CSE 316A:
Social Network Analysis

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Course website

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Course piazza page

www.piazza.com/wustl/fall2015/cse316a/home
Plan for today

- Introduction
- Course Overview
- Class logistics
Networks

Several elements connected to each other, either physically or logically, to form a system.
Networks

They are everywhere!
Social Networks

Connections among

✧ People
✧ People-like entities (e.g. governments, organizations, financial institutions)
✧ Logical units (e.g. web pages)
Social Networks

• Sociology, Economics

*Sociology* on Wikipedia
Social Networks

• Sociology, Economics

• Hard to collect data and perform controlled experiments
Milgram’s experiment (1967)

• Systematic study of the “small-world problem”

(Psychology Today, vol 1., no. 1, May 1967, pp. 61-67)
Milgram’s experiment (1967)

Target person (Boston stock broker)

The chains progress from the starting position (Omaha) to the target area (Boston) with each remove. Diagram shows the number of miles from the target area, with the distance of each remove averaged over completed and uncompleted chains.

One of several starting points
Milgram’s experiment (1967)
Social Networks Today

Internet → Social Networking Services
Social Networks Today

• People are connected better and in novel, interesting ways.

• Providers have large amounts of data. Also ability to conduct experiments. e.g. “Experimental evidence of massive-scale emotional contagion through social networks”, *PNAS*, vol. 111, no. 24, June 2014.
Why Study Social Networks?

• Better understanding of human interactions and their consequences
  – Making predictions, formulating policies
  – Making money
This Course

• Developing analytical tools and applying them to the study of select network phenomena and institutions
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• Tentative organization: 6 modules
This Course

• **Module 1: Graph Theory**
  – *Structure* of connections
This Course

• **Module 2: Game Theory**
  – (Strategic) *behavior* of connected individuals and *outcomes*
This Course

• Module 3: Auctions and Markets
This Course

• Module 4: Information Networks and Web Search
This Course

• Modules 5 & 6: Network Dynamics
  – Structural effects: Small-world phenomena, Epidemics