



NATIONAL RESEARCH  
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# Network Science Project 1

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### Graph properties

- 154 nodes
- 1474 edges
- Radius: 5
- Diameter: 8
- Clustering coefficient: 0.65

### Node properties

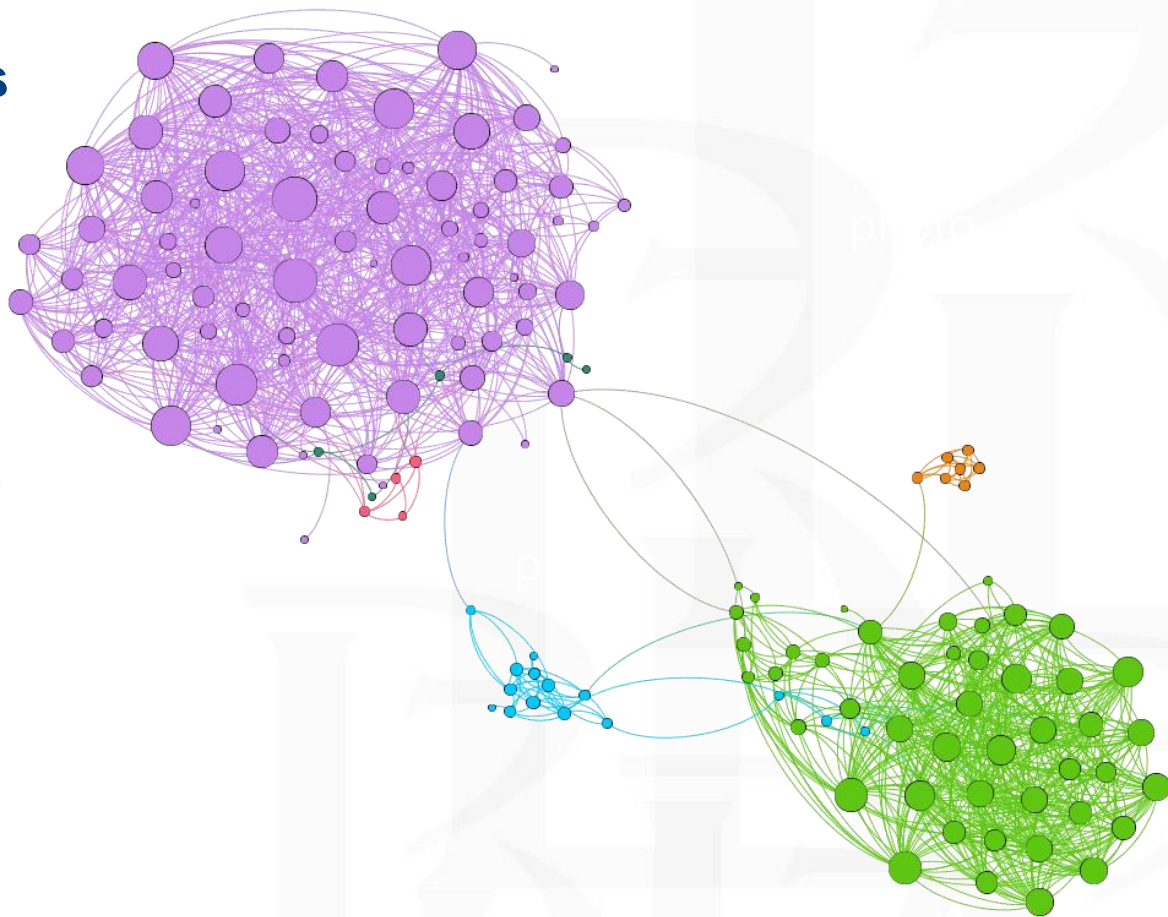
- Name
- Gender
- Age
- City
- Number of friends (in general, not only mutual)
- Number of friends and followers (in general)

## Four distinct communities

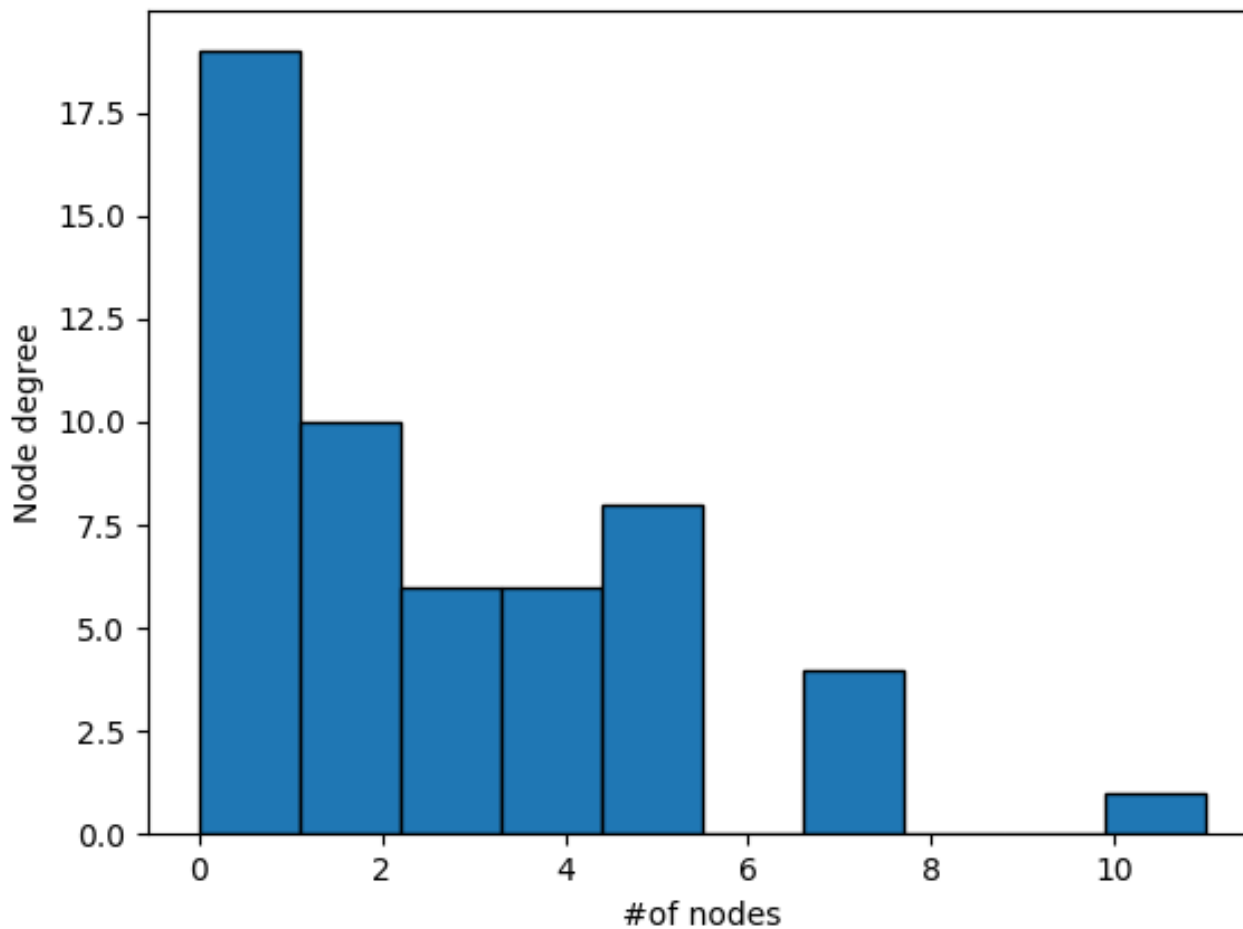
- Ulan-Ude
- Bachelor program
- Master program
- Work

## Several subcommunities within larger communities

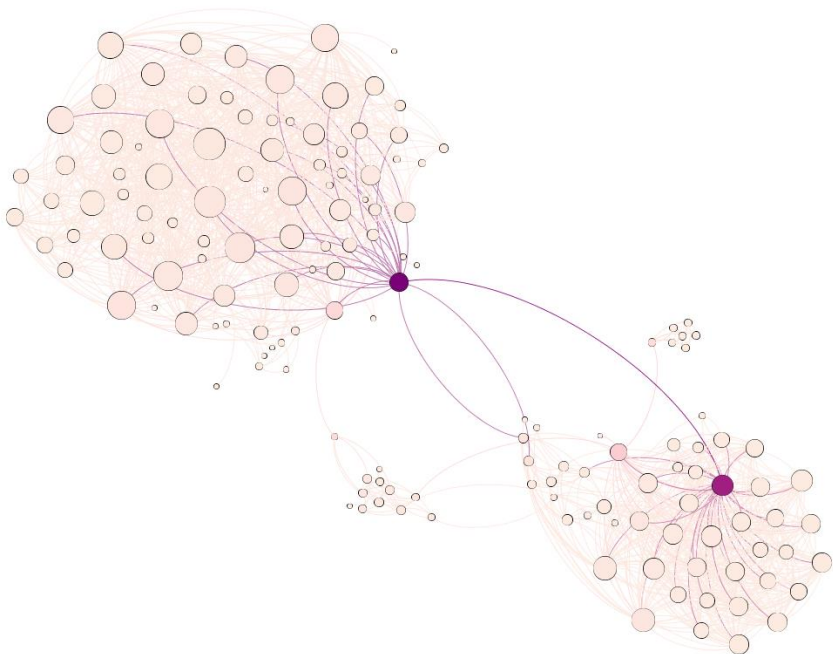
- Schoolmates of the same year
- Schoolmates year younger
- Dormitory friends



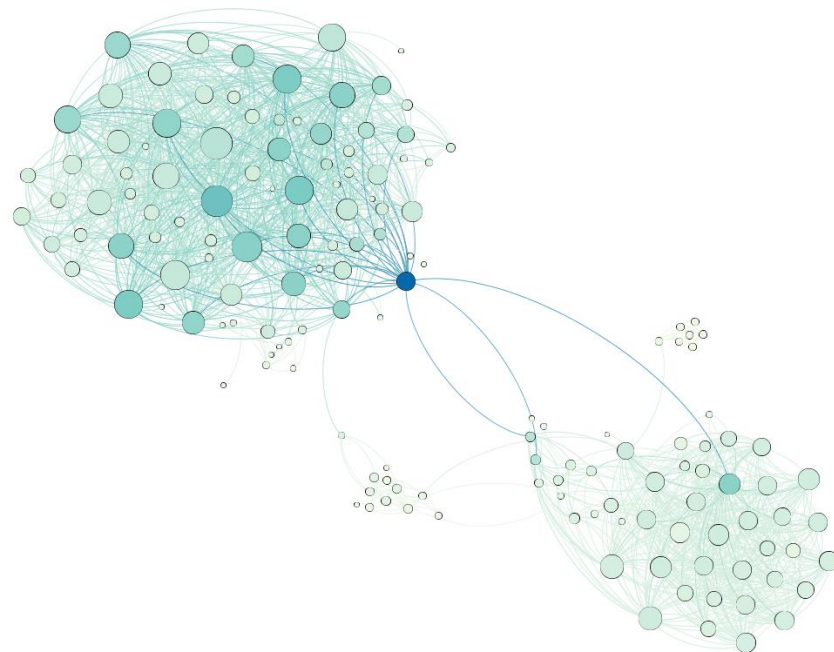
## Node degree distribution



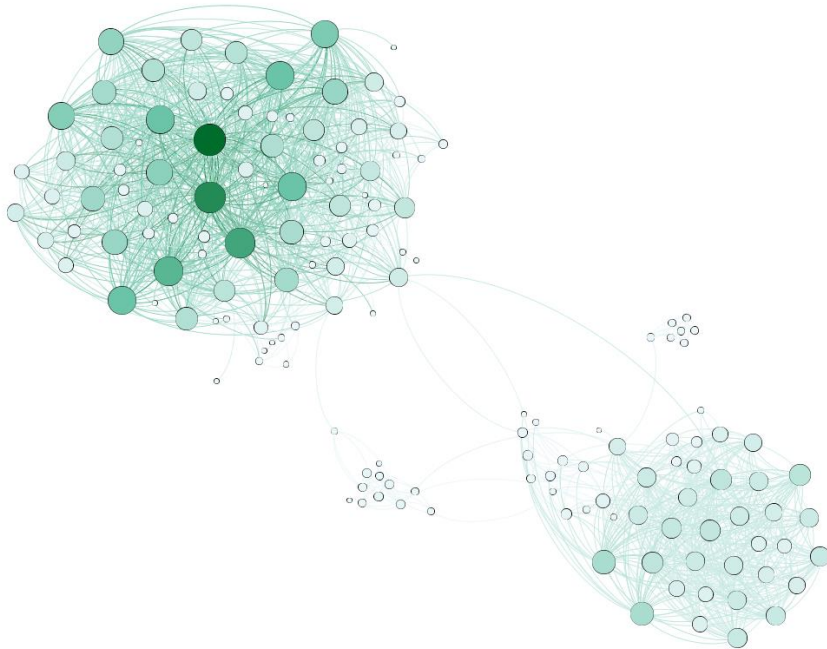
## Betweenness centrality



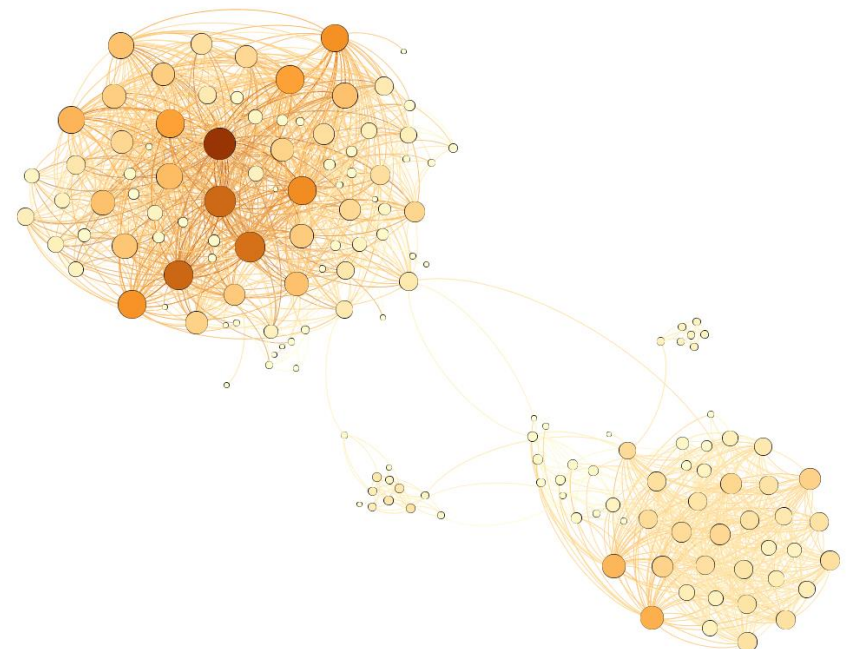
## Closeness centrality



## Degree centrality



## Pagerank



## Centralities conclusions

- Nodes with high degree centrality in the largest community also have high Pagerank and closeness centrality due to high density of community
- Nodes connecting two largest communities have incredibly high betweenness centrality and high closeness centrality

## Assortativity coefficients

Node degree (mutual friends): 0.015

Age: 0.032

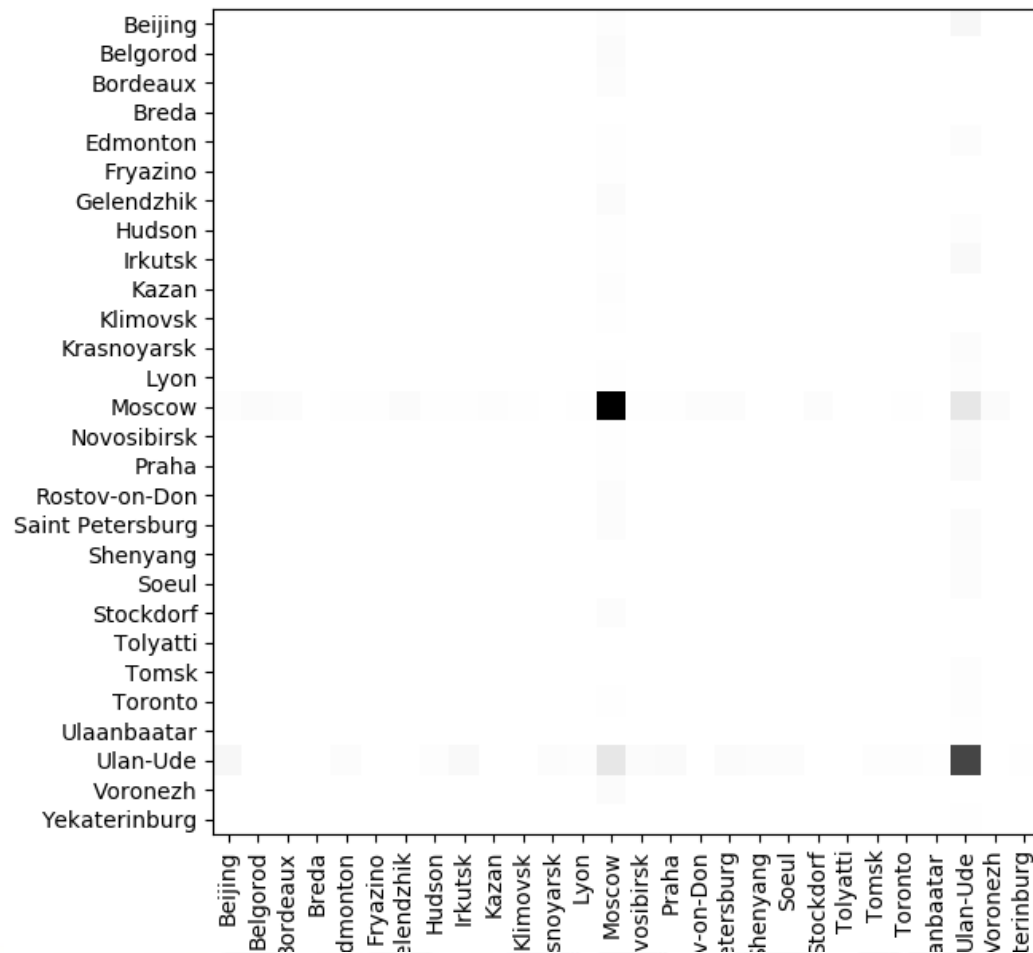
City: 0.265

Gender: 0.0816

Friends overall: -0.01

Friends and followers overall: -0.0095

## Assortativity mixing for cities



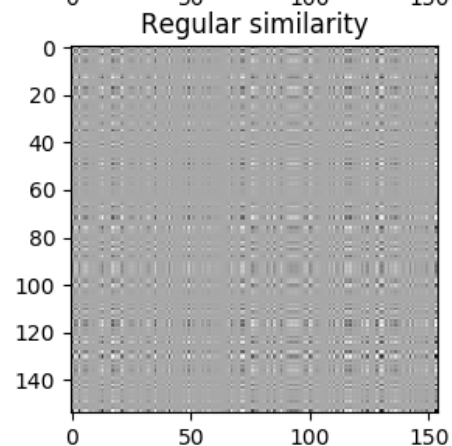
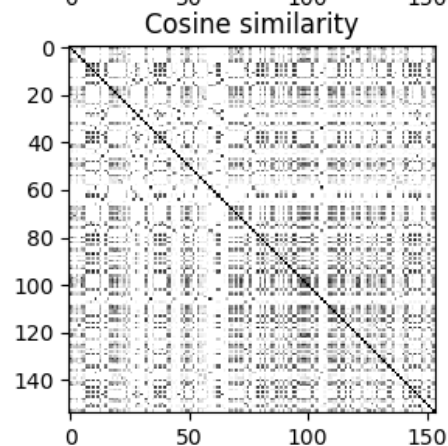
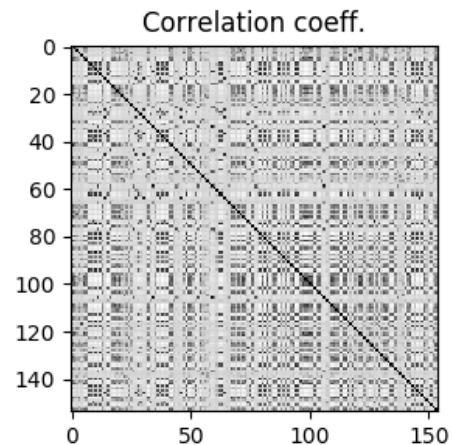
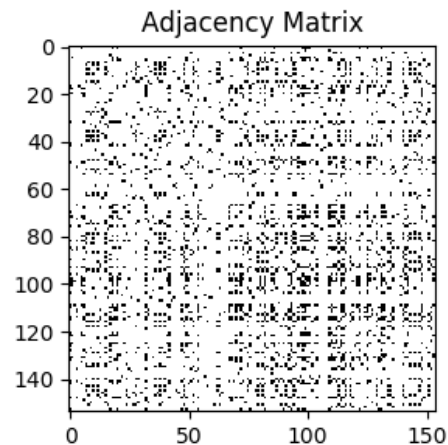


## Subcommunities form cliques

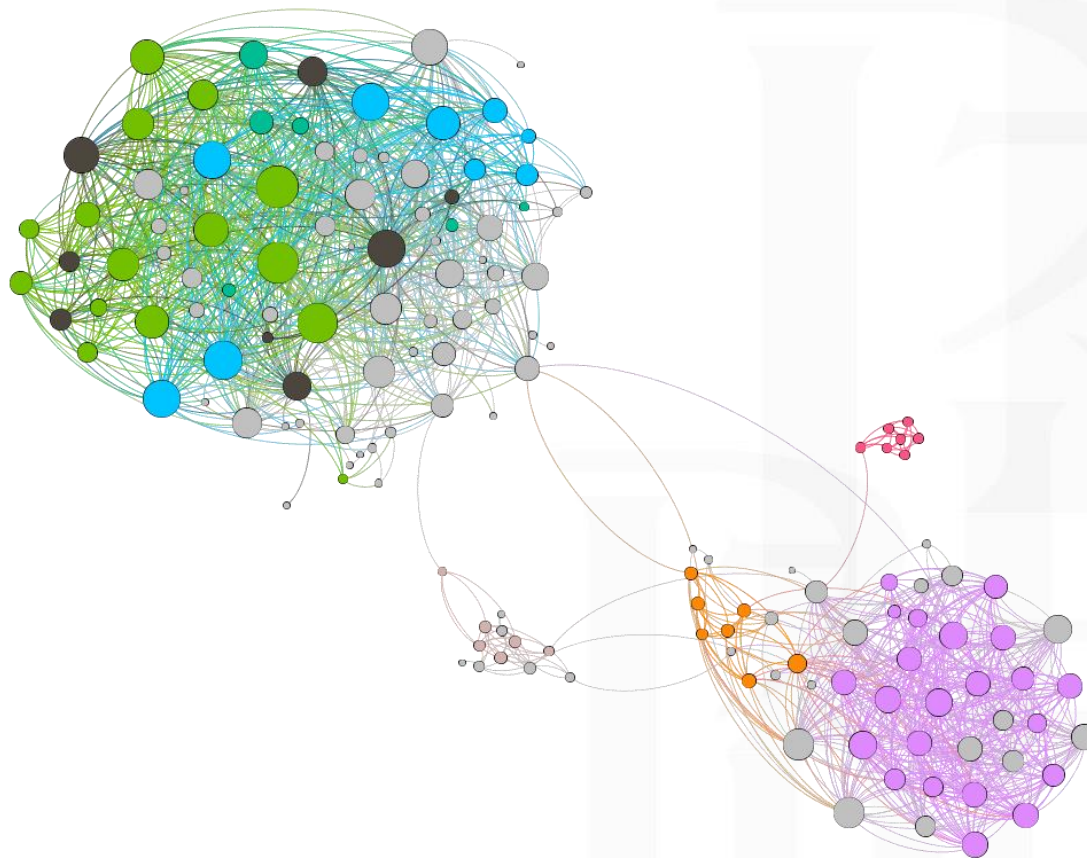
- Classmates
- Schoolmates year younger
- Dormitory friends
- Baccalaureate peers
- Master program peers
- Work colleagues



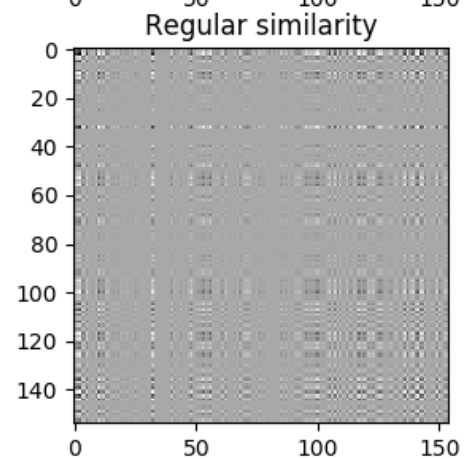
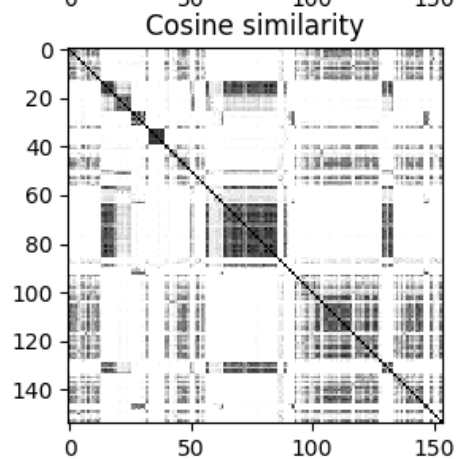
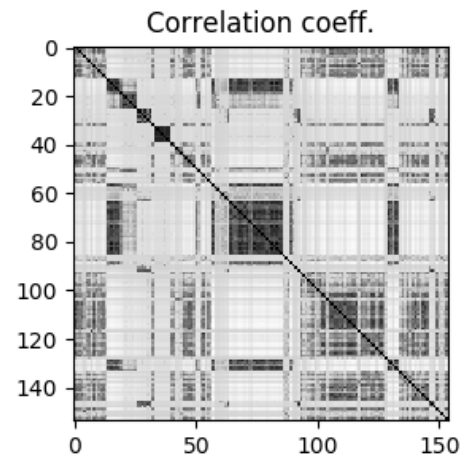
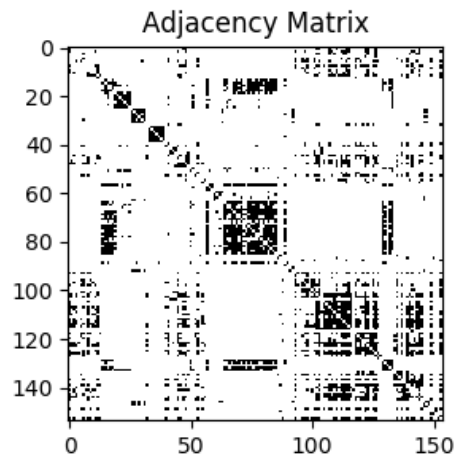
## Initial similarity visualization



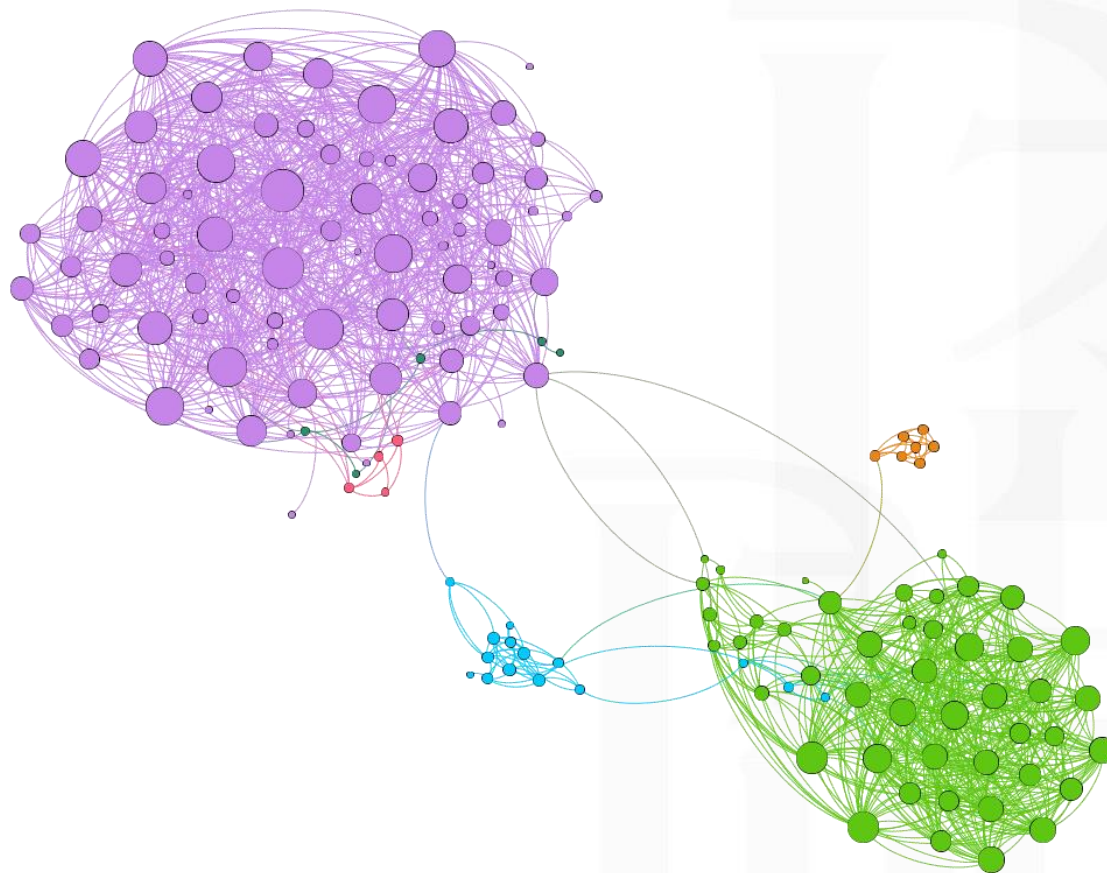
## Markov Cluster Algorithm



## Markov Cluster Algorithm

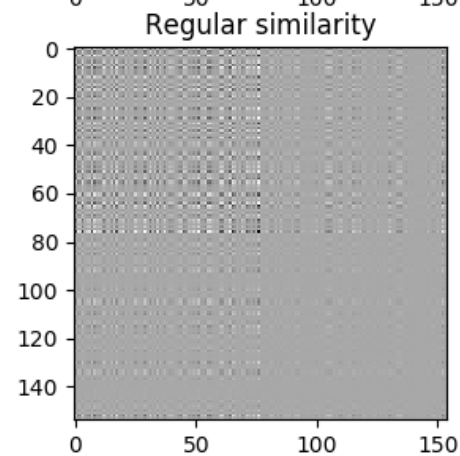
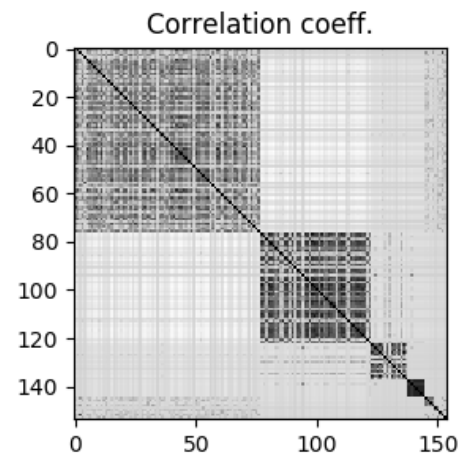
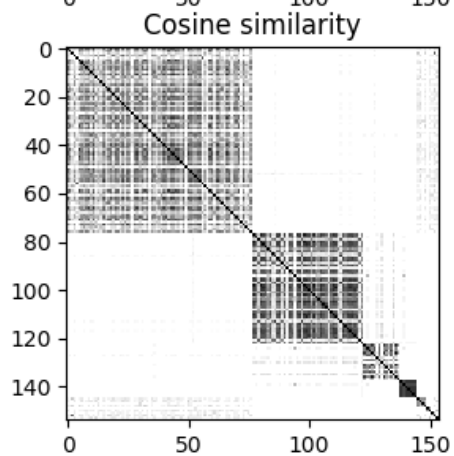
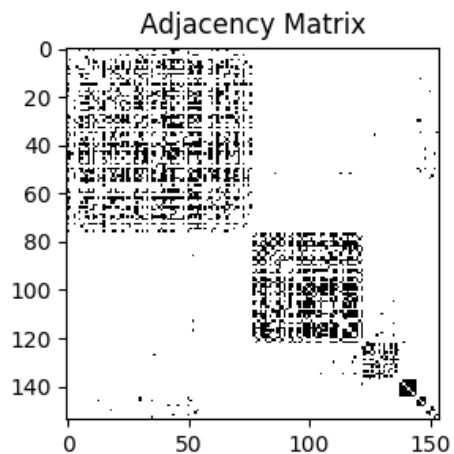


## Louvian method





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Thank you  
for your attention!