**Homework 4**

**(15 points)**

Use the enclosed file “person\_knows\_person.csv”. This file is a simulation of a graph dataset and each row presents two nodes that are connected to each other.

- Dijkstra and A\* to find the shortest path in the graph. Since the graph is large, you can create a smaller file and work on the smaller graph. (2 points)

- Prim and Kruskal to find the MST and remove other edges (2 points).

- Page rank and HITS algorithm to order the graph nodes based on their importance. Again, if the graph is too large for your system, you can make a smaller file and use a subgraph. (5 points)

- Visualize the result of PageRank and HITS algorithm (6 points). Higher-ranked nodes should have denser colors, and lower ranks nodes should have lighter color.

You must research on your own about visualizing graph communities. We did not describe visualization in class, which is the homework's main challenge. For example, the size of the node circle could be used to visualize the importance of a node in Page rank and HITS.

*If you have any trouble during your work, please contact your facilitator. They will schedule an appointment to help you progress in your homework. Late homework delivery results in a penalty on your grade.*