OKAAPI QUICK GUIDE

for the beta version (okaapibeta)

This is a very brief guide to the beta version of the okaapi R package. The purpose of this guide is to provide a bit of information that can be useful when getting started with okaapi (specifically okaapibeta). See further below for where to find more information.

Note: in the package and below, the term 'traits' means node attributes (for example characteristics of individuals such as their age, gender, etc.).

WHAT TO USE OKAAPI FOR

The main purpose of the okaapi package is to provide tools to generate networks based on social preferences for traits (or equivalent node attribute effects), visualize the networks, and measure their structure. It can additionally be used to measure network metrics on other networks, and to generate node attribute values.

The networks are generated with the *trait preference model* (introduced in Brask et al. 2023). This method allows for generating networks that are based on different traits and preferences, and where multiple trait preferences can act simultaneously and can have different importance.

Depending on the user's interest, the package can alternatively be viewed as a tool for generating networks with various structural properties, or for generating networks based on node attribute effects other than social preferences.

WHICH FUNCTIONS TO USE

The okaapi package contains two main functions: the *traitnet* function and the *traitnetsmetrics* function. The other functions are mostly helper functions, the main purpose of which is to be used (called) by the main functions. I have, however, made them available so that they can be called directly, as this could occasionally be useful.

Here is an overview of the purpose of each function. More specific information can be found in the documentation (the help file) of each function in R.

Function name	Function purpose
Main functions:	
traitnet	Generate and plot a trait preference network
traitnetsmetrics	Measure network metrics on a set of trait preference networks
Helper functions:	
traitvalues	Generate trait (node attribute) values
traitnetsociat	Calculate social attraction values based on trait values and preferences
traitnetbuild	Build a network matrix based on social attraction values
contincols	Create node colours based on values
traitnetvisual	Plot a trait preference network (only plotting, not generation)
netmetrics	Measure network metrics on a single network

HOW TO USE THE FUNCTIONS

The help files for each function contain detailed descriptions of the input arguments. The input arguments should be easy to make correctly, and the functions also contain checks that can catch many types of potential errors in the arguments. There is, however, one thing that is good to be aware of (as it cannot be checked for). If you generate networks based on more than one trait (node attribute), then you need to follow this rule:

- *input vectors that have one value for each trait must all have the value for the same trait in the same place.*

For example, if we want to generate a network based on two traits, then all the information concerning one trait needs to be in the first place of each input vector, and all the information concerning the other trait needs to be in the second place. This is because the function assumes that all the values in place 1 fit together, and all the values in place 2 fit together.

Also note that if you use the helper functions, then it is extra important to read the documentation about input arguments carefully to make sure the functions are used correctly, as these functions are mostly made to be used by the main functions and are less friendly to humans.

WHERE TO GET MORE INFORMATION

- For information about specific functions in okaapi, see the help files in R for each function.
- For information about the generative network model that the okaapi package is based on, see Brask et al. 2023.
- For explanation about social preferences for traits, see Brask et al. 2023.
- A more extensive guide to okaapi will become available in the future.

LITERATURE

Brask JB, Koher A, Croft DP & Lehmann S (2023). *arXiv e-prints*, arXiv: 2303.08107
https://arxiv.org/abs/2303.08107