**CS 43118 & CS 53118 ST: Graph and Social Network Analysis**

**Homework 1 (100 points)**

**Instructor:** Niranjan Rai

**Due Date:** Please refer to the course website

1. What is a graph? Why do we need to study graphs and what are the applications of graphs in the real world? (20 points)
2. List five different properties of graphs? Give two examples for each property. (20 points)
3. What are the different types of networks? Explain at least five with examples. (20 points)
4. What is a graph isomorphism problem? What is its application? (20 points)
5. What is the difference between adjacency matrix and adjacency list? Explain with an example (20 points)
6. Bonus question: Visualize the given dataset using any graph visualization tools. (20 points)

Dataset: <http://snap.stanford.edu/data/ego-Facebook.html>

\*You will receive extra 20 points if you answer the bonus question.