

## tnet

tnet is a package written in R to serve three purposes:

- Calculate social network measures on weighted networks

Not everyone is the same. Some people are close to us, whereas others are just acquaintances. Few network measures, and fewer network analysis programmes, can deal with datasets where the ties are differentiated by weights. By removing the weights of relations, we are removing a lot of the richness within the dataset. This means that we are limiting the weight analysis to sensitivity analyses, which are difficult to interpret. A close friendship is not the same as an acquaintance. For an overview of the weighted networks-part of tnet, see this blog entry.

- Calculate social network measures on two-mode networks (also known as affiliation or bipartite networks)

Most forms of interaction occur through mediums, such as meetings, projects, forums, etc. By simply joining two people if they have interacted with the same medium, we greatly reduce the information available to analyse. For example, the clustering coefficient on a one-mode projection of a two-mode network is meaningless as triangles are formed automatically when three or more people interact with the same medium. To remove some of the biases that might invalidate the analysis, a new set of measures directed at analysing two-mode networks directly and a software with these measures are needed.

- Detect underlying principles that guide tie formation in networks with time-stamped ties (from version 3.0)

Network analysis is often based on static networks. In these networks there are issues of dependence as everything depends on everything. Therefore it is difficult to say why certain ties are created and others are not. In networks where the exact sequence of ties is known, the endogeneity issue can be dealt with. This type of data is generally from online communities, email networks, and telephone networks (if your dataset is not like this, but collected in waves, try Siena).

This package is under constant in development. The latest version is available through CRAN. Please send feedback about the package if you have any issues or suggestions.

Note: At the Sunbelt conference 2010, I will hold a workshop on using tnet.

tnet requires data to be one of three edgelist formats: a weighted edgelist, a two-mode edgelist, or a longitudinal edgelist list. For more information and a guide to transforming your data into this format, see Data used by tnet. A set of possible extensions for weighted networks can be found on my blog.

If you would like to contribute to tnet, please contact me.

tnet is available under a Creative Commons Attribution-Noncommercial (CC-by-nc 3.0 unported) license. The current citation for tnet is: Opsahl, T., 2009. Structure and Evolution of Weighted Networks. University of London (Queen Mary College), London, UK, pp. 104-122.