

Introduction to Network Analysis

Workshop in Methods

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This document can be viewed at <http://bit.ly/2gDXCwh>. You are also welcome to download slides and lab materials from my previous longer workshops here, organized by topic here: <http://annmccranie.net/site/ICPSR.html>. *Opinions expressed are purely my own, and not those of IUNI.*

Recommended Introductory Textbooks for Social Network Analysts

There are many excellent textbooks specific to particular fields (economics, physics, health, security studies) or for specific software packages (such as Pajek or R), but the first three books below (from left) provide excellent high-level treatments of network analysis, particularly whole or complete analysis. They are suitable for a graduate level course, or an independent researcher trying to learn about the field. The fourth books Another text, forthcoming in 2017 from Cambridge, by Perry, Pescosolido, and Borgatti, will address egocentric networks specifically.



More listed on this regularly updated Amazon List: <http://a.co/aU8k0De>

Journals that have network focus (primarily social)

Network Science: <https://www.cambridge.org/core/journals/network-science>

Social Networks <http://www.journals.elsevier.com/social-networks/>

Journal of Complex Networks <http://comnet.oxfordjournals.org/>

Connections http://insna.org/connections_archives.html

Journal of Social Structure: <https://www.cmu.edu/joss/> (Online only, undergoing restructuring)

Social Network Analysis and Mining: <http://www.springer.com/13278>

Available Datasets

Colorado Index of Complex Networks: <https://icon.colorado.edu/#/>

This a growing list of networks that are publicly available. You can do some metaanalysis of networks here as well.

IU Specific: <http://www.iuni.iu.edu/resources/data.html>

Web of Science Dataset: <http://www.iuni.iu.edu/resources/wos.html>

Observatory on Social Media: <http://osome.iuni.iu.edu>

Contact IUNI at iuni@indiana.edu: Indiana Legislative dataset, Reddit data

Networks-focused Conferences

NetSci 2017: Indianapolis, IN in June 2017: <http://netsci2017.net>

Sunbelt - INSNA: Beijing in June 2017 <http://insna.org/sunbelt2017/>

North American Social Networks: Washington DC in July 2017 <http://insna.org/nasn2017/>

PolNet: Columbus, OH in June 2017 <http://conference.polinetworks.org/>

Conference on Complex Systems (CCS) in Cancun, Sept 2017: <http://ccs17.unam.mx/>

European Conference on Social Networks (EUSN) in Sept 2017:

<http://www.eusn2017.uni-mainz.de/>

IUNI Resources

IUNI Faculty Affiliates: <http://www.iuni.iu.edu/people/affiliates.html>

Courses at IU and PhD minor: <http://www.iuni.iu.edu/resources/minor.html>

Talk series on campus: NetSci Talks: <http://iuni.iu.edu/events/talks.html>

IUNI listserv: iuni-discussion-l: http://www.iuni.iu.edu/resources/email_list.html

Recommended Software Packages to Get Started

UCINET, NetDraw: <https://sites.google.com/site/ucinetsoftware/home>

A full suite of network analysis routines, a very good place to start, particularly for those uninterested in using R. \$40 students, \$150 faculty. Get the textbook as companion.

Visone: <https://visone.info>

Primarily a visualization package, visone offers a lot of flexibility in visualization options and some analysis within. A bit of a learning curve, but worth it for the researcher interested in generating high resolution, high quality images for publications.

Pajek: <http://mrvar.fdv.uni-lj.si/pajek/>

Initially built for large networks and for block modeling, a full suite of analysis options, with a different kind of interface. Get the textbook as companion.

Statnet: <https://statnet.org/trac>

statnet is a comprehensive suite of R packages that can be used to do most major types of network analysis and visualization. There are extensive tutorials, a wiki, and even a new web-based interface. The packages are regularly maintained and there is an active user community and listserv.

RSIENA: <https://www.stats.ox.ac.uk/~snijders/siena/>

A R package particularly used for longitudinal analysis.

Other software worth checking out

- Gephi: <https://gephi.org/> (visualization)
- Egoweb 2.0: <http://www.rand.org/methods/egoweb.html> (collection and analysis of egocentric data)
- Netlogo: <https://ccl.northwestern.edu/netlogo/index.shtml> (simulation)
- Network Workbench <http://nwb.cns.iu.edu> (very large networks, limited analysis, can be customized)
- Sci2 <https://sci2.cns.iu.edu> (scientometric tools with powerful parsers)
- PNet: <http://www.melnet.org.au/pnet/> (for ergm models)
- NetworkX: <https://networkx.github.io/> (Python package, very useful for large datasets)
- VOSON: <http://uberlink.com/> (Subscription web-based web crawling and Twitter data, combined with analysis and visualization options)
- NodeXL: <http://www.smrfoundation.org/nodexl/> (excellent starter package - add on to Excel, connects to some social media data sources directly)
- Stata - nwcommandsa <https://nwcommands.wordpress.com> (networks package in Stata)
- Social Media Toolkit: A comparison of many different social media tools:
<http://socialmedialab.ca/apps/social-media-toolkit/>