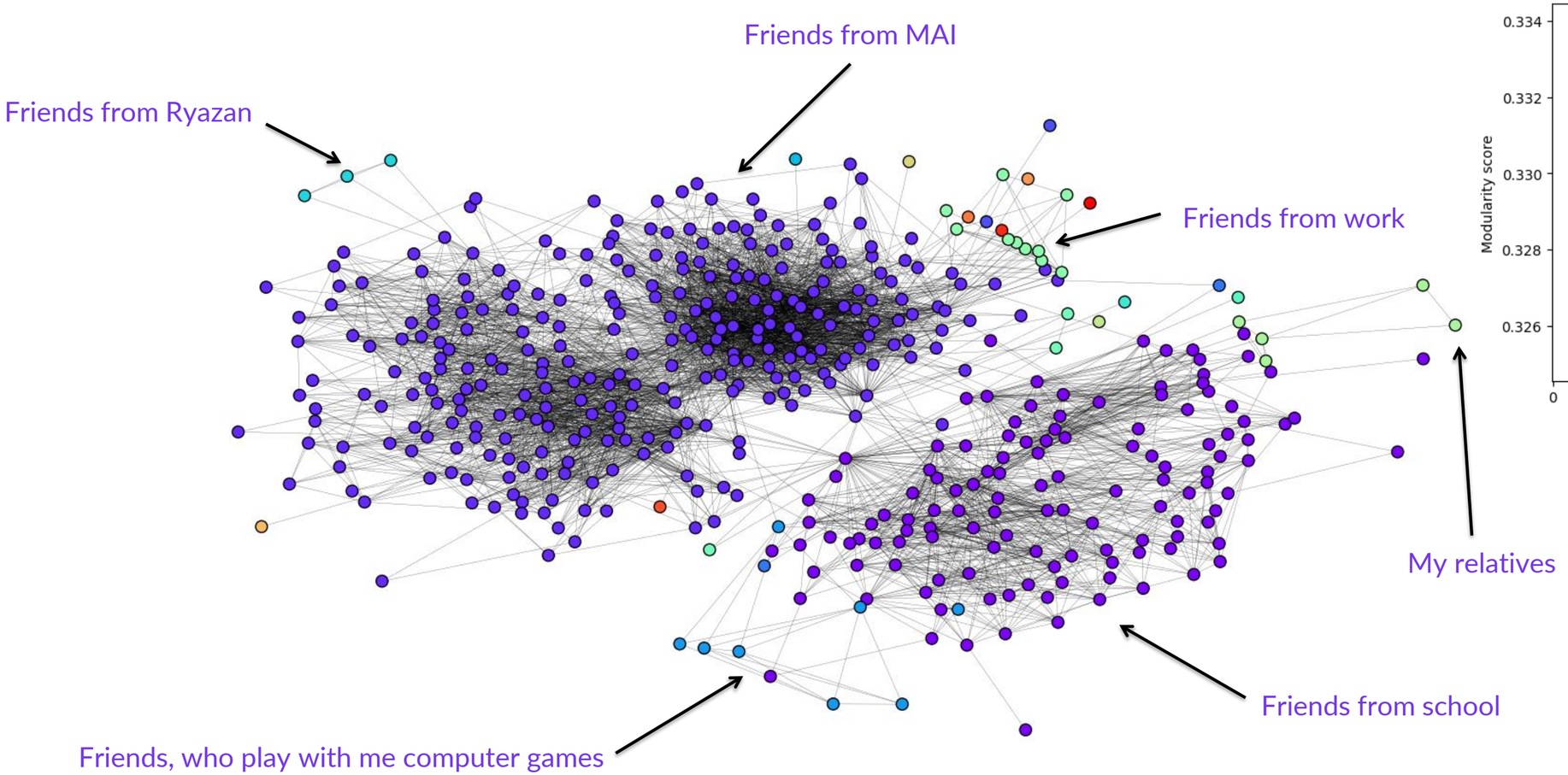


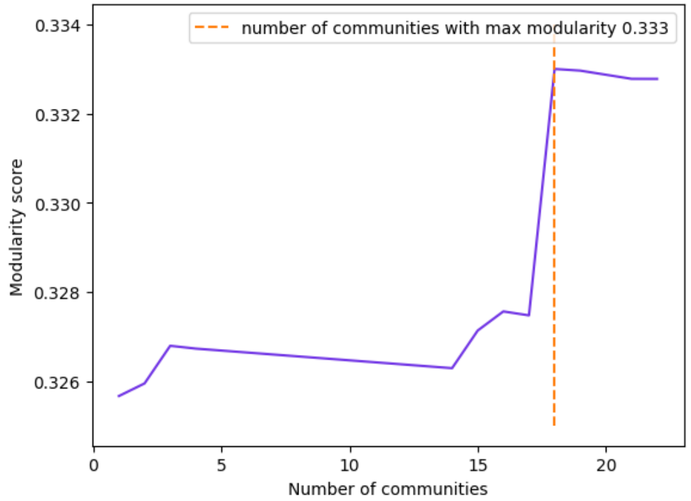
k-shells on 21-core



Community Detection

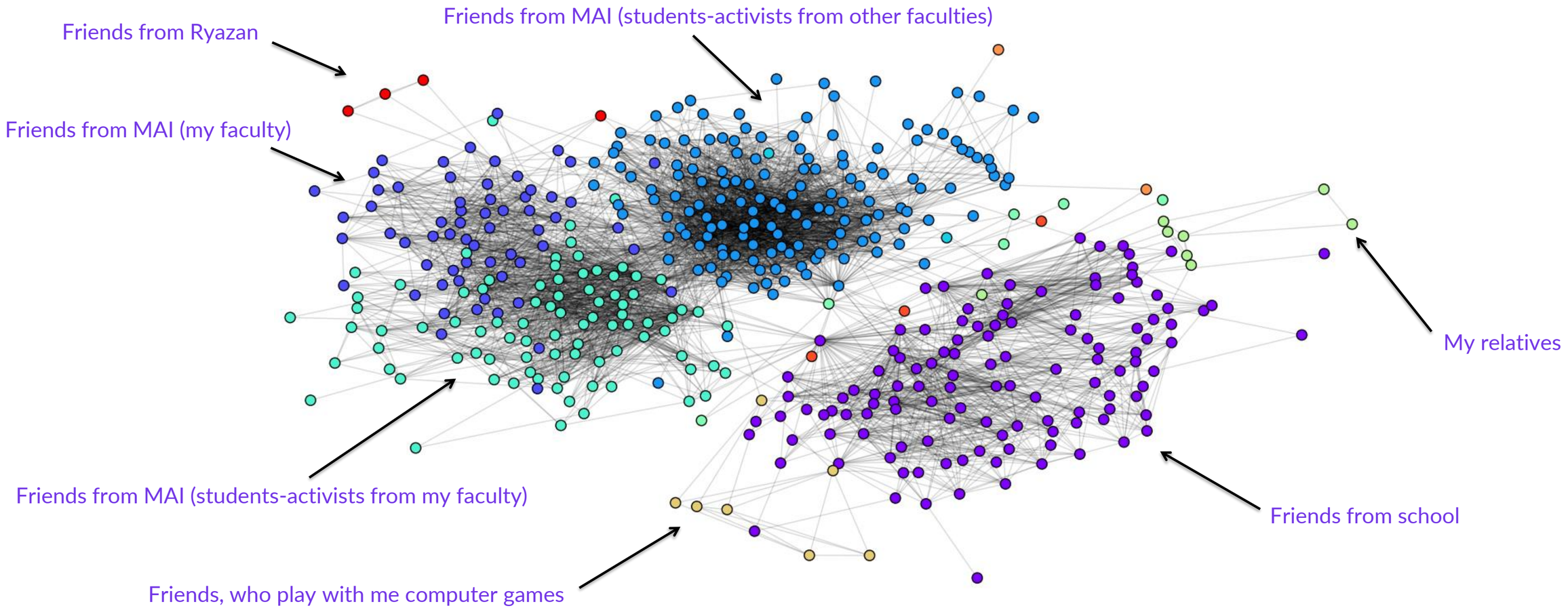
Girvan-Newman





Community Detection

Agglomerative clustering



Community Detection

Laplacian eigenmaps