Social Network Analysis – Fall 2023
Assignment

(Due August 31, 2023)

Properties of a real Social Network utilizing tools and libraries of your choice

Part A - Tools

1. Download a Social Network Data from the links given below.
   Make sure the dataset you use is unique to you.

2. Visualize the graph using 2 different layouts.

3. Calculate the Degree Distribution
   i. Assign sizes to vertices based on their total degree.

4. Filter the network by degree such that only the:
   i. Bottom 10% of nodes and the connection among them are visible.
   ii. Top 5% of nodes and the connections among them are visible.

5. Find
   i. All the connected components of the network
   ii. The size of the giant component of the network

Output: Paste screenshots in a document and email the document to the instructors

You can use any tool that you want – but Gephi may be easiest for you.

[5 marks]

Part B – Libraries

Now try to do the same exercise using a library of your choice.

Output: Send a mail to the instructors of the Jupyter notebook link.

The program should be written in such a way that it reads in the input network (hardcoded inside the program) and does not ask for any input.

You can use any library that you want – but SNAP or NetworkX may be easiest for you. You can use more than one library.

[5 marks]

List of Dataset Sites

1. http://networkrepository.com/
2. https://snap.stanford.edu/data/
3. http://www.sociopatterns.org/datasets/
4. https://networkdata.ics.uci.edu/
5. https://graphchallenge.mit.edu/data-sets
6. https://www.pik-potsdam.de/members/donges/network-datasets

Please reach out to us in case you face any issues with the dataset.