Network Analysis: An Accelerated Introduction  (Three day workshop)  

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Course Description

Social network analysis focuses on relationships between social entities. It is used widely in the social and behavioral sciences, as well as in political science, economics, organizational science, and industrial engineering. The social network perspective, which will be taught in this workshop, has been developed over the last sixty years by researchers in psychology, sociology, and anthropology. The social network paradigm is gaining recognition and standing in the general social and behavioral science communities as the theoretical basis for examining social structures. This basis has been clearly defined by many theorists, and the paradigm convincingly applied to important substantive problems. However, the paradigm requires a new and different set of concepts and analytic tools, beyond those provided by standard quantitative (particularly, statistical) methods.

This three-day workshop focuses on precisely those concepts and tools. This two-and-a-half day workshop will present an introduction to various concepts, methods, and applications of social network analysis drawn from the social, and behavioral sciences. The primary focus of these methods is the analysis of relational data measured on groups of social actors. Topics to be discussed include an introduction to graph theory and the use of directed graphs to study structural theories of actor interrelations; structural and locational properties of actors, such as centrality, prestige, and prominence; subgroups and cliques; equivalence of actors, including structural equivalence, blockmodels, and an introduction to role algebras; an introduction to local analyses, including dyadic and triad analysis; and statistical global analyses, using models such as p1, p*, and their relatives. Brief introductions will be given to common networks software packages: UCINET, Pajek, STOCNET, and pnet.

This is an accelerated workshop, which is appropriate for individuals with a strong statistical background, and familiarity with matrix algebra and linear models.
Schedule

Day One (Friday)
8:30-11:00   Intro to Networks and Graph Theory Lecture
11:00-noon   Centrality Lecture
1:15-2:30    Graph Theory and Centrality Lab
2:30-3:30    Subgroups Lecture
4:00-5:30    Subgroups and Visualization Lab
5:30-6:30    Discussion and Wrap-up

Day Two (Saturday)
8:30-11:00   Blockmodels Lecture
11:00-noon   Lab on Subgroups and Blockmodeling
1:15-2:30    Lab on Blockmodeling continued.
2:30-4:30    Intro to Statistical Modeling Lecture
5:00-6:00    Discussion and Wrap-up
6:00-??      Hit the Pub

Day Three (Sunday)
8:30-11:30   Statistical Modeling (p*) and Applications
noon-1:00    Discussion and Wrap-up

Course texts

There are two particularly helpful texts for this class. The Wasserman & Faust text will be primary.


Additionally, you may find the following texts helpful:


Topics to be taught and the relevant chapters from Wasserman and Faust are:

Chapter 1: Introduction
Chapter 2: Social Network Data: Collection and Applications
Chapter 3: Notation for Social Network Data
Chapter 4: Graphs and Matrices
Chapter 5: Centrality, Prestige, Prominence, and Related Concepts
Chapter 7: Cohesive Subgroups
Chapter 9: Structural Equivalence
Chapter 10: Blockmodels
Chapter 13: Dyads
Chapter 15: Statistical Analysis of Single Relational Networks

Please review chapters 1-4 and 5-7 before you arrive in Ann Arbor.

Chapters 8-10 from Carrington, et al. are also relevant.

**Computer Programs**

We will be using a number of different social network analysis computer programs. All of these are available in the computer labs. All but **UCINET** are freely available on the web.

**UCINET**, available in computer labs and for purchase from Analytic Technologies: [http://www.analytictech.com](http://www.analytictech.com)

**Pajek**: [http://vlado.fmf.uni-lj.si/pub/networks/pajek/default.htm](http://vlado.fmf.uni-lj.si/pub/networks/pajek/default.htm)

**Netdraw**, comes with the UCINET package or individually at: [http://www.analytictech.com](http://www.analytictech.com)

**STOCNET**: [http://stat.gamma.rug.nl/stocnet/](http://stat.gamma.rug.nl/stocnet/) (see also [http://stat.gamma.rug.nl/snijders/siena.html](http://stat.gamma.rug.nl/snijders/siena.html))


Network Workbench: [http://nwb.slis.indiana.edu/download.html](http://nwb.slis.indiana.edu/download.html)
Other Resources

These are some particularly useful resources on social networks available online.

The International Network for Social Network Analysis (INSNA) is the international and interdisciplinary professional association for people interested in social network research. Its website (http://insna.org) is a wonderful source of information and resources on social networks, including links to many informative sites and to social network computer programs and data.

The listserv, SOCNET, is the main on-line forum for discussion of current topics on social networks. Information on how to join is available through the INSNA site (see above) or at: http://insna.org/INSNA/socnet.html

Connections is INSNA’s newsletter/informal journal. It is available through the INSNA website or directly at: http://insna.org/indexConnect.html

Journal of Social Structure is an peer-reviews online journal with many articles of interest to social network researchers. http://www.cmu.edu/joss/

Complexity and Social Networks Blog (http://www.iq.harvard.edu/blog/netgov/) is a new “online journal” devoted to network analysis.

Steve Borgatti’s web page is a nice source of introductory material and handouts on various topics on social networks. http://www.analytictech.com/networks/

Data examples from Wasserman and Faust are available at the INSNA website.