

1<sup>st</sup> North American Social Networks Conference  
of the International Network for Social Network Analysis  
NASN2017

## 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 Wednesday, July 26<sup>th</sup> (9 am – 7 pm).

**This document** lists the workshop timetable, a table of contents for all workshops, and a description of all available workshops.

**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 April 7, 2017

Registration closes July 24, 2017

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

Register for workshops here: [link](#)

**Additional information:**

Conference website: <http://insna.org/nasn2017/>

Link to Workshop program: <http://insna.org/nasn2017/program/>

Workshop FAQ: <http://insna.org/nasn2017/workshop-faq/>

Conference and Workshop registration page: <http://insna.org/nasn2017/registration/>

For additional questions contact us at: [nasocnet@gmail.com](mailto:nasocnet@gmail.com)

## WORKSHOP TIMETABLE

Wednesday, July 26		
9:00 - 12:00	1:00 - 4:00	4:00 - 7:00
Intro to Exponential family Random Graph Models (ERGMs) for Social Networks	Intro to Temporal ERGMs (TERGMs) for Dynamic Social Networks	Analyzing Egocentrically Sampled Network Data Using ERGMs and TERGMs
A Hands-on Introduction to Analyzing Social Networks with UCINET & Netdraw		Basic and Advanced Network Visualization with R
Dynamic Network Analysis and ORA		Charting Collections in Social Media: Creating Maps and Measures with NodeXL
EgoWeb 2.0: Flexible and User Friendly Social Network Data Collection Software	Constructing Ego Networks from Retweets	Mixed Methods Research in Social Networks
Network Approaches for Behavior Change	Understanding Diffusion with netdiffuseR	Social Media Analytics During Crises
Agent-Based Models in Social Network Analysis Using NetLogo		Generating and Analyzing Scientific Networks with <i>Metaknowledge</i>

# WORKSHOP DESCRIPTIONS: TABLE OF CONTENTS

Workshop Title	Page Number
Intro to Exponential Family Random Graph Models (ERGMs) for Social Networks .....	4
Intro to Temporal ERGMs (TERGMs) for Dynamic Social Networks .....	4
Analyzing Egocentrically Sampled Network Data using ERGMs and TERGMs .....	5
A Hands-on Introduction to Analyzing Social Networks with UCINET & Netdraw .....	6
Basic and Advanced Network Visualization with R.....	6
Dynamic Network Analysis and ORA.....	7
Network Approaches for Behavior Change.....	8
EgoWeb 2.0: Flexible and User Friendly Social Network Data Collection Software.....	9
Constructing Ego Networks from Retweets .....	9
Mixed Methods Research in Social Networks.....	10
Charting Collections in Social Media: Creating Maps and Measures with NodeXL.....	10
Social Media Analytics During Crises.....	12
Agent-Based Models in Social Network Analysis Using NetLogo.....	12
Generating and Analyzing Scientific Networks with <i>Metaknowledge</i> .....	13
Understanding Diffusion with netdiffuseR.....	14

## WORKSHOP DESCRIPTIONS

### Intro to Exponential Family Random Graph Models (ERGMs) for Social Networks

**Session Length:** 1-session (3 hours)

**Attendance Limit:** None

**Instructors:** Martina Morris (University of Washington)

**Description:** 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 in this workshop 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.

Prerequisites: 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), and they support statistical analysis of large networks, longitudinal network dynamics, and missing data.

### Intro to Temporal ERGMs (TERGMs) for Dynamic Social Networks

**Session Length:** 1-session (3 hours)

**Attendance Limit:** None

**Instructors:** Martina Morris (University of Washington)

**Description:** This workshop will provide an introduction to the analysis of dynamic networks using Temporal Exponential-Family Random Graph Models (TERGMs) in statnet. We will cover the statistical theory and methods for separable temporal ERGM 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 as 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](http://statnet.org/movies).

**Prerequisites:** 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 packages for the R statistical computing environment that supports the representation, manipulation, visualization, modeling, simulation, and analysis of network data. **statnet** packages are contributed by a team of volunteer developers, and are made freely available under the GNU Public License. **statnet** packages can be used with any computing platform that supports R (including Windows, Linux, and Mac), and they support statistical analysis of large networks, longitudinal network dynamics, and missing data.

## Analyzing Egocentrically Sampled Network Data using ERGMs and TERGMs

**Session Length:** 1-session (3 hours)

**Attendance Limit:** None

**Instructors:** Martina Morris (University of Washington)

**Description:** This workshop will provide a tutorial on using egocentrically sampled data with exponential-family random graph models (ERGMs) for statistical modeling of social networks. It will be a hands-on workshop to fitting, diagnosing and simulating 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.

Prerequisites: Familiarity with descriptive network concepts and statistical methods for network analysis in the R/statnet platform (especially ERGM and TERGM) is required. Attendees are expected to have had some experience R.

**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), and they support statistical analysis of large networks, longitudinal network dynamics, and missing data.

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

**Session Length:** 2-sessions (6 hours)

**Attendance Limit:** None

**Instructors:** Martin Everett (University of Manchester) and Steve Borgatti (University of Kentucky)

**Description:** This is a 1-day workshop for participants who already have some experience with UCINET and 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.

Prerequisites: We do assume basic familiarity with UCINET as a pre-requisite for the workshop.

## Basic and Advanced Network Visualization with R

**Session Length:** 1-session (3 hours)

**Attendance Limit:** None

**Instructors:** Katherine Ognyanova (Rutgers University)

**Description:** This workshop will cover basic and advanced network visualization using the R language for statistical computing (cran.r-project.org) and RStudio (rstudio.com). Participants 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 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.

## Dynamic Network Analysis and ORA

**Session Length:** 2-sessions (6 hours)

**Attendance Limit:** None

**Instructors:** Kathleen Carley (Carnegie Mellon University) and Richard Carley (Carnegie Mellon University)

**Description:** In 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 or MAC 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  $10^6$  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
- Weighted networks
- Semantic 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 or Mac operating system based. Participants should bring their own laptops to 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.

## Network Approaches for Behavior Change

**Session Length:** 1-session (3 hours)

**Attendance Limit:** None

**Instructors:** Tom Valente (University of Southern California)

**Description:** 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.

## EgoWeb 2.0: Flexible and User Friendly Social Network Data Collection Software

**Session Length:** 1-session (3 hours)

**Attendance Limit:** 30 people

**Instructors:** David Kennedy (RAND Corporation) and Stacey Giroux (Indiana University)

**Description:** In this hands-on workshop, attendees will learn to use *EgoWeb 2.0*, an open-source and freely available software for network data instrument development, network interview administration, and network data processing 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. Workshop attendees will learn how to use EgoWeb to collect both personal network data as well as complete and cognitive network data.

Attendees of this workshop will learn:

- To program surveys that ask questions about network alters generated from scratch or that generate responses about alters chosen from a roster.
- To program questions about ego, alters, and alter pairs.
- To use EgoWeb's skip-logic capabilities for displaying questions based on previous question responses
- To produce instant visualizations of network data collected during the interview
- To use basic analysis and visualization capabilities in EgoWeb for analysis of data after collection.
- To export data for analysis in other software (e.g. R).
- To set up EgoWeb to send invitations via email for respondents to answer social network survey questions through a web browser.
- To use EgoWeb mobile app for data collection off-line in the field.
- To set up EgoWeb to run on a commercial web hosting site.

The workshop will primarily involve live demonstrations and hands-on exercises with minimal lecturing. Attendees will be expected to have a basic understanding of social network analysis and survey data collection. Attendees should bring their own laptops to access to the internet via a web-browser (Chrome preferred) in order to participate in workshop exercises. Attendees will be given access to a server installation of EgoWeb to follow workshop exercises.

Additional EgoWeb 2.0 information can be found at [egoweb.info](http://egoweb.info) / [egoweb.wikispaces.com](http://egoweb.wikispaces.com).

## Constructing Ego Networks from Retweets

**Session Length:** 1-session (3 hours)

**Attendance Limit:** None

**Instructors:** Yotam Shmargad (University of Arizona)

**Description:** Twitter has become a prominent social network, playing a significant role in how people all over the world share and consume information. Moreover, while many online social networks have made it increasingly difficult for researchers to extract data from their servers, Twitter still remains relatively open. This workshop will go through the details of how to construct a Twitter user's ego network from Retweets they have received on the Tweets they have posted. Instead of focusing on who Follows who on the Twitter platform, this method instead conceptualizes edges as existing between users if they have recently Retweeted each other. Conceptualizing edges as Retweets has two primary benefits. First, it captures recent interactions between users rather than decisions that users may have made long ago (i.e. Following each other) which may not translate into meaningful interaction today. Second, users often have many more Followers than they do Retweeters. The method proposed can thus be used to analyze even relatively popular users. The workshop will go through obtaining authorization from Twitter as well as taking into account the limits that Twitter imposes on how much data can be extracted from their servers within a short window of time. Participants should make sure to download and install R, as the workshop will make use of its TwitteR and igraph packages.

## Mixed Methods Research in Social Networks

**Session Length:** 1-session (3 hours)

**Attendance Limit:** 20 people

**Instructors:** Betina Hollstein (University of Bremen) and Elisa Bellotti (University of Manchester)

**Description:** The workshop focuses on the use of mixed methods research designs when studying whole and ego-centered social networks. The workshop 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.

## Charting Collections in Social Media: Creating Maps and Measures with NodeXL

**Session Length:** 1-session (3 hours)

**Attendance Limit:** None

**Instructors:** Mark Smith (Social Media Research Foundation)

**Description:** Networks are a data structure commonly found in any social media service that allows populations to author collections of connections. The [Social Media Research Foundation's NodeXL](#) project makes analysis of social media networks accessible to most users

of the Excel spreadsheet application. With NodeXL, network charts become as easy to create as pie charts. Recent research created by applying the tool to a range of social media networks has already revealed the [variations](#) in network structures present in online social spaces. A review of the tool and images of Twitter, flickr, YouTube, Facebook and email networks will be presented.

Background: We now live in a sea of tweets, posts, blogs, and updates coming from a significant fraction of the people in the connected world. Our personal and professional relationships are now made up as much of texts, emails, phone calls, photos, videos, documents, slides, and game play as by face-to-face interactions. Social media can be a bewildering stream of comments, a daunting fire hose of content. With better tools and a few key concepts from the social sciences, the social media swarm of favorites, comments, tags, likes, ratings, updates and links can be brought into clearer focus to reveal key people, topics and sub-communities. As more social interactions move through machine-readable data sets new insights and illustrations of human relationships and organizations become possible. But new forms of data require new tools to collect, analyze, and communicate insights.

The [Social Media Research Foundation](http://www.smrfoundation.org) (<http://www.smrfoundation.org>), formed in 2010 to develop open tools and open data sets, and to foster open scholarship related to social media. The Foundation's current focus is on creating and publishing tools that enable social media network analysis and visualization from widely used services like email, Twitter, Facebook, flickr, YouTube and the WWW. The Foundation has released the [NodeXL](http://nodexl.codeplex.com/) project (<http://nodexl.codeplex.com/>), a spreadsheet add-in that supports "network overview discovery and exploration". The tool fits inside your existing copy of Excel in Office 2007, 2010 and 2013 and makes creating a social network map similar to the process of making a pie chart.

Using [NodeXL](#), users can easily make a map of public social media conversations around topics that matter to them. Maps of the connections among the people who recently said the name of a product, brand or event can reveal key positions and clusters in the crowd. Some people who talk about a topic are more in the "center" of the graph, they may be key influential members in the population. [NodeXL](#) makes it a simple task to sort people in a population by their network location to find key people in core or bridge positions. [NodeXL](#) supports the exploration of social media with import features that pull data from personal email indexes on the desktop, Twitter, Flickr, YouTube, Facebook, Wikis, blogs and WWW hyper-links. The tool allows non-programmers to quickly generate useful network statistics and metrics and create visualizations of network graphs.

A book [Analyzing Social Media Networks with NodeXL: Insights from a connected world](#) is available from Morgan-Kaufmann. The book provides an introduction to the history and core concepts of social network analysis along with a series of step-by-step instructions that illustrate the use of the key features of [NodeXL](#). The second half of the book is dedicated to chapters by a number of leading social media researchers that each focus on a single social media service and the networks it contains. Chapters on Twitter, email, YouTube, flickr, Facebook, Wikis, and the World Wide Web illustrate the network data structures that are common to all social media services.

A recent report co-authored with the [Pew Research Center's Internet Project](#) documents the discovery of the six basic forms of social media network structures present in social media platforms like Twitter. The report, "[Mapping Twitter Topic Networks: From Polarized Crowds to Community Clusters](#)" provides a step by step guide to analyzing social media networks.

## Social Media Analytics During Crises

**Session Length:** 1-session (3 hours)

**Attendance Limit:** None

**Instructors:** Cody Buntain (University of Maryland)

**Description:** This tutorial-based workshop will build practical experience in using Python + Jupyter Notebooks to analyze and discover insights from social media during times of crisis and social unrest. We demonstrate how temporal, network, sentiment, and geographic analyses on Twitter can aid in understanding and enhance storytelling of contentious events. Examples of events we might cover include protests in Ferguson, MO, the Boston Marathon Bombing, the Charlie Hebdo Attack, and a set of natural disasters. Demonstrations will include hands-on exercises in extracting tweets by location, sentiment analysis, network analysis to visualize groups taking part in the discussion, and detecting high-impact moments in the data. Most of the work will be performed in the Jupyter notebook framework to aid in repeatable research and support dissemination of results to others.

A Github repository containing a previous version of this workshop is available here: <https://github.com/cbuntain/TutorialSocialMediaCrisis>

## Agent-Based Models in Social Network Analysis Using NetLogo

**Session Length:** 2-session (6 hours)

**Attendance Limit:** 16 people

**Instructors:** Dr. Wouter Vermeer (Northwestern University) and Gabriella Anton (Northwestern University)

### **Description:**

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. NetLogo is designed to be a low threshold, high sealing programming environment that affords use among both young (or novice) coders and experts alike. 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. Among them is the Network-extension, which provides powerful Network Science capabilities in NetLogo.

NetLogo models, and agent-based models in general, are well suited for studying complex systems over time, and for executing 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 extensions, NetLogo is particularly well suited for incorporating the networks that underlie systems in the analysis of such patterns, and for exploring the local rules that allow certain network structures to emerge.

In the workshop, we provide an introduction on the use of NetLogo. We adopt a practical, hands on workshop approach, in which approximately half of the time will be spent with participants exploring and programming in NetLogo. For this workshop participants are encouraged to provide their own research questions (and/or data). We will help participants get started on their own NetLogo models, specifically focusing on the use of the Network extension. 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:

- 1) Introduction to ABM and Netlogo [1.5 hour]
- 2) Practical Assignments (part 1) [1.5 hour]  
(Participants are encouraged to bring their own research questions and data)

Session 2:

- 1) Centralized evaluation of practical assignments (part 1) [0.5 hour]
- 2) Network extension [1 hour]
- 3) Practical Assignment 2 [1.5 hour]  
(Participants are encouraged to bring their own research questions and data)

## Generating and Analyzing Scientific Networks with *Metaknowledge*

**Session Length:** 1-session (3 hours)

**Attendance Limit:** 50 people

**Instructors:** Dr. John McLevey (University of Waterloo) and Reid McIlroy-Young (University of Chicago)

**Description:** metaknowledge is a full-featured Python package for generating and analyzing a wide-range of scientific networks. It currently accepts raw data from the Web of Science, Scopus, PubMed, ProQuest Dissertations and Theses, and select funding agencies. It processes these raw data inputs and outputs a variety of datasets for quantitative analysis, network analysis (including multi-mode, multi-level, and longitudinal networks), and computational text analysis (e.g. topic modeling). It is optimized to scale efficiently for analyzing very large datasets, and is designed to integrate well with reproducible and open research workflows.

This workshop is a practical and hands-on introduction to using metaknowledge to generate and analyze scientific networks. We will cover:

1. using Python and Jupyter Notebooks for metaknowledge research (no prior knowledge or experience assumed)
2. creating quantitative and network datasets from raw data from Web of Science, PubMed, and the National Science Foundation

3. manipulating and analyzing scientific networks (e.g. co-authorship, citation, co-citation, keyword, coinvestigator, two-mode, multi-level)
4. preparing networks for analysis with any other research software (e.g. statnet, igraph, Pajek, UCINET, Visone, etc.)
5. time permitting: working with extremely large datasets

While some basic knowledge of Python is helpful, we will assume that workshop participants do not have any prior experience with Python.

Workshop materials will be provided at: [https://github.com/mclevey/metaknowledge\\_workshop](https://github.com/mclevey/metaknowledge_workshop).

## Understanding Diffusion with netdiffuseR

**Session Length:** 1-session (3 hours)

**Attendance Limit:** None

**Instructors:** Thomas W. Valente (PhD, University of Southern California) and George Vega Yon (University of Southern California)

**Description:** 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.