

## Assignment 0

The purpose of this assignment is to get you familiar with NetworkX and basic concepts in network analysis. We choose ego-Facebook dataset as our testbase in this assignment, since we are not going deep to detect social circles in this assignment, you will only need to download the datafile facebook\_combined.txt.gz, which saves the list of all the edges in this graph.

For those of you who are interested in knowing what this dataset is about you may check the "Dataset Information", "readme-Ego.txt", and the introduction of the source paper: Learning to Discover Social Circles in Ego Networks. NIPS, 2012.

We have provided the code for loading the edge list datafile as well as generating a graph from it, you will be required to complete the code which could answer the following questions:

1. Number of nodes, Number of edges, Whether the network is connected or not?
2. Find out the id of node (or nodes) with maximum degree.
3. What is the clustering coefficient of the maximum degree node (or nodes) and what is the average clustering coefficient of the whole network?
4. How many triangles in the network?
5. What is the shortest path from node 5 to node 3000?
6. What are the diameter and average shortest path length of the network?

Make sure when loading the datafile, its path is correct. You may need to change it according to where you save the datafile.

Please email your ipython notebook with complete code and results to our course gmail address, with notebook named as hw0\_studentID\_studentName.ipynb.