 Data visualization course

**Laboratory work 7**

# Visualize social connections in your Instagram profile

Analysis of connections in social networks is a useful and effective tool for identifying the main specificity of human relations in social groups. These tools allow you to determine the quantitative and qualitative parameters of the formed connections.

One of the most popular social networks is Instagram. A special API is used to interact with the social network. It is with its help that you can get all the necessary information.

In most cases, you can install the Instagram API using the following command:

pip install instagrapi

An example of using the Instagram API is shown in Listing 1.

Remember that in order to log in, you need to open the letter you received in your mail with a 6-digit authorization code from Instagram.

Listing 1 – An example of using the Instagram API

from instagrapi import Client

import networkx as nx

import matplotlib.pyplot as plt

from time import sleep

# Login to Instagram

cl = Client()

USERNAME = 'my\_instagram\_login'

PASSWORD = 'my\_instagram\_password'

cl.login(USERNAME, PASSWORD)

# Fetch our followers

my\_followings = cl.user\_following(cl.user\_id)

my\_followings\_names = [user.username for user in my\_followings.values()]

G = nx.Graph()

G.add\_node(cl.username, label=cl.username)

for following in my\_followings.values():

    G.add\_node(following.username, label=following.full\_name)

    G.add\_edge(cl.username, following.username)

# Fetch followers of our followings

for person in my\_followings.values():

    sleep(1)  # To respect Instagram rate limits

    try:

        following\_followings = cl.user\_following(person.pk)

        for following in following\_followings.values():

            if following.username in my\_followings\_names:

                G.add\_node(following.username, label=following.full\_name)

                G.add\_edge(person.username, following.username)

    except Exception as e:

        print(f"Error fetching data for {person.username}: {e}")

# Save the graph in gexf format

nx.write\_gexf(G, "InstaFriends.gexf")

# Visualize the graph

print("Drawing...")

nx.draw\_spring(G, with\_labels=True, font\_weight='bold', font\_size=5)

plt.savefig('InstaGraf.png', dpi=600)

plt.show()

The results of the program are presented in Figures 1 and 2.

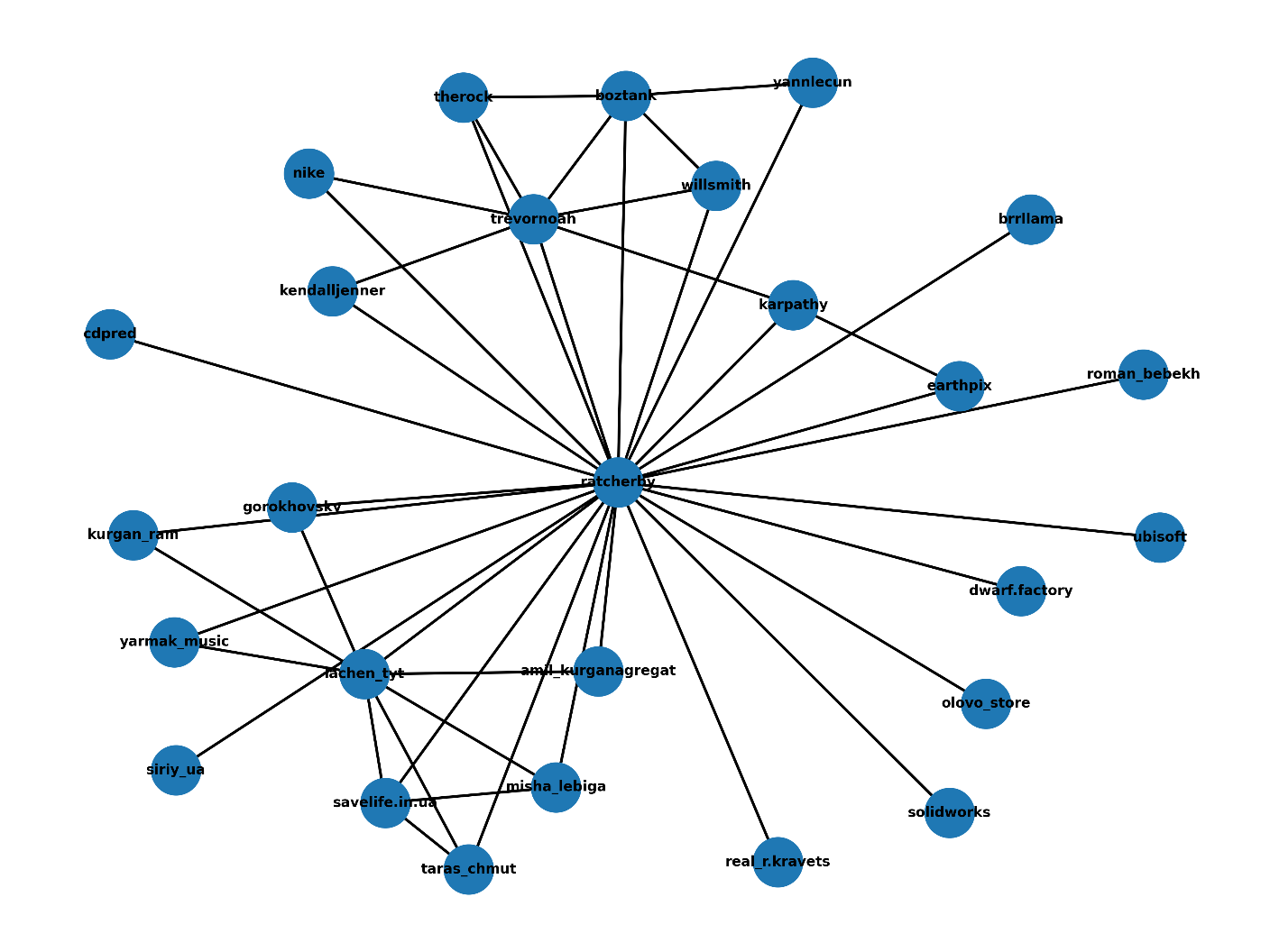


Figure 1 – Graph visualization result using networkX

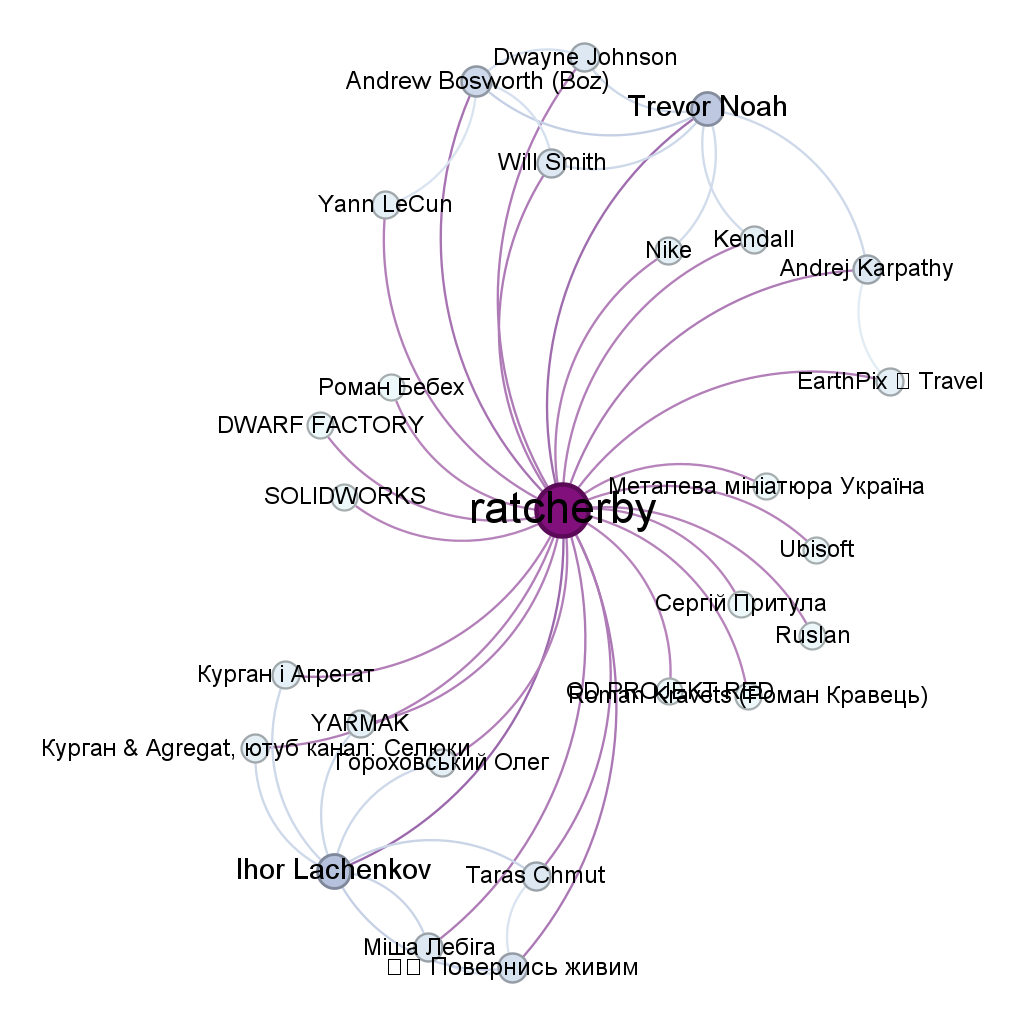


Figure 2 – Graph visualization result using gephi

# Task

Build a graph of your followers on the social network Instagram. Visualize the graph using the networkx and gephi libraries. Also, determine the characteristics according to the variant using networkx or gephi:

1. Number of nodes in the graph.
2. Number of edges in the graph.
3. Average degree of the vertices.
4. Diameter of the graph.
5. Density of the graph.
6. Average clustering coefficient.
7. Average path length.
8. Modularity of the graph.
9. Ratio of the number of edges to the number of nodes.