Social Network Analysis – Fall 2021
Assignment 1
(Due September 25, 2021)

Properties of a real Social Network utilizing any tool of your choice

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 in an effective way.

3. Plot the total degree distribution.
   - i. Assign sizes to vertices based on their total degree.

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

5. Identify the communities in the network.
   - i. Assign colours to each community such that vertices in the same community have the same colour.
   - ii. Find the modularity value for the given set of communities.

6. 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]

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.