Package 'statnet'

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Title Software tools for the Statistical Analysis of Network Data

Depends R (>= 2.15), network (>= 1.9.0), ergm (>= 3.1.2), sna (>= 2.3.2), networkDynamic (>= 0.6.1), tergm (>= 3.1.4), ergm.count (>= 3.1.1), latentnet (>= 2.5.0)

Suggests networksis (>= 2.1.2), degreenet (>= 1.2), relevent (>= 1.0.3), ndtv (>= 0.5.1), EpiModel (>= 0.95)

Imports statnet.common (>= 3.1.1)

Description An integrated set of tools for the representation, visualization, analysis, and simulation of network data. For an introduction, type help(package='statnet')

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URL http://statnet.org

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R topics documented:

`statnet-package` *A Suite of Packages for the Statistical Modeling of Network Data*

Description

statnet is a suite of software packages for statistical network analysis. The packages implement recent advances in network modeling based on exponential-family random graph models (ERGM), as well as latent space models and more traditional network methods. The components of the package provide a comprehensive framework for ERGM-based network modeling: tools for model estimation, for model evaluation, for model-based network simulation, and for network visualization. This broad functionality is powered by a central Markov chain Monte Carlo (MCMC) algorithm. The coding is optimized for speed and robustness.

Details

statnet packages are written in a combination of R and `C` It is usually used interactively from within the R graphical user interface via a command line. it can also be used in non-interactive (or "batch") mode to allow longer or multiple tasks to be processed without user interaction. The suite of packages are available on the Comprehensive R Archive Network (CRAN) at `http://www.r-project.org/` and also on the **statnet** project website at `http://statnet.org/`

The **statnet** suite of packages has the following components:

- **ergm** is a collection of functions to fit, simulate from, plot and evaluate exponential random graph models. The main functions within the **ergm** package are `ergm`, a function to fit linear exponential random graph models in which the probability of a graph is dependent upon a vector of graph statistics specified by the user; `simulate`, a function to simulate random graphs using an ERGM; and `gof`, a function to evaluate the goodness of fit of an ERGM to the data. **ergm** contains many other functions as well.
- **tergm** is a collection of extentions to **ergm** enabling it to fit models for dynamic networks.
- **ergm.count** is an extension to **ergm** enabling it to fit models for networks whose relations are counts.
- **ergm.userterms** provides a template for implementing new ERGM terms.
- **sna** is a set of tools for traditional social network analysis.
- **degreenet** is a package for the statistical modeling of degree distributions of networks. It includes power-law models such as the Yule and Waring, as well as a range of alternative models that have been proposed in the literature.
- **latentnet** is a package to fit and evaluate latent position and cluster models for statistical networks The probability of a tie is expressed as a function of distances between these nodes in a latent space as well as functions of observed dyadic level covariates.
- **networksis** is a package to simulate bipartite graphs with fixed marginals through sequential importance sampling.
- **relevent** is a package providing tools to fit relational event models.

- **network** is a package to create, store, modify and plot the data in network objects. The `network` object class, defined in the **network** package, can represent a range of relational data types and it supports arbitrary vertex / edge /graph attributes. Data stored as `network` objects can then be analyzed using all of the component packages in the **statnet** suite.
- **networkDynamic** extends **network** with functionality to store information about about evolution of a network over time, defining a `networkDynamic` object class.

In addition, the following packages are available from the author:

- **rSonia**: provides a set of methods to facilitate exporting data and parameter settings and launching SoNIA (Social Network Image Animator). SoNIA facilitates interactive browsing of dynamic network data and exporting animations as a QuickTime movies.

statnet is a metapackage, depending on all of the above packages, so that they can be installed together.

Each of these components is described in detail in the references below. Loading the **statnet** package into R automatically loads them all. Each package has associated help files and internal documentation that is supported by the information on the Statnet Project website (`http://statnet.org/`). A tutorial, support mailing list, references and links to further resources are provided there.

When publishing results obtained using this package the original authors are to be cited as described in `citation("statnet")`. In addition, please cite the specific package that you use.

We have invested a lot of time and effort in creating the `statnet` suite of packages for use by other researchers. lease cite it in all papers where it is used.

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update_statnet *Update the Component Packages of the Statnet Suite*

Description

A wrapper around update.packages to update the component packages of Statnet Suite to their latest versions.

Usage

```
update_statnet(..., ask = FALSE, checkBuilt = TRUE, addURLs = character())
```

Arguments

ask, checkBuilt	Arguments to update.packages documentation. The defaults are different from those of that function.
addURLs	Optional repository URLs in addition to CRAN, such as http://www.statnet.csde.washington.edu/preview. Defaults to none.
...	Additional arguments to be passed to update.packages.

Details

Updates the list component packages of Statnet Suite, using setRepositories and update.packages.

Value

update_statnet returns NULL invisibly.

See Also

setRepositories, update.packages, install.packages

Examples

```
## Not run:
# Update from CRAN
update_statnet()

# Update from statnet.org's preview release, taking packages from CRAN
# as needed
update_statnet(addURLs="http://statnet.csde.washington.edu/preview")

## End(Not run)
```

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