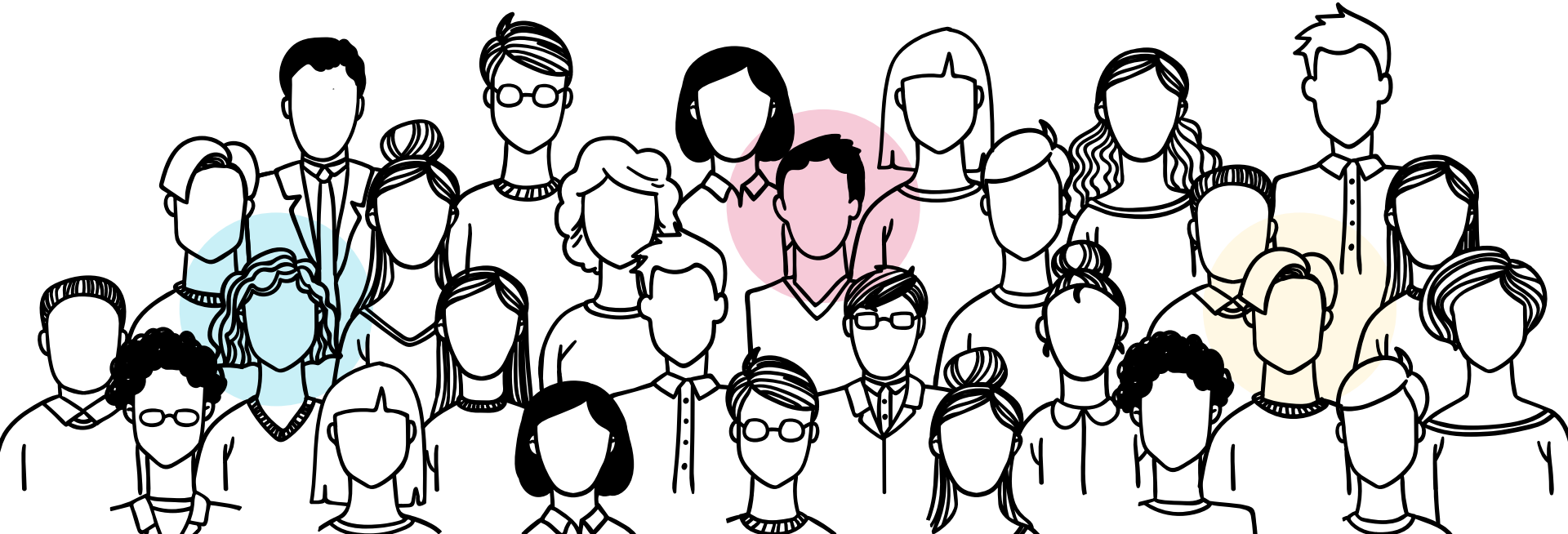


VK FRIEND NETWORK

Graph Analysis and Social Networks



STUDENT

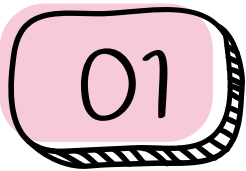


SOFIA SMOLIANINOVA

Master's Programme
in Data Science

-

Erasmus



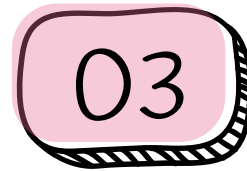
Introduction

VKontakte (VK) - social
network



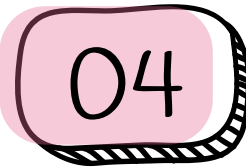
How to get data?

Creation and authorization of
the application



Gephi

Data representation



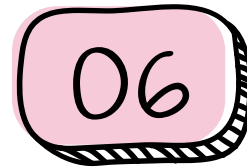
Results

Community detection



Discussion

What we can improve?



Conclusion

Summary

01

INTRODUCTION



VK – social network

VK or originally VKontakte is the **second** largest social network in Europe after Facebook. It is available in several languages, but is especially popular among Russian-speaking users around the world.

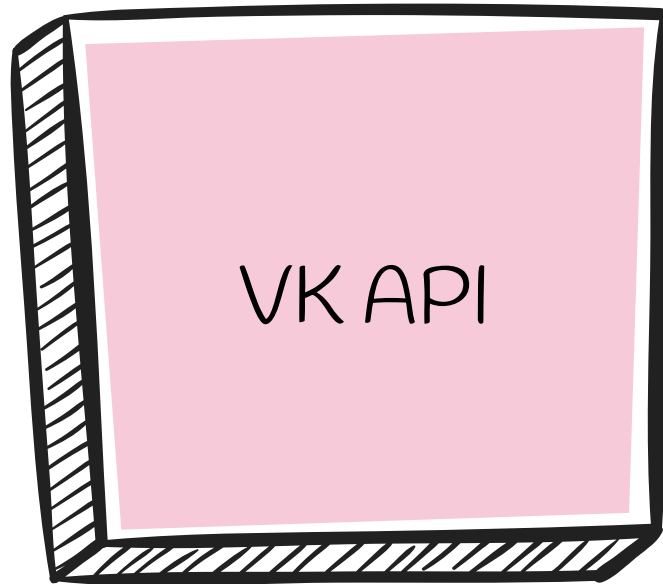
VKontakte allows users to:

- create pages (private or public), groups, public pages, events;
- share and tag images, audio and video;
- play browser-based games.

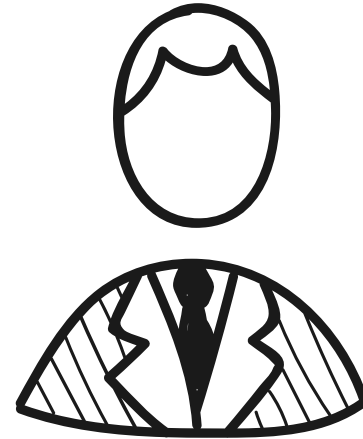
VKontakte is pretty similar to Facebook in its functionality and nature of usage.

02

How to get data?

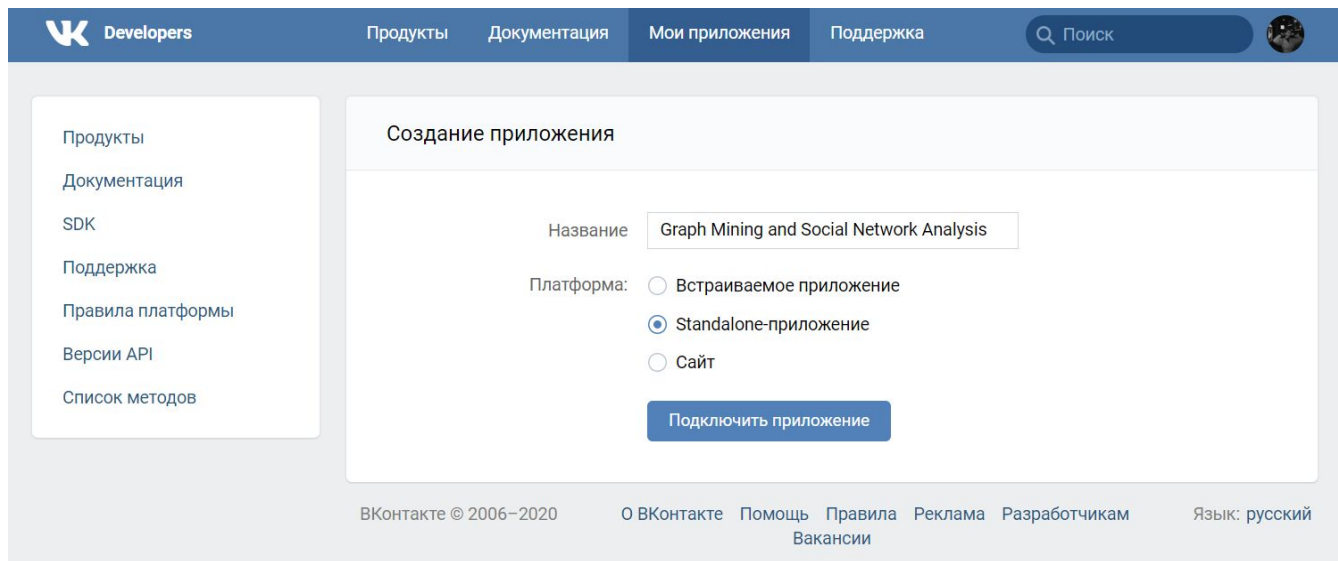


“To get access to the VKontakte API, we need to create a **Standalone-application**, after that we can use built-in API methods.”



Api methods

- friends.get
- users.get



The screenshot shows the 'Создание приложения' (Create Application) page on the VK Developers website. The page has a dark blue header with the VK logo, 'Developers' text, and navigation links: 'Продукты', 'Документация', 'Мои приложения', and 'Поддержка'. A search bar with the text 'Поиск' is also present. On the left, a sidebar contains links: 'Продукты', 'Документация', 'SDK', 'Поддержка', 'Правила платформы', 'Версии API', and 'Список методов'. The main content area is titled 'Создание приложения' and contains a form with the following fields:

- Название** (Name): A text input field containing 'Graph Mining and Social Network Analysis'.
- Платформа** (Platform): A group of radio buttons with three options:
 - ☐ Встраиваемое приложение (Embeddable application)
 - ☒ Standalone-приложение (Standalone application)
 - ☐ Сайт (Website)
- Подключить приложение** (Connect application): A blue button at the bottom of the form.

The footer of the page contains copyright information 'ВКонтакте © 2006–2020', links to 'О ВКонтакте', 'Помощь', 'Правила', 'Реклама', 'Разработчикам', and 'Вакансии', and a language selector 'Язык: русский'.

.gexf

Python application for data collection and graph
representation in .gexf file format



<https://github.com/SmolyaninivaSofia/VK-Social-Graph>

Key numbers

178



Number of Nodes (177 friends + 1 root user)

Number of Edges between the nodes



1642

20 sec



To extract the data via VK API and create .gexf file

Node example

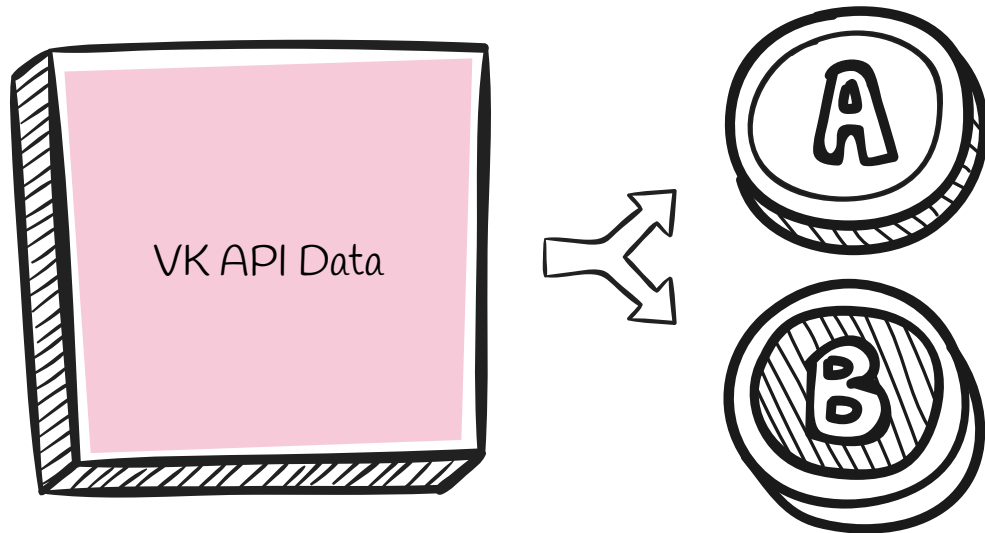
	ID	Lable
Friend 1	104575244	Sofia Smolianinova
Friend 2	76035331	Aleksandra Smolianinova
Friend 3	191394838	Sasha Peshkov

Edge example

	Source	Target	Type
Relation 1	104575244	76035331	Undetected
Relation 2	104575244	191394838	Undetected
Relation 3	104575244	719794458	Undetected

03

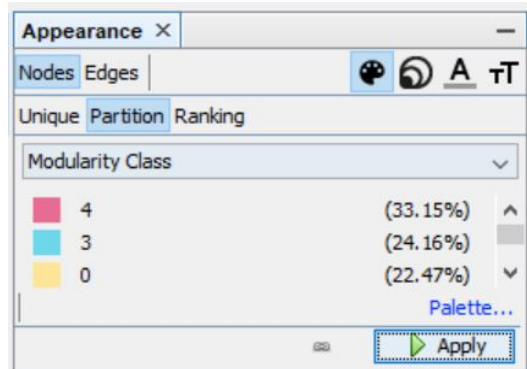
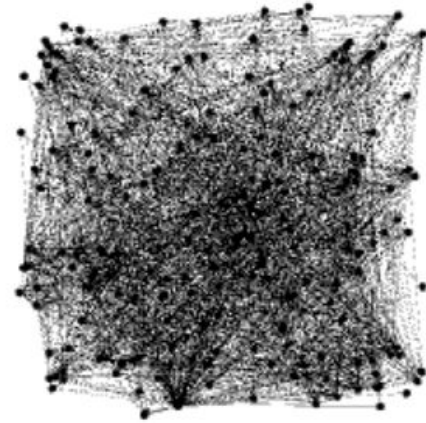
GEPHI



Gephi Steps

STEP 0

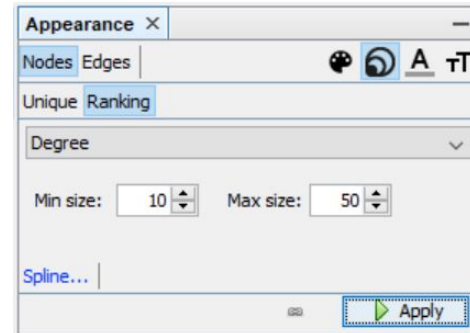
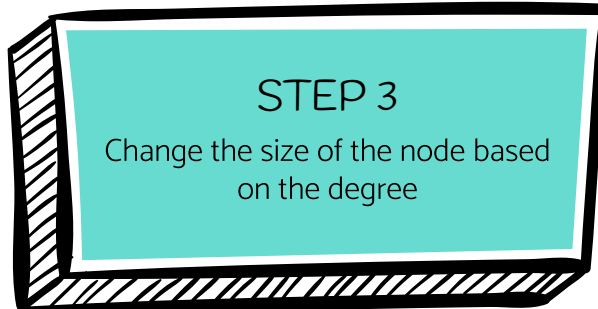
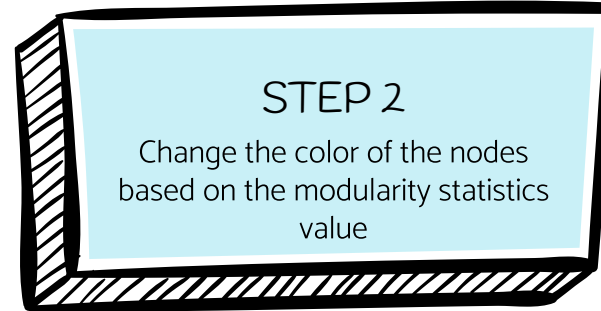
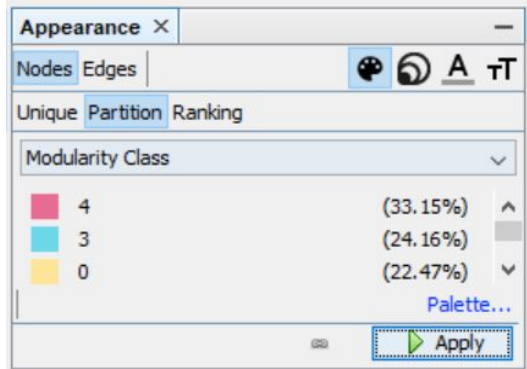
Visualization of the initial data



STEP 1

Run Modularity statistics

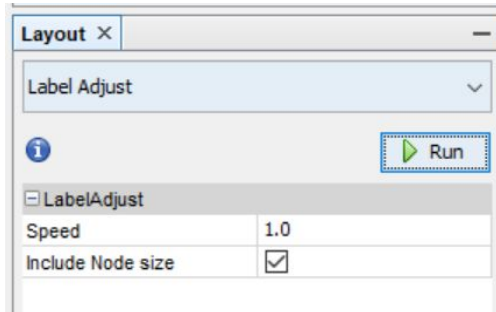
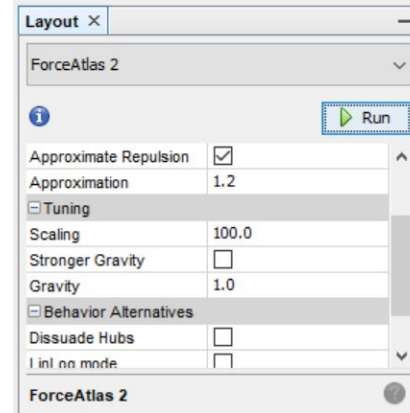
Gephi Steps



Gephi Steps

STEP 4

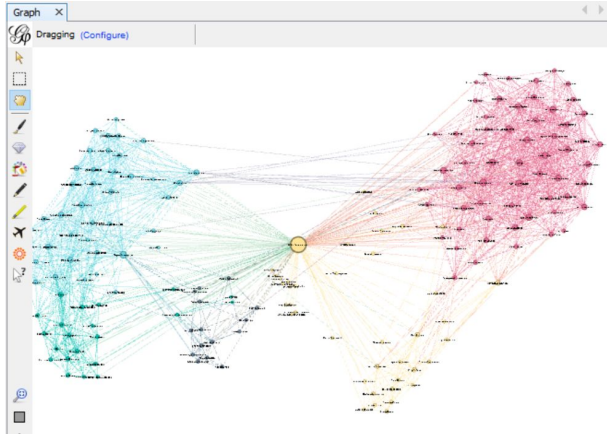
Run Force Atlas 2 algorithm



STEP 5

Run Label Adjust algorithm

Gephi Steps



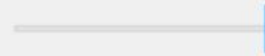
STEP 6

The social network of my VK friends represented by the graph

RESULT

Render the final result for analysis

Preview ratio: 100%

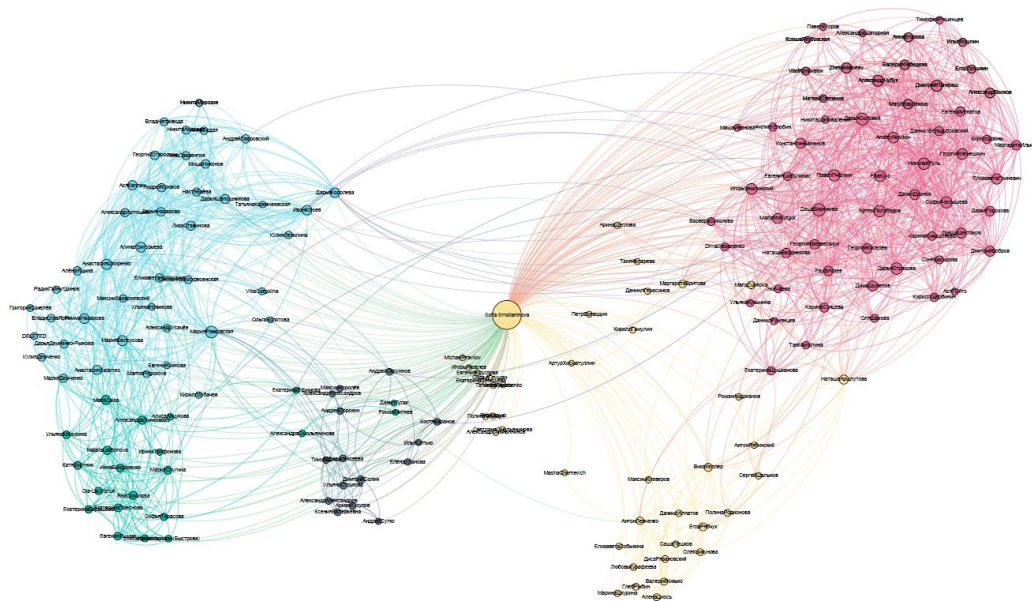


Refresh

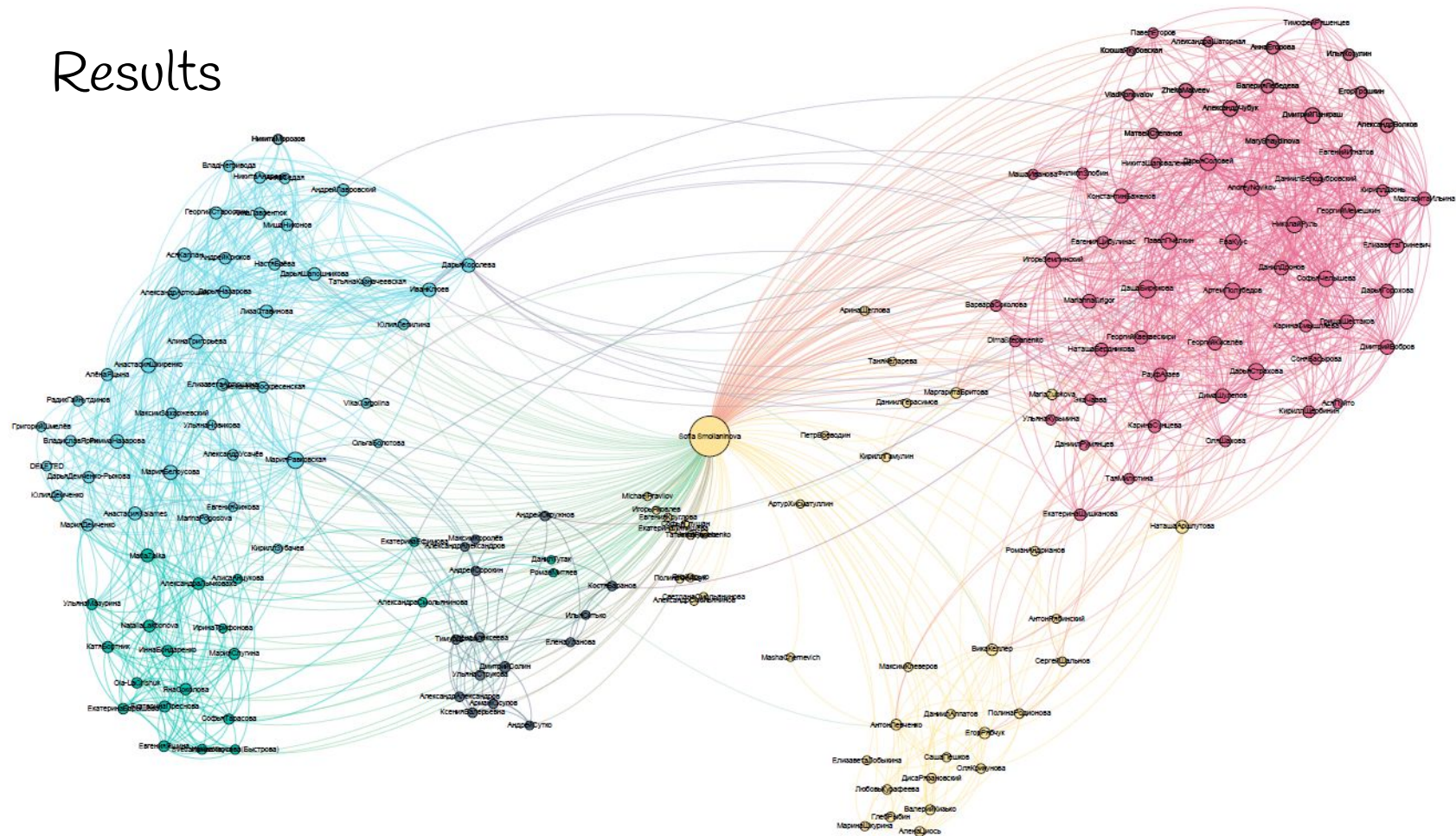
Export: SVG/PDF/PNG

04

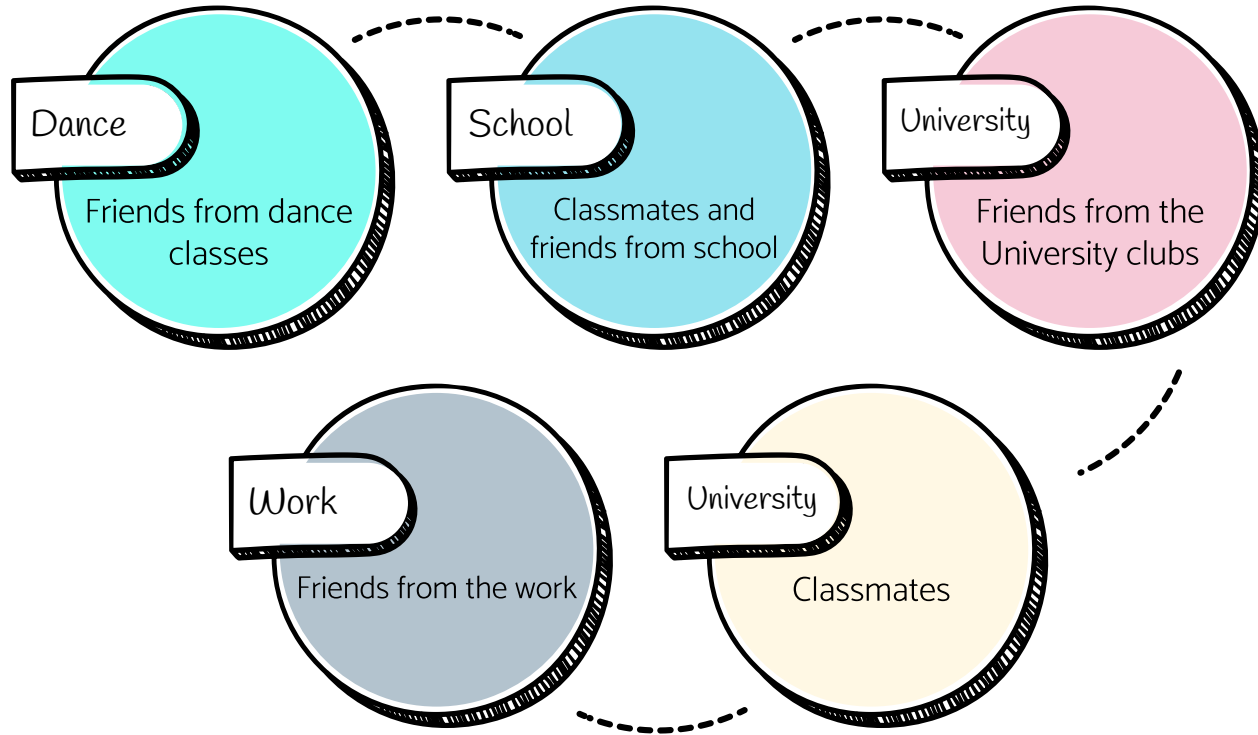
RESULTS



Results



Community detection

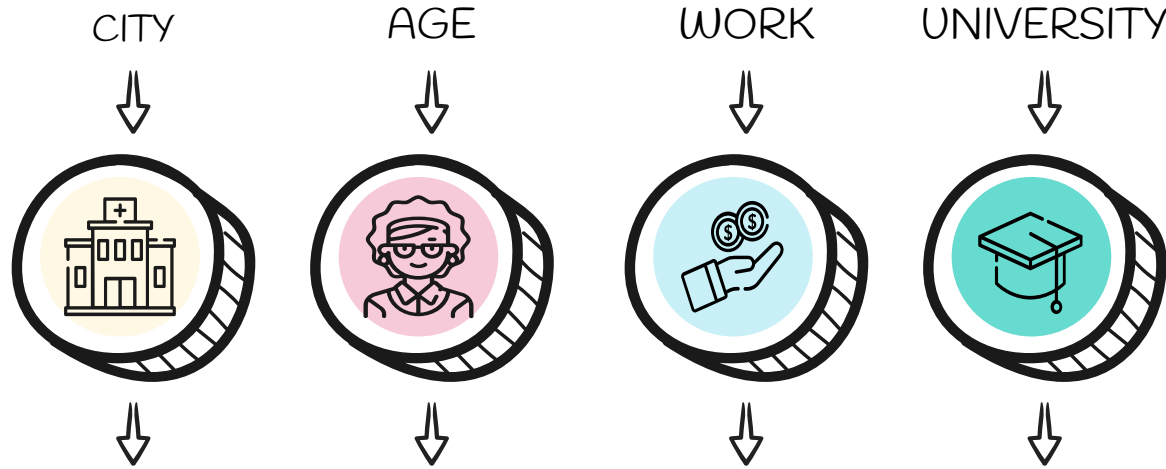


05

DISCUSSION



Additional data



Improving community detection quality



THANKS!

ANY QUESTIONS?

Sofia Smolianinova
Master's Programme in Data Science
Erasmus