Sunbelt 2016

XXXVI Sunbelt Conference of the
International Network for Social Network Analysis (INSNA)
April 5 – April 10, 2016
Newport Beach, California

WORKSHOPS

Workshops are delivered in 1-session (3-hour) or 2-session (6-hour) formats, and are focused on teaching attendees specific methods, software or theories.

Workshops are scheduled for Tuesday April 5th (8am – 9:30pm) and Wednesday April 6th (8am – 11am).

This document lists the workshop timetable (p.2), a table of contents for all workshops (pp.3-4), and a description of all available workshops (pp.5-25).

Workshop fees:
1-session (3-hour) workshop: $70 USD regular/ $35 USD student
2-session (6-hour) workshop: $140 USD regular/ $70 USD students

Registration:
Registration opens December 11th, 2015
Registration closes March 25th, 2016

Note: Many workshops have a set maximum number of participants, so please register early to ensure your place.

Register for workshops here: http://insna.org/sunbelt2016/registration

Additional information:
Conference website: http://insna.org/sunbelt2016
Link to Workshop program: http://insna.org/sunbelt2016/program
Workshop FAQ: http://insna.org/sunbelt2016/workshop-faq/
Conference and Workshop registration page: http://insna.org/sunbelt2016/registration

For additional questions contact us at: sunbelt2016@gmail.com

Version: March 9 2016

WORKSHOP TIMETABLE

Tuesday 8am-11am	Tuesday 11:30am-2:30pm	Tuesday 3pm-6pm	Tuesday 6:30pm-9:30pm	Wednesday 8am-11am
Introduction to Social Network Analysis with R and statnet	Moving beyond Descriptives: Basic Network Statistics with statnet	Exponential Family Random Graph Modeling (ERGMs) Using statnet	Introduction to Egocentric Network Data Analysis with ERGMs and TERGMs Using statnet	Valued Network Modeling with statnet
Collecting and Analyzing Social Media Data Using SocialMediaLab	Introduction to Modeling Temporal (Dynamic) ERGMs Using statnet	Introduction to Ego-network Analysis with R		MRQAP-regression Analyses: Cross-sectional, Multilevel and Longitudinal Models
A Hands-on Introduction to Analyzing Social Networks with UCINET & Netdraw		Managing Dynamic Network Data in statnet: Animations, Data Structures and Temporal SNA	Advanced Social Network Analysis using UCINET and Netdraw	
EgoWeb 2.0: Flexible Social Network Data Collection Software	Multilevel Modeling for Egocentric Network Analysis	Modeling Relational Event Dynamics with statnet	Machine Learning for SNA	
Visualizing Social Networks. How to Create Meaningful and Compelling Network Drawings	Basic and Advanced Network Visualization with Gephi: Part 1	Basic and Advanced Network Visualization with R: Part 2	Algebraic Analysis of Multiple, Signed, and Affiliation Networks with `multiplex´	Introduction to Social Network Data Collection with an Emphasis on Social Survey Methods
Dynamic Network Analysis (DNA) and *ORA		Analysing Network Dynamics and Peer Influence Processes with Rsiena		Social Network Approaches for Behavior Change
Introduction to Research Design with Social Networks		BlauNet: An R Package to Construct Blau Spaces and Analyze the "Blau Statuses" of Social Entities and Individuals…	Simplifying Ego-centered Network Analysis in R with egonetR	
Using R and igraph for Social Network Analysis		Agent-Based Models in Social Network Analysis Using Netlogo		The Positional Approach to Network Analysis
Understanding Diffusion with netdiffuseR	Mixed Methods Research in Social Networks		From Words to Networks: Text-based/ Semantic Network Analysis	
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Specialized Topics

WORKSHOP DESCRIPTIONS

A Hands-on Introduction to Analyzing Social Networks with UCINET & Netdraw

Session Time: Tuesday April 5th, 8:00am – 2:30pm

Workshop Length: 2 sessions (6 hours)

Attendance Limit: None

Instructors: **Martin Everett (Manchester)**
Steve Borgatti (Kentucky)
Rich DeJordy (Northeastern)

This interactive workshop gives all participants an opportunity for hands-on experience analyzing network data in the UCINET/Netdraw software package. We will provide a beginner's tutorial on the concepts, methods, and data analysis techniques for a whole social network research project, from data entry through reporting results. Together, we will use sample datasets from public health and management settings to focus on the interpretation and calculation of some of the most common measures of network analysis. We will introduce ways to identify "important" nodes in a network based on different concepts of centrality and ego-network composition measures, as well as ways to identify sets of key players for particular applications (e.g., network-based interventions). We will also provide a hands-on tutorial for NetDraw, which creates network visualizations.

In order to get the most practical benefit from the workshop, each participant should bring a Windows laptop computer (or Mac with a Windows emulator) in order to personally run the analyses as the instructors are demonstrating them. We ask participants to download a free trial version of UCINET (which includes NetDraw as well as sample network data), available at http://www.analytictech.com/ucinet/, prior to the workshop, preferably in March since the free trial is good for 60 days.

Introduction to Social Network Analysis with R and statnet

Session Time: Tuesday April 5th, 8:00am – 11:00am

Workshop Length: 1 session (3 hours)

Attendance Limit: N/A

Instructors: **Ryan M. Acton (Data Scientist, WeddingWire Inc.), racton@weddingwire.com**
Lorien Jasny (Lecturer, University of Exeter, United Kingdom), L.Jasny@exeter.ac.uk

This workshop session will serve as a basic introduction to the importation, manipulation, and descriptive analysis of social network data within the R/statnet platform. Topics covered will include: an overview of basic R functions and data types; importation of network data into R; network data manipulation; management of metadata for complex networks; visualization of network data; calculation of network descriptives (e.g., centrality scores, graph-level indices); and use of classical network analytic techniques (e.g., blockmodeling). No prior experience with R or statnet is assumed, but attendees should have familiarity with the basic concepts of descriptive network analysis. (Participation in this workshop session is recommended prior to the other statnet sessions.)

statnet is a collection of packages for the R statistical computing system that supports the representation, manipulation, visualization, modeling, simulation, and analysis of relational data. statnet packages are contributed by a team of volunteer developers, and are made freely available under the GNU Public License. These packages are written for the R statistical computing environment, and can be used with any computing platform that supports R (including Windows, Linux, and Mac). statnet packages can be used to handle a wide range of simulation and analysis tasks, including support for large networks, statistical network models, network dynamics, and missing data.

Workshop family website (tentative): https://statnet.org/trac/wiki/Sunbelt2016

Using R and igraph for Social Network Analysis

Session Time: Tuesday April 5th, 8:00am – 2:30pm

Workshop Length: 2 sessions (6 hours)

Attendance Limit: 30

Instructors: Michał Bojanowski (University of Warsaw), m.bojanowski@uw.edu.pl

 The workshop introduces R and package igraph for social network data manipulation, visualization, and analysis. Package igraph is a collection of efficient tools for storing, manipulating, visualizing, and analyzing network data. Igraph is in part an alternative, in part a complement to other SNA-related R packages (e.g. statnet, tnet). It is an alternative as it goes for network data manipulation and visualization. It is a complement because of a large and growing collection of algorithms, including community detection problems, unavailable elsewhere.

The material will cover:

> 0. Brief introduction to R.
> 1. Creating and manipulating network data objects.
> 2. Working with node and tie attributes.
> 3. Creating network visualizations.
> 4. A tour through computing selected SNA methods including: degree distribution, centrality measures, shortest paths, connected components, quantifying homophily/segregation, network community detection.
> 5. Connections to other R packages for SNA, e.g.: statnet, RSiena, egonetR.

The focus is on analysis of complete network data and providing prerequisites for other workshops including two on ego-network analysis: "Introduction to ego-network analysis" by Rafaele Vacca and "Simplifying advanced ego-network analysis in R with egonetR" by Till Krenz and Andreas Herz.

The workshop have been successfully organized on earlier Sunbelt conferences (since Sunbelt 2011) and on European Social Networks conference (EUSN 2014). The workshop attracted a lot of attention (total of over 130 participants since 2011) and positive feedback (80% report being satisfied, 75% would recommend the workshop to a colleague). The earlier workshop title was "Introduction to Social Network Analysis with R". The content have been updated to catch up with newest developments in igraph and related packages.

Target audience and requirements:
The workshop is designed to be accessible for people who have limited experience with R. The participants are expected to be familiar with basic R objects (e.g. matrices and data frames) and functions (e.g., reading data, computing basic statistics, basic visualization). Some brief introduction to R will be provided.

To be absolutely on the safe side we recommend taking an internet course on the level of R programming course on Coursera (https://www.coursera.org/course/rprog), which you can take every month, or skimming through a book on the level of initial eight sections of Roger D. Peng book "R programming" (https://leanpub.com/rprogramming).

Participants are encouraged to bring own laptops. We have prepared examples and exercises to be completed during the workshop. Detailed instructions about how to prepare will be distributed in due time.

Moving beyond Descriptives: Basic Network Statistics with R and statnet

Session Time: Tuesday April 5th, 11:30am – 2:30pm

Workshop Length: 1 session (3 hours)

Attendance Limit: N/A

Instructors: Lorien Jasny (University of Exeter, United Kingdom), L.Jasny@exeter.ac.uk

 This workshop session will serve as an introduction to the use of basic statistical methods for network analysis within the R/statnet platform. The approach taken is practical rather than theoretical, with emphasis on simple, robust methods for hypothesis testing and exploratory data analysis of single and multi-network data sets. Topics will include:

tests for marginal relationships between node or graph-level indices and covariates; Monte Carlo tests for structural biases; network correlation, autocorrelation, and regression; and exploratory multivariate analysis of multi-network data sets. We will also cover interpreting R code in existing functions and writing your own functions. Attendees are expected to have had some prior exposure to R, but extensive experience is not assumed. Completion of the "Introduction to Network Analysis with R and statnet" workshop session is suggested (but not required) as preparation for this session. Familiarity with the basic concepts of descriptive network analysis (e.g., centrality scores, network visualization) is strongly recommended. To get the most out of the workshop, participants are recommended to bring a laptop with R, RStudio, and statnet installed. Sample data and code will be provided by the organizer.

Note: This workshop is the 2nd in the statnet series of workshops. Participants may want to take the Intro to social network analysis with R and statnet before this workshop.

Introduction to Research Design with Social Networks

Session Time: Tuesday April 5th, 8:00am – 2:30pm

Workshop Length: 2 sessions (6 hours)

Attendance Limit: N/A

Instructors: Francesca Pallotti (University of Greenwich), f.pallotti@greenwich.ac.uk
Yasaman Sarabi (University of Greenwich)

Social networks research is about exploring connections and interdependencies between individuals or groups, and their effects on behaviours and socio-economic outcomes. It has shed light on, for example, patterns in the diffusion of innovations, competition and collaboration in markets, the formation and diffusion of social norms, the dynamics of influence in the Web 2.0.

This 6-hours workshop offers an introduction to the power and potential of the science of social networks, helping you to understand how it can enrich your research, scholarship or practice. It will be particularly useful if you are new to the field, if you wish to systematize your knowledge after some preliminary experience, or if you have never led a social networks research of your own. Focus is on the design of studies with a social networks dimension, going through the key steps of collecting relational data, configuring and storing them in formats appropriate for use with social network analysis software, and preparing them to perform basic analyses. Linkages with social theories of networks and examples of successful applications to policy and business will be highlighted. Although the workshop does not focus on any specific software or data handling tool, it offers some practical experience of handling network data, drawing graphs, and calculating simple indicators with commonly used software packages.

By attending this workshop, you will learn:
- The social networks perspective, and its grounding in social theories;
- Use of network-based reasoning to draw social policy and business recommendations;
- Specificity of collection methods, format and properties of network data;
- Principles of network data visualisation and how they support analysis;
- Basic measures of network composition and structure, and how they reveal important aspects of the social phenomenon under study;
- A flavour of more complex statistical models of networks;
- How to integrate a network dimension into social science research and applications;
- Resources (such as books, journals) that support research on social networks.

Participants may come from all social sciences (or other) backgrounds and are assumed to have no previous knowledge of the topic, nor any specific software skills.

The workshop lasts a full day (2 sessions of 3 hours), and participation is open to a maximum of 35 attendees. More information will be available, closer the time, at http://databigandsmall.com/courses/introduction-to-research-design-with-social-networks/

Advanced Social Network Analysis Using UCINET and Netdraw

Session Time: Tuesday April 5th 6:30pm – 9:30pm, and Wednesday April 6th 8:00am-11:00am

Workshop Length: 2 sessions (6 hours)

Attendance Limit: None

Instructors: **Steve Borgatti (Kentucky)**
Martin Everett (Manchester)
Rich DeJordy (Northeastern)

This is a 1-day workshop for participants who already have some experience with network analysis, but would like to learn more. We cover advanced aspects of centrality, finding subgroups, and measuring equivalence. We also cover advanced techniques for analyzing network change and handling multiple relations, missing data, non-symmetric data, valued data and 2-mode data. Throughout, we demonstrate powerful, sometimes undocumented, features of UCINET and NETDRAW, including newer routines that make it work much easier.

Note: what makes this workshop advanced is the selection of topics, not the speed or complexity of the exposition. In other words, wherever practical, all concepts are explained from first principles, making as few assumptions about prior knowledge as possible. However, we do assume basic familiarity with UCINET as a pre-requisite for the workshop as given in the introductory workshop.

Algebraic Analysis of Multiple, Signed, and Affiliation Networks with `multiplex´

Session Time: Tuesday April 5th, 6:30pm – 9:30pm

Workshop Length: 1 session (3 hours)

Attendance Limit: 25

Instructors: Antonio Rivero Ostoic (Aarhus University), jaro@econ.au.dk

`multiplex´ (http://cran.r-project.org/web/packages/multiplex/) is a computer program written in R that is specially designed for the analysis of multiple network structures including signed and affiliation networks. With this intensive workshop session the participants will be able to create and manipulate multivariate network data, reduce multiple network structures with algebraic procedures, construct algebraic systems to represent relational and role structures, analyze social influence processes in multiple networks with actor attributes, perform algebraic analyses of signed networks within structural balance theory, and apply algebraic approaches for the analysis of affiliation or two-mode networks.

Moreover, the participant will have an exclusive access to the developing version of `multiplex´ that includes functions to visualize and manipulate multigraphs with all the advantages that the R environment offers.

The methodology is learning by doing, and the analyses use real-life data sets. It is recommended to have a basic knowledge of R, but there will be quick introductions to the essential functions in R during the workshop.

Analysing Network Dynamics and Peer Influence Processes with RSiena

Session Time: Tuesday April 5th, 3:00pm – 9:30pm

Workshop Length: 2 sessions (6 hours)

Attendance Limit: 40

Instructors: Christoph Stadtfeld (c.stadtfeld@ethz.ch), and Zsófia Boda (zsofia.boda@gess.ethz.ch) , from ETH Zurich

This workshop gives an introduction to statistical inference for longitudinal social network data with the help of stochastic actor-based models, implemented in the RSiena program (Ripley et al., 2014). Longitudinal social network data are understood here as two or more repeated observations of a directed graph on a given node set (usually between 30 and a few hundred nodes).

Part 1: Network Dynamics
Stochastic actor-based models for network evolution (Snijders, van de Bunt & Steglich, 2010) allow analysing global

network change as emerging from local decisions, taken by the actors in response to their personal network environment. In this part of the workshop, participants are introduced to these models and learn how to apply them in the analysis of longitudinal, group-centred network data. The workshop consists of lectures combined with hands-on exercises using the RSiena package, part of the R statistical programming environment.

Part 2: Peer Influence Processes
In the second part of the workshop, the central topic is the analysis of network influence processes, like contagion or diffusion, taking place in dynamically changing, group-centred networks (Steglich, Snijders & Pearson, 2010). In the lectures, course participants are introduced to the problems related to the identification of network influence, and to the stochastic actor-based approach for addressing these. In lab exercises, they familiarise themselves with the use of the RSiena software for estimating these models.

Prerequisites:
Course participants should have a basic understanding of model-based statistical inference (say, logistic regression), some prior knowledge of social networks, and should have had some basic exposure to the R statistical software environment. They are expected to bring their own laptop to the course (Windows, Mac or Linux), with the R statistical software environment and the RSiena package pre-installed. Further instructions will be given before the conference starts. Please consult the SIENA website (tab "courses / activities") in the week before the workshop to download the course material.

Literature:

Ripley, R., T.A.B. Snijders, Zsofia Boda, András Vörös, and P.Preciado (2014). Manual for RSiena version 1.1-278. URL: http://r-forge.r-project.org/R/?group_id=461

Snijders, Tom, Gerhard van de Bunt, and Christian Steglich, 2010. Introduction to stochastic actor-based models for network dynamics. *Social Networks* 32, 44-60.

Steglich, Christian, Tom A.B.Snijders, and Mike Pearson, 2010. Dynamic Networks and Behavior: Separating Selection from Influence. *Sociological Methodology* 40, 329-393.

SIENA website: http://www.stats.ox.ac.uk/~snijders/siena

MRQAP-regression Analyses: Cross-sectional, Multilevel and Longitudinal Models

Session Time: Wednesday April 6th, 8:00am – 11:00am

Workshop Length: 1 session (3 hours)

Attendance Limit: N/A

Instructors: David Dekker (University of Greenwich), david.dekker@gmail.com

The traditional classical model is very versatile and offers possibilities (after relative mild adaptations) to handle complex frameworks that embed multiple theoretical levels. Although network data have the issue of dependence of observations, permutation based tests can overcome these problems. Only a basic understanding of regression analysis is required in this hands-on workshop, where participants will learn how to use of MR-QAP functionality in UCINET, R and ORA. The workshop consists of three parts. In a brief introduction, the assumptions of permutation based testing will be discussed. Secondly, through examples and exercises inference on cross-sectional models will be learned, and thirdly, we move to the treatment of longitudinal models. This workshop is suited especially for those interested in exploring associations between network relationships. The course will provide data sets, yet participants are encouraged to prepare their own data sets. There will be possibilities for consultancy with the instructor after the workshop.

Technology Needs: Internet access, UCINET, R, ORA

Collecting and Analyzing Social Media Data Using SocialMediaLab

Session Time: Tuesday April 5th, 8:00am – 11:00am

Workshop Length: 1 session (3 hours)

Attendance Limit: 30

Instructors: Robert Ackland (Australian National University), robert.ackland@anu.edu.au
Timothy Graham (University of Queensland), timothy.graham3@uq.net.au

VOSON SocialMediaLab is an R package that provides a suite of tools for collecting and constructing networks from social media data. It provides easy-to-use functions for collecting data across popular platforms (Instagram, Facebook, Twitter, and YouTube) and generating different types of networks for analysis. SocialMediaLab also collects the associated text data from social media platforms (e.g. Tweets, Facebook fan page posts and comments, YouTube video comments).

In this workshop, participants will learn how to collect various types of social media data using SocialMediaLab and generate different types of 'ready-made' networks for analysis. Participants will also learn basic network and text analysis using R packages such as igraph and tm.

Assumed knowledge: A basic familiarity of R (or other programming languages) and basic concepts from network and text analysis.

Examples of the networks that can be constructed using SocialMediaLab:
- Instagram: Bimodal network (Instagram users and Instagram posts), with edges representing user i 'commenting' or 'liking' post j.
- Facebook: Bimodal dynamic network (Facebook users and Facebook posts), with edges representing the time(s) when user i commented on post j.
- Twitter: Unimodal network of Twitter users who have tweeted using particular hashtag, with edges representing user i mentioned or replied to user j in a tweet. Unimodal network of Twitter terms (words and hashtags) where edges represent terms i and j co-occurred in at least one tweet.
- YouTube: Unimodal network of YouTube users who have interacted with one another in the comment section for a video (i.e. user i has replied to user j or mentioned user j in a comment).

Assumed knowledge: A basic familiarity of R (or other programming languages) and basic concepts from network and text analysis.

More info: http://voson.anu.edu.au/SocialMediaLab

Agent-based Models in Social Network Analysis Using Netlogo

Session Time: Tuesday April 5th, 3:00pm - 9:30pm

Workshop Length: 2 sessions (6 hours)

Attendance Limit: 16

Instructors: Dr. Wouter Vermeer (Center for Connected Learning and Computer-Based Modeling, Northwestern University), Wouter.vermeer@northwestern.edu

Arthur Hjorth (Center for Connected Learning and Computer-Based Modeling, Northwestern University), Arthur.hjorth@u.northwestern.edu

Netlogo (http://ccl.northwestern.edu/netlogo/) is a free, open source, modeling environment for simulating natural and social phenomena, authored by Prof. Wilensky, and it is currently the most cited agent-based modeling language in social sciences. Ever since its conception in 1999, the Center for Connected Learning and Computer-Based Modeling (CCL) has continuously developed new language features and extensions to Netlogo. Recently two extensions have been released; the Network-extension which provides powerful Network Science capabilities to NetLogo; and LevelSpace, which allows for creating a network of simultaneous, interdependent models.

Netlogo models, and agent-based models in general, are well suited for studying complex systems over time, and for doing scenario analyses. Modelers can give instructions to hundreds or thousands of "agents" all operating

independently. This makes it possible to explore the connection between the micro-level behavior of individuals and the macro-level patterns that emerge from their interaction. With the addition of the Network- and LevelSpace-extensions, NetLogo is particularly well suited for modeling the effects of changes or interventions in networked, multi-leveled social systems.

In the workshop we elaborate on the use of Netlogo and adopt a practical, hands on workshop approach, in which participants are encouraged to provide their own research questions and data. We will help participants get started on their own Netlogo models, specifically focusing on the Network and LevelSpace extensions. We emphasize providing support to new and current users for effectively integrating Netlogo in their research.

The workshop will consist of two 3 hours sessions. To allow for sufficient room for interactions we impose a maximum number 16 participants to each session. Session 1 is a prerequisite for Session 2.

Session 1:
1) Introduction to ABM and Netlogo (1 hour)
2) Network extension (1 hour)
3) Practical Assignment 1 (1 hour)
(Participants are encouraged to bring their own research questions and data)

Session 2:
1) Lessons from practical assignment 1 (0.5 hour)
2) LevelSpace extension (1 hour)
3) Practical Assignment 2 (1.5 hour)
(Participants are encouraged to bring their own research questions and data)

Exponential Family Random Graph Modeling (ERGMs) Using statnet

Session Time: Tuesday April 5th, 3:00pm-6:00pm

Workshop Length: 1 session (3 hours)

Attendance Limit: N/A

Instructors: Martina Morris, morrism@u.washington.edu
        Carter T. Butts, buttsc@uci.edu

Prerequisites:
Familiarity with R. Previous experience with the statnet packages network and sna is helpful but not required.

Synopsis:
This workshop will provide an introductory tutorial on using exponential-family random graph models (ERGMs) for statistical modeling of social networks, using a hands-on approach to fitting these models to data. The ERGM framework allows for the specification, estimation, and simulation of models that incorporate the complex dependencies within networks, and provides a general and flexible means of representing them. The session will demonstrate ERG modeling using the statnet software in R.

Topics covered within this session include: an overview of the ERGM framework; defining and fitting models to empirical data; interpretation of model coefficients; goodness-of-fit and model adequacy checking; simulation of networks using ERG models; degeneracy assessment and avoidance; and modeling and simulation of complete networks from egocentrically sampled data. Familiarity with basic descriptive network concepts and statistical methods for network analysis within the R/statnet platform is recommended. Attendees are expected to have had some prior exposure to R, but extensive experience is not assumed.

statnet is a collection of integrated packages for the R statistical computing environment that support the representation, manipulation, visualization, modeling, simulation, and analysis of network data. statnet is developed and maintained by a team of volunteer developers, and is released under the GNU Public License. statnet packages can be used with any computing platform that supports R (including Windows, Linux, and Mac). The software supports statistical analysis of large networks, temporal network analysis and valued ties, with utilities for missing and sampled data.

Introduction to Modeling Temporal (Dynamic) ERGMs Using statnet

Session Time: Tuesday April 5th, 11:30am – 2:30pm

Workshop Length: 1 session (3 hours)

Attendance Limit: N/A

Instructors: Martina Morris, morrism@u.washington.edu
Steven Goodreau, goodreau@uw.edu

Prerequisites:
Familiarity with R. Previous experience with the statnet packages (ergm, network, sna).

Synopsis:
This workshop will provide an introduction to the estimation and simulation of dynamic networks using Temporal Exponential-Family Random Graph Models (TERGMs) in statnet. We will cover the statistical theory and methods for separable temporal ERG modeling, with a hands-on tutorial using the TERGM software package. TERGM can be used for both estimation from and simulation of dynamic network data, and it provides a wide range of fitting diagnostics.

The topics covered will include estimation from network panel data, from a single cross-sectional network with link duration information, and from cross-sectional, egocentrically sampled network data. Simulating dynamic networks with both fixed and changing node sets will also be covered. We will demonstrate how the results of a dynamic network simulation can be visualized an animated "network movie" using the ndTV package in statnet. An example of the type of "network movie" these tools can produce can be found at statnet.org/movies. This workshop will assume familiarity with R, and the network, SNA and ergm packages in statnet. The "Exponential Family Random Graph Modeling (ERGMs) with statnet" workshop is recommended as preparation.

statnet is a collection of integrated packages for the R statistical computing environment that support the representation, manipulation, visualization, modeling, simulation, and analysis of network data. statnet is developed and maintained by a team of volunteer developers, and is released under the GNU Public License. statnet packages can be used with any computing platform that supports R (including Windows, Linux, and Mac). The software supports statistical analysis of large networks, temporal network analysis and valued ties, with utilities for missing and sampled data.

Dynamic Network Analysis (DNA) and *ORA

Session Time: Tuesday April 5th, 8:00am – 2:30pm

Workshop Length: 2 sessions (6 hours)

Attendance Limit: None

Instructors: Kathleen M. Carley (Carnegie Mellon University), kathleen.carley@cs.cmu.edu
L. Richard Carley (Carnegie Mellon University), carley@ece.cmu.edu, www.casos.cs.cmu.edu

Keywords:
Dynamic Network Analysis, ORA, Spatio-Temporal Dynamic Networks, Network Visualization

A lecture and hands-on workshop in which attendees learn about Dynamic Network Analysis (DNA) and the DNA toolkit *ORA. Foundational concepts and techniques of Dynamic Network Analysis are presented including: assessing meta-network data, geo-spatial enabled network analysis, and change over time. Using *ORA the attendees will learn how to import, export, visualize, and assess data. Attention will be focused on spatio-temporal visualization, grouping technologies, key entity identification, dynamic networks, and network change. Participants will be presented with a thorough demonstration of software features used to create a sample network and analyze it using traditional and advanced DNA techniques. Participants will be provided with a CD for a windows PC with executable of the software (student version), a trial professional version), sample data, and a user's guide. Basic social network and dynamic network representations, statistics, analysis and visualization techniques are covered, both in concept and practical operation. This workshop will be fast-paced and involves advanced material, however novices to network analysis should be able to follow along, as the material is presented in an affable, but comprehensive manner.

This full-day session begins with an overview of ORA, and techniques for entering, visualizing, and analyzing social and meta-network data. Special features for handling node attributes are presented. The early session provides an introduction to the basic network capabilities; whereas, the later session covers more advanced topics. Key node identification, clustering, spatio-temporal analytics and visualization, twitter analytic, and semantic networks are covered.

*ORA is a powerful network analysis and visualization tool. *ORA supports the assessment of standard social network data, organizational network data, high-dimensional network data, meta-network data, geo-spatial network data, and dynamic network data. Relatively unique features include trail and network visualization, fuzzy grouping algorithms, multi-mode network assessment, built in network simulators, JSON and CSV importers, specialized twitter analytics, two mode metrics, and powerful visualizer with data entry and mark-up capabilities. The professional version is capable of handling large 106 networks, and can run under the PC, Mac or linux operating system.

Who Should Attend?
Those who are interested in assessing social media data, networks derived from texts, groups, organizations or communities using sets of interconnected multi-mode or multi-link networks and/or sets of networks across time and/or space and who want to learn how to use existing software tools and techniques to analyze such meta-network data, should attend this full-day workshop. The material and its delivery is suitable for researchers and practitioners, alike. This is designed to be a non-technical workshop, however, by its very nature, the material will involve some mathematics, although this will be minimized as the delivery is driven towards forming an understanding of the concepts, not mastery of the details.

Topics Include:
- Social Network Analysis
- Comparing and contrasting networks
- Multi-mode, multi-link, high dimensional network metrics
- Networks with positive and negative ties
- Sentiment networks
- Placing networks on maps, geo-network analytics
- Analyzing Twitter data
- *ORA software
  - Data management, Visualization, General, temporal and geo-spatial, metrics, Grouping algorithms, Reporting

Computer Equipment:
The software presented in this tutorial is Windows operating system based. Participants with windows emulators should pre-load and test the *ORA software from the CASOS website – http://www.casos.cs.cmu.edu/projects/ora/. Participants should bring their own laptops to workshop. Nevertheless, participants not able to bring a Windows-based laptop computer to the sessions are welcome to participate, and will still fully benefit from the workshop. The software will be screen-projected to the group as a live walk-through demonstration. Participants will be provided with a data CD containing the complete set of software and will be guided through its installation and subsequent hands-on usage.

Modeling Relational Event Dynamics with statnet

Session Time: Tuesday April 5th, 3:00pm –6:00pm

Workshop Length: 1 session (3 hours)

Attendance Limit: N/A

Instructors: Carter T. Butts, buttsc@uci.edu
Christopher S. Marcum, christopher.steven.marcum@gmail.com

Prerequisites:
Some experience R and familiarity with descriptive network concepts and statistical methods for network analysis in the R/statnet platform is expected.

Synopsis:
This workshop session will provide an introduction to the analysis of relational event data (i.e., actions, interactions, or other events involving multiple actors that occur over time) within R/statnet platform. We will begin by reviewing the basics of relational event modeling, with an emphasis on models with piecewise constant hazards. We will then discuss estimation of dyadic and more general relational event models using the relevant package, with an emphasis on hands-on applications of the methods and interpretation of results. Using the informR package, we will then show how to construct models for spell data, and data involving multiple event types. Attendees are expected to have had some prior exposure to R and statnet, and completion of the "Introduction to Network Analysis with R and statnet" workshop session is suggested (but not required) as preparation for this session. Familiarity with parametric statistical methods is strongly recommended, and some knowledge of hazard or survival analysis will be helpful.

statnet is a collection of packages for the R statistical computing system that supports the representation, manipulation, visualization, modeling, simulation, and analysis of relational data. statnet packages are contributed by a team of volunteer developers, and are made freely available under the GNU Public License. These packages are written for the R statistical computing environment, and can be used with any computing platform that supports R (including Windows, Linux, and Mac). statnet packages can be used to handle a wide range of simulation and analysis tasks, including support for large networks, statistical network models, network dynamics, and missing data.

Valued Network Modeling with statnet

Session Time: Wednesday April 6th, 8:00am – 11:00am

Workshop Length: 1 session (3 hours)

Attendance Limit: N/A

Instructors: Pavel Krivitsky, pavel@uow.edu.au
          Carter T. Butts, buttsc@uci.edu

Prerequisites:
Attendees are expected to have had some prior exposure to R, but extensive experience is not assumed. Familiarity with binary ERG modeling with the R/statnet platform (e.g., from the "Exponential Family Random Graph (ERGM) Modeling with statnet" workshop session) is assumed.

Synopsis:
This workshop session provides a tutorial using statnet software particularly ergm and latentnet to model social networks whose ties have weights (e.g., counts of interactions) or are ranks (i.e., each actor ranks the others according to some criterion), using latent space models and exponential-family random graph models (ERGMs) generalized to valued ties, and emphasizing a hands-on approach to fitting these models to empirical data.

The ERGM framework allows for the parametrization, fitting, and simulation from models that incorporate the complex dependencies within relational data structures, and provides an extremely general and flexible means of representing them, while latent space models postulate an unobserved social space in which actors are embedded, facilitating principled visualization and group detection. Topics covered within this session include: importing, modifying, and exporting edge values on network objects; an overview of the valued ERGM framework and the notion of reference distribution; an overview of latent space models for social networks; defining and fitting models to empirical data, including ERGM terms meaningful for counts and ranks; interpretation of model coefficients; simulation of networks using these models; and ERGM degeneracy assessment.

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Managing Dynamic Network Data in statnet: Animations, Data Structures and Temporal SNA

Session Time: Tuesday April 5th, 3:00pm – 6:00pm

Workshop Length: 1 session (3 hours)

Attendance Limit: N/A

Instructors: Skye Bender-deMoll, skyebend@skyeome.net

Prerequisites:
Familiarity with R. Previous experience with the statnet packages (ergm, tergm, network and networkDynamic) is helpful but not required.

Synopsis:
This workshop will provide an introduction to the R packages networkDynamic, ndtv and tsna. These tools can be used for both empirical and simulated network data. We will illustrate both, with some well-known data sets from the social network literature, and some simulations from the statnet package tergm. The workshop will demonstrate how to import, transform and extract relational data with timing information from various data structures (matrices, spell lists, toggles, etc.). We will discuss advantages of various temporal models and representations (continuous vs discrete time, etc.) as well as considerations about how to slice and aggregate time in networks.

Attendees will learn to create visualizations of network dynamics, including exporting network animations as videos or interactive HTML5 web pages. We will explain how to attach and manipulate dynamic vertex and edge attributes and effectively use a range of graphical properties to represent them (color, shape, size, transparency, speed, and annotation). We will also discuss some common visualization challenges, such as adjustments needed when working with networks with disconnected components, and how to determine if a network has appropriate size and density to create an animation. Some non-animation techniques such as relationship timelines, filmstrips and other projections will be explained as well. Finally we will demonstrate some of the basic functionality for calculating temporal network statistics using the tsna package, including computing temporal paths, and basic sequence measures.

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Understanding Diffusion with netdiffuseR

Session Time: Tuesday April 5th, 8:00am – 11:00pm

Workshop Length: 1 sessions (3 hours)

Attendance Limit: N/A

Instructors: Thomas W. Valente (PhD, University of Southern California, tvalente@usc.edu
George Vega Yon (MS, University of Southern California)

The netdiffuseR package provides a set of tools for analyzing and simulating diffusion of innovations on networks. In this workshop we demonstrate the features of the package through the analysis of both empirical and simulated data on the diffusion of innovations. The session will include examples on how to use netdiffuseR jointly with other network analysis packages such as RSiena, statnet, and igraph. netdiffuseR 's main features are computing network exposure models based on various weight matrices (direct ties, structural equivalence, attribute-weighted, etc.), thresholds, infectiousness and susceptibility, among others. The package works with both static and dynamic networks. Some other capabilities include handling relative large graphs, simulating networks and diffusion of innovation processes, and visualizing the diffusion of innovations. While there are no pre-requisites, it is suggested to have a working knowledge of the R programming language.

Basic and Advanced Network Visualization with Gephi: Part 1

Session Time: Tuesday April 5th, 11:30am – 2:30pm

Workshop Length: 1 session (3 hours)

Attendance Limit: 40

Instructors: Katherine Ognyanova (Rutgers University)
Kar-Hai Chu (University of Southern California)

This workshop is the first of two workshops that will cover basic and advanced network visualization techniques. *Note: participants may register for one or both sessions

Part 1 will focus on hands-on training for graph visualization with Gephi (gephi.github.io). No prior knowledge of the software is required. The training will cover formats and input modes for structural and attribute data, visualization parameters, and best practices. It will provide an overview of layout algorithms appropriate for networks with different sizes and characteristics. This session will also deal with advanced topics including dynamic visualization for longitudinal data; working with bipartite and multiplex graphs; and combining networks with geographic data. We will discuss output formats, and cover the use of plugins that facilitate the export of Gephi networks to interactive Web pages.

Basic and Advanced Network Visualization with R: Part 2

Session Time: Tuesday April 5th, 3:00pm – 6:00pm

Workshop Length: 1 session (3 hours)

Attendance Limit: 40

Instructors: Katherine Ognyanova (Rutgers University)

This workshop is the second of two workshops that will cover basic and advanced network visualization techniques. *Note: participants may register for one or both sessions

Part 2 will cover network visualization using the R language for statistical computing (cran.r-project.org) and RStudio (rstudio.com). Participants in that session should have some prior knowledge of R and network concepts. The session will provide a brief overview of network formats, focusing on their structure and representation in key R packages. Attendees will also receive an introduction to major principles of graphics used in the R environment. The workshop will provide a step-by-step guide describing (through series of examples) the path from raw data to graph visualization in the igraph and statnet frameworks. The advanced portion of this session will introduce dynamic visualization for longitudinal networks; combining networks with geographic maps; and user-designed graph layouts. This section will also discuss ways of converting networks in R to interactive JavaScript/d3-based visualizations for the Web.

Visualizing Social Networks. How to Create Meaningful and Compelling Network Drawings

Session Time: Tuesday April 5th, 8:00am – 11:00am

Workshop Length: 1 session (3 hours)

Attendance Limit: 40

Instructors: Jürgen Pfeffer (Carnegie Mellon University), jpfeffer@cs.cmu.edu

The ability to visualize social structures is one of the most obvious advantages of social network analysis. With network drawings, you are able to visualize analytical research results in a communicative way. Presenting outcomes is a common application of network visualizations, however they are not only for use at the end of a research project; they can also yield first impressions of data in a very early stage of this process. The precondition for effective information visualization and successful visual reasoning is the capability to draw "good" pictures. Although drawing networks is more complex than clicking the "Draw" button of a social network analysis tool, a basic knowledge of certain rules can increase the quality of your visualizations dramatically. These techniques, explored in this workshop, make visualizing networks into a craft rather than an art.

In this workshop, you will learn about different aspects of visualizing networks and about underlying visualization principles, giving you the ability to assess the quality of network visualizations and to draw better network pictures by yourself. This workshop is neither an introduction into a specific network analysis tool nor will we discuss technical details about layout algorithms or the like. Instead, this 3 hours session will cover the following topics:

- Fundamentals of information visualization
- Visual elements for drawing networks
- Multivariate information visualization with networks
- Communicating with colors
- Human perception

Participants are invited to bring their own network data in order to create meaningful and compelling network drawings for their publications and presentations (e.g. Sunbelt).

Multilevel Modeling for Egocentric Network Analysis

Session Time: Tuesday April 5th, 11:30am – 2:30pm

Workshop Length: 1 sessions (3 hours)

Attendance Limit: 50

Instructors: Brea L. Perry (Indiana University Network-Science Institute (IUNI), Department of Sociology), blperry@indiana.edu

This workshop will provide an overview of multilevel modeling (MLM) techniques for analyzing egocentric network data, where alters are nested in ego networks. Multilevel modeling offers a number of important advantages over standard aggregation and regression techniques for egocentric analysis, including taking full advantage of variation across alters, increased statistical power, and the ability to test complex research questions that cross levels of analysis. In this workshop, participants will learn when it is appropriate to use MLM for egocentric analysis and how to formulate and test multilevel hypotheses. In addition, the workshop will provide an introduction to the multilevel variance-components model with special considerations for egocentric data. Finally, participants will learn how to run and interpret MLM for egocentric data using the software program Stata, but equivalent code will be provided for R and SAS users.

Topics covered include:

- When to use MLM for egocentric network analysis
- Why MLM is necessary
- Examining tie formation, alter behavior, and characteristics of dyads
- Nested social contexts (individuals within dyads within networks)
- Interactions within and between levels
- Random-intercept, random-coefficient, and fixed effects models
- Formatting and coding nested data
- Conducting MLM for continuous and categorical outcomes
- MLM diagnostics for egocentric network analysis
- Interpreting coefficients, intraclass correlation, and other model parameters

Session Time: Tuesday April 5th, 3:00pm – 9:30pm

Workshop Length: 2 sessions (6 hours)

Attendance Limit: 30

Instructors: Raffaele Vacca (Department of Family, Community and Health System Science, College of Nursing, University of Florida), r.vacca@ufl.edu, www.raffaelevacca.com

Prerequisites:
None.

Topics:

- Short introduction to ego-network research and data.
- Data structures for ego-networks in R: vectors, data frames and lists.
- Network objects in R.
- The split-apply-combine strategy: creating ego-level summary variables.
- Looping over multiple ego-networks (for, while, repeat loops).
- Writing your own R functions.
- Applying your functions to multiple ego-networks: The "apply" family of functions (apply, lapply, sapply, etc.).
- The plyr package for easier split-apply-combining.

More information is available at www.raffaelevacca.com/teaching/workshops/ego-network-r/.

Technology requirements:
A laptop with RStudio installed. More details will be emailed to participants before the workshop.

Background:
This workshop offers an introduction to ego-network analysis with R, presenting essential facilities available in R to store and manipulate ego-network data, to visualize ego-networks, and to perform compositional and structural analysis on large collections of ego-networks.

The central idea behind ego-network analysis is that the people (alters) that an individual (ego) knows, and the way that these people interact with each other, affect outcomes in that individual's life such as mental wellbeing, smoking behavior, or assimilation to a foreign culture. A typical ego-network study involves identifying a sample of focal individuals (the egos), and collecting a network of personal contacts (the alters) from each. Ego is asked about characteristics of each alter, characteristics of each ego-alter relation, and characteristics of alter-alter relations. This information is then frequently aggregated into ego-level variables that summarize ego-network characteristics, which can subsequently be linked to other ego attributes and outcomes.

Typical ego-network analysis requires handling dozens or hundreds of datasets, each representing one ego-network with ego attributes, alter characteristics, and alter-alter ties. The analysis involves running the same set of operations on each dataset, e.g. to extract compositional and structural summary variables on each ego-network; and joining the resulting metrics into a single dataset, together with other ego-level or alter-level variables. This has been called the split-apply-combine process in data analysis, in which raw data are *split* into pieces (in this case, each piece representing one ego), the same analysis is *applied* on each piece, and results are then *combined* together into a single dataset.

Handling the split-apply-combine process in traditional point-and-click software for statistical analysis is inefficient. Pointing and clicking is repetitive, boring and prone to errors. It typically does not allow users to run the same set of operations on many objects *in batch*, without the user's intervention. Perhaps more importantly, pointing and clicking makes research not reproducible. R overcomes these limitations and opens up a whole different way of doing ego-network analysis. It eliminates pointing-and-clicking entirely, and allows users to write reproducible scripts that batch analyze hundreds or thousands of ego-networks simultaneously in few seconds.

This workshop will use real-world ego-network data, in combination with the main R packages for network analysis (igraph and statnet). The workshop can be taken as an introduction to the workshop "Simplifying ego-centered network analysis in R with egonetR" by Till Krenz and Andreas Herz. Students interested in a general introduction to social network analysis with R should also consider taking the workshop "Using R and igraph for Social Network Analysis" by Michal Bojanowski.

Simplifying Ego-centered Network Analysis in R with EgonetR

Session Time: Tuesday April 5ᵗʰ 6:30- 9:30pm, and Wednesday April 6ᵗʰ 8:00am-11:00am

Workshop Length: 2 sessions (6 hours)

Attendance Limit: 30

Instructors: Till Krenz (Otto-von-Guericke University Magdeburg), till.krenz@ovgu.de
Andreas Herz (University of Hildesheim)

Ego-centered network analysis is tricky because most often you have n+many networks which you want to analyse simultaneously and performing multivariate analyses, where network data and attributional data of ego are combined. An ego-centered network is commonly known as the network of a focal actor (ego), including the relationships of ego to alters and the relationships between these alters. Analysis can be conducted on two different levels: On the alter level the analysis focusses on the qualities of the ego-alter-relationships e.g. provision of support or contact frequency. The network level analysis focuses the structure and composition of the ego-centered network. The most reasonable way to analyse multiple ego-centered networks is to use R because it allows both the calculation of various network measures for n+many networks simultaneously (e.g. what is the density of all networks) and multivariate analysis of network and attributional data (e.g. how does density vary between men and women). The workshop focuses the analysis of ego-centered networks using data from current research projects. We introduce the R-package "egonetR" which simplifies the import and manipulation of ego, alter and network-level data in different formats and allows to calculate a range of network measures. Using "egonetR" users will be enabled to conduct ego-centered network analysis with very basic R programming knowledge.

After a short introduction into data management and data import to R we calculate network measures on alter level (e.g., multiplexity, homophily) and network level (size, density, EI-Index, diversity, components, proportions of ties with specific attributes). Afterwards we go on with multivariate analyses, both on alter and the network level. For both levels we exemplify explorative and hypothesis testing procedures using additional packages in R (e.g. cluster, lme4, FactoMineR): On the network level we focus cluster analysis and standard regression. With cluster analysis we present a way to typologize ego-networks along network-level information. In standard regression analysis, network measures can be used as dependent or independent variables, just as any other characteristic of ego e.g. to test whether network size differs by gender or age. On the level of the analysis of ego-alter dyads we demonstrate multivariate correspondence analysis and give a short introduction to multilevel analysis. Multivariate correspondence analysis is used to explore the dependencies between categorical alter-level variables using visualisations. Multilevel analysis is used to treat with the nested nature of alter level data when dependent variables lies on the alter level.

Major parts of the workshop will be "hands-on" utilizing R (R-Studio). A short intro into the basics of R will be given in the beginning while prior knowledge in R is preferable.

For more in depth introductions to R it is recommended to visit the workshop „Introduction to ego-network analysis with R" by Raffaele Vacca, where data collection, data management and data transformation between different levels of data are discussed in detail and Michal Bojanowski's " Using R and igraph for Social Network Analysis" for a general introduction to (whole) network analysis with igraph in R.

Further information will be available on (http://rego.tillt.net).

Technology Needs: Laptops with internet access. Installation of R (http://cran.r-project.org/) and R-Studio (www.rstudio.com) before the workshop is required.

Introduction to Egocentric Network Data Analysis with ERGMs and TERGMs using statnet

Session Time: Tuesday April 5th, 6:30pm-9:30pm

Workshop Length: 1 session (3 hours)

Attendance Limit: N/A

Instructors: Pavel Krivitsky, pavel@uow.edu.au
    Martina Morris, morrism@uwashington.edu

Prerequisites:
Some experience R and familiarity with descriptive network concepts and statistical methods for network analysis in the R/statnet platform (especially ERGM and TERGM) is required.

Synopsis:
This workshop will provide an introductory tutorial on analyzing egocentrically sampled data with exponential-family random graph models (ERGMs) for statistical modeling of social networks. It will be a hands-on workshop demonstrating how to fit, diagnose and simulate both static and dynamic ERG models from such data. We will be using the new "ergm.ego" package, part of the integrated statnet software in R.

Topics covered within this session include: a review of different approaches to analyzing egocentrically sampled data in the social network community, an overview of the basic statistical concepts that govern methods for analyzing sampled network data, and the exponential family theory that supports the use of ERGMs for egocentric samples; defining and fitting ERGMs to egocentric data; interpretation of model coefficients; goodness-of-fit and model adequacy checking; and simulation of complete networks from the specified ERG models. With one additional piece of data – information on relational duration – these methods can be generalized to dynamic network analysis. The workshop therefore will also cover estimating, fitting, diagnosing and simulating dynamic networks from cross-sectional egocentrically sampled data. The ergm.ego package provides users with simple access to many functions that support these analyses.

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Introduction to Social Network Data Collection with an Emphasis on Social Survey Methods

Session Time: Wednesday April 6th, 8:00am-11:00am

Workshop Length: 1 session (3 hours)

Attendance Limit: 20

Instructors: David Tindall, tindall@mail.ubc.ca

This workshop is intended for relative newcomers to social network analysis. This workshop will provide an introduction to social network data collection with an emphasis on social survey methods. The workshop will consider a variety of related methodological issues such as measurement, sampling, data analysis, and ethics, as well as the linkage of these issues to data collection. Different types of data collection techniques will be illustrated such as the name generator, position generator, and name roster. The different opportunities and constraints associated with data collection for whole versus ego-networks will be considered. Some discussion of non-survey techniques may also be provided. Some attention may also be given to mixed methods.

EgoWeb 2.0: Flexible Social Network Data Collection Software

Session Time: Tuesday April 5th, 8:00am-11:00am

Workshop Length: 1 session (3 hours)

Attendance Limit: N/A

Instructors: **David Kennedy (RAND Corporation), davidk@rand.org**
Marie Kennedy (Loyola Marymount University)

In this workshop, attendees will learn to use *EgoWeb 2.0*, an open-source and freely available software option for network data collection, administration, and analysis for a variety of data collection modes. Attendees of the workshop will learn to create and author data collection instruments that can be administered on laptops, mobile tablets, or over the web. It can be used to collect personal network data as well as complete and cognitive networks.

Attendees of this workshop will learn:

- to easily set up EgoWeb to run on a commercial web hosting site and how to collect data in the field without a live internet connection using iPads or laptops.
- to set up EgoWeb to send invitations via email for respondents to answer social network survey questions through a web browser.
- to program surveys that ask questions about network alters generated from scratch or that generate responses about alters chosen from a roster. EgoWeb has flexible skip-logic capabilities and a variety of question presentation options to reduce the respondent burden that is typical of social network interviews. EgoWeb also provides instant visualization of network data collected during an interview to facilitate exploratory/ qualitative data collection about a personal network. EgoWeb provides basic analysis output and exports data in a simple format for analysis in standard network analysis packages such as R.
- options for exporting and analyzing EgoWeb data.

Additional EgoWeb 2.0 information can be found at egoweb.info and www.rand.org/methods/egoweb

BlauNet: An R package to Construct Blau Spaces and Analyze the "Blau Statuses" of Social Entities and Individuals in Conjunction with Their Networks

Session Time: Tuesday April 5th, 3:00pm-6:00pm

Workshop Length: 1 session (3 hours)

Attendance Limit: 25

Instructors: Cheng Wang (University of Notre Dame, Department of Sociology), cwang3@nd.edu

In this workshop we introduce the R package BlauNet, an integrated set of tools to calculate and analyze Blau spaces (i.e., a k-dimensional space where salient sociodemographic variables comprise the dimensions; McPherson 1983, 2004) and the statuses of social entities and individuals located in these spaces. BlauNet has the capability to identify possible salient dimensions; construct a Blau space; plot niches, calculate and graph ecological carrying capacity, membership rate, and intensity of exploitation for social entities; calculate and analyze a variety of "Blau statuses" describing individual positions in a competitive ecology and relating these to concrete network data; and generating Blau bubbles for individuals, allowing researchers to capture interpersonal influences in the absence of network data, or at tie strengths below what is captured in most network data. We will illustrate key features of BlauNet with example datasets. BlauNet has a graphical user interface and is available for Windows, OSX, and Linux operating systems. It can be downloaded from CRAN for free. Researchers interested in voluntary organizations, cultural competition, ecological models, and the intersection of social networks with other levels of analysis will find this software useful.

Authors of BlauNet:
Cheng Wang,* Department of Sociology, University of Notre Dame;
Michael Genkin,* School of Social Sciences, Singapore Management University;
George Berry, Department of Sociology, Cornell University;

Liyuan Chen, Department of Sociology, Cornell University;
Matthew Brashears, Department of Sociology, University of South Carolina
* Both authors contributed equally to this work.

Rough agenda:

Topic 1 – General introduction of BlauNet, approximately 15 minutes;

Topic 2 – Installation of BlauNet, approximately 15 minutes;

Topic 3 – Interface of BlauNet, approximately 10 minutes;

Topic 4 – Major features of BlauNet, approximately 120 minutes (rest break included);

Topic 5 – Minor features of BlauNet, approximately 20 minutes.

Workshop materials:

Handouts will be provided. Registrants will be given electronic access to materials and installations instructions ahead of their arrival.

Participants are encouraged to bring their own laptops for reproducing BlauNet features.

References:

McPherson M (1983). "Ecology of Affiliation." *American Sociological Review*, 48(4), 519–532.

McPherson M, Ranger-Moore J (1991). "Evolution on a Dancing Landscape: Organizations and Networks in Dynamic Blau Space." *Social Forces*, 70(1), 19–42.

McPherson M (2004). "A Blau Space Primer: Prolegomenon to an Ecology of Affiliation." Industrial and Corporate Change, 13(1), 263–280.

Social Network Approaches for Behavior Change

Session Time: Wednesday April 6th, 8:00am-11:00am

Workshop Length: 1 session (3 hours)

Attendance Limit: N/A

Instructors: Thomas W. Valente, PhD (University of Southern California), tvalente@usc.edu

This workshop introduces the many ways that social networks influence individual and network-level behaviors. It also provides a brief introduction to analytic approaches for understanding network influences on behaviors; and reviews existing evidence for the utility of using social network data for behavior change in a variety of settings including health behaviors and organizational performance. The workshop presents a typology of network interventions and reviews existing evidence on the effectiveness of network interventions. (Students familiar with the R environment may follow an R script written to demonstrate the 24 or so tactical interventions presented.) The workshop will be conducted by Tom Valente who has been developing and implementing network based interventions for over 15 years. No pre-requisites.

Mixed Methods Research in Social Networks

Session Time: Tuesday April 5th, 11:30am-6:00pm

Workshop Length: 2 sessions (6 hours)

Attendance Limit: 20

Instructors: Betina Hollstein (University of Bremen, Department of Sociology, Germany), betina.hollstein@uni-bremen.de
Elisa Bellotti (University of Manchester, Department of Sociology, Mitchell Centre for Social Network Analysis, Great Britain)

The workshop focuses on the use of mixed methods research designs when studying whole and ego-centered social networks. The workshop will be conducted in two parts. The first part introduces social network qualitative research and the principles of mixed methods research designs and its contributions to the study of social networks, pointing out advantages and challenges of this approach. Illustrations of the theoretical and methodological aspects are given by bringing examples from a variety of fields of research. The second part is devoted to the presentation of concrete procedures to apply mixed methods in network research both at the level of data collection and analysis. This part includes an introduction of different approaches to the collection of whole and ego-centered network data, i.e. interviews, ethnographic methods, archival data, together with visual instruments. It then moves to the analysis of the quantitative and qualitative dimensions of network relationships and structures in a mixed method perspective.

From Words to Networks: Text-based/Semantic Network Analysis

Session Time: Tuesday April 5th, 6:30-9:30pm, and Wednesday April 6th 8:00am-12:00pm

Workshop Length: 2 sessions (6 hours)

Attendance Limit: 25

Instructors: Jana Diesner (http://people.lis.illinois.edu/~jdiesner/) is an Assistant Professor at the iSchool (a.k.a. Graduate School of Library and Information Science) at the University of Illinois Urbana-Champaign (UIUC). For questions about the workshop, email Jana at jdiesner@illinois.edu

Natural language text data can be a rich source of information about networks. This workshop introduced participants to fundamental theories, concepts and methods for going from words to networks. The focus is on practical, hands-on skills for constructing network data based on text data in an informed, systematic and efficient fashion. Attendants will learn text mining and natural language processing techniques including:

- Entity Extraction, i.e. locating and classifying terms that represent instances of relevant node classes in one-mode and multi-mode networks, e.g. social agents, locations and information.

- Relation Extraction, i.e. linking identified entities into edges based on various criteria, including proximity, syntax and semantics. The extracted networks can be imported into standard SNA tools, incl. R, Gephi, Pajek, UCINET, ORA and visone.

- Analyzing the extracted networks to make meaningful interpretations.

- Text summarization/ distant reading techniques such as topic modeling, corpus statistics, and term weighting techniques.

- Close reading techniques used in the social sciences and humanities, such as text coding.

- Sentiment/ subjectivity analysis, also known as opinion mining.

- Pre-processing techniques such as stemming, n-gram detection and part of speech tagging.

- Measuring the entropy (diversity) of text data.

- Working with various types of text data, e.g. social media data and news data.

Why bother?
The functioning and dynamics of real-world networks often involve the production, processing and flow of knowledge

and information, which are often represented in the form of text data. In this workshop, participants learn how to a) construct network data based on text data and textual meta-data and b) jointly consider text data and network data for analysis. The latter step allows for considering two types of behavioral information for network analysis, namely social interaction and language use.

Using text data for network analysis is useful for answering questions like: Who is talking to whom, and about what? What social agents or stakeholders are associated with that themes and opinions? What perception or mental models of certain themes do social agents have? How can we track the evolution and diffusion of opinions in teams, society and online? Throughout this workshop, we discuss practical applications from various domains for the introduced techniques.

Who should attend?
We aim to equip the attendees with the skills and tools needed to apply the covered techniques to their own research questions and text data sets. This is an interdisciplinary and interactive workshop designed to benefit from the participation of attendants from different backgrounds. The material, exercises and mode of delivery are suitable for researchers and practitioners alike. No specific prior knowledge or computational skills are required.

What to bring to the workshop?
Software: We will use ConText (http://context.lis.illinois.edu/). Prior to the workshop, we will send an email to confirmed participants with links and installation instructions for any tools needed. You are invited to bring a laptop to the workshop. If attendants cannot bring a laptop they will still fully benefit from the workshop as we screen-project all live walk-through exercises.

Data: Attendants can work with the sample data that we provide and/ or bring their own data.

The Positional Approach to Network Analysis

Session Time: Wednesday April 6th, 8:00am-11:00am

Workshop Length: 1 session (3 hours)

Attendance Limit: 50

Instructors: Ulrik Brandes (University of Konstanz), ulrik.brandes@uni-konstanz.de, http://algo.uni-konstanz.de/brandes/

The positional approach is a recent methodological innovation intended to narrow the gap between substantive theory and mathematical analysis of social networks. By breaking down current methods into meaningful and manageable decision steps it explicates hitherto tacit assumptions, suggests means to overcome them, and smoothly generalizes approaches to valued, multiplex, multilevel, and temporal data. It also facilitates the incorporation of more qualitative observations and produces more nuanced results.

All of this is achieved with the help of a simple conceptual change, defining the network position of an actor as the aggregate of direct and indirect relationships and attributes. Starting from this key concept, the network position, state-of-the-art methods of analysis turn out to be special cases of positional comparisons and evaluation. The characterization of actors by their positions can be thought of as a form of conjoint measurement, and exploits a richer array of non-quantitative mathematical tools.

Methodologically, this allows to separate the substantive argumentation of what defines a position from the formal analysis of the network it is embedded in. An important benefit of the genericity of the positional many new methods obtained from alternative instantiations. Moreover, it facilitates basic research by identifying relevant problems without requiring domain-specific background knowledge.

The workshop is an introduction to the positional approach starting from first principles. It is centered around use cases that cover a broad range of social network application domains. We will discuss the relative utility of positional and current state-of-the-art approaches and identify how method selection can be better informed by substantive theory. If desired, participants can submit example data or research designs to be discussed in the workshop.

Session Time: Tuesday April 5th 6:30pm-9:30pm, and Wednesday April 6th 8:00am-11:00am

Workshop Length: 2 sessions (6 hours)

Attendance Limit: N/A

Instructors: Maksim Tsvetovat, maksim@tsvetovat.org

Attendees of the workshop will receive a crash-course on machine learning and learn to apply machine learning techniques to SNA data.

Topics include:
- Classifiers and Support Vector Machines
- Unsupervised machine learning
- Recommender systems
- Preparing data for training machine learning systems
- Using ML to classify graph substructures in very large graphs -- a kinder gentler structural equivalence and an alternative to ERGMs
- Recurrent Neural Networks and Deep Learning
- Using ML to identify feature clusters

The workshop requires knowledge of Python and NetworkX; we shall also use a combination of GraphLab, SciKits Learn, and Theano.

The workshop will have two lecture sections of ~ 90 min each, and two practical sessions. Ideally, attendees should bring their own data and project ideas -- but we will provide some data and ideas to hack on.