
conan Documentation

Release

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conan is a toolbox for functional CONnectivity ANalysis in Matlab.

Prerequisites

- 64-bit Linux
- 64-bit Matlab
- The GCC C compiler
- A working MEX setup that uses GCC to compile the MEX files

Download

Clone the repository.

```
$ git clone --recursive https://github.com/kloewe/conan.git
```

Build

Change to the root directory of the cloned repository and build the MEX files.

```
$ cd conan  
$ make
```

Set up

Add the relevant directories to Matlab's search path and save it.

```
$ make install
```

Alternatively, you can manually add the relevant directories to Matlab's search path and optionally save it.

```
>> addpath('<conan-dir>/mod/corr-m')  
>> addpath('<conan-dir>/mod/cpuinfo-m')  
>> addpath('<conan-dir>/mod/fconn-m')  
>> addpath('<conan-dir>/mod/util-m')  
>> savepath
```


Usage

A description of each function can be displayed in Matlab using

```
>> help <function-name>
```

Functions

Pairwise correlations (corr-m)

Function	Synopsis
<code>pcc</code>	Compute pairwise Pearson correlation coefficients.
<code>sub2utm</code>	Linear index (wrt upper triangle) from matrix subscripts.
<code>tetracc</code>	Compute pairwise tetrachoric correlation coefficients.
<code>toSymMat</code>	Convert vector of upper triangular elems into a symmetric matrix.

Processor information queries (cpuinfo-m)

Function	Synopsis
<code>corecnt</code>	Determine the number of processor cores.
<code>cpuinfo</code>	Determine availability of instruction set extensions on the CPU.
<code>proccnt</code>	Determine the number of logical processors.

Functional connectivity (fconn-m)

Function	Synopsis
fcmNodeMetrics	Nodal metrics of functional connectomes.
mfcMStats	Element-wise statistics across multiple functional connectomes.
volClust	Volume clustering and cluster properties.
volClustPermTest	FWE-corrected cluster-level p values based on permutations.

Utilities (util-m)

Function	Synopsis
<i>circos</i>	
genCircosConf	Generate a Circos configuration.
rgb2colordef	Create color definitions file for use with Circos.
<i>data</i>	
clipData	Clip/winsorize data according to the specified clipping limits.
cutData	Cut data according to the specified limits.
flat	Flatten an array of data.
rescaleData	Rescale (linearly transform) data to the specified range.
<i>file</i>	
fileCountLines	Count the number of lines in a file.
fileExists	Check if a given file exists.
fileGetDir	Get directory from full path.
fileGetExt	Get extension from full path.
fileGetName	Get filename from full path.
fileGlob	Filename expansion.
<i>mri</i>	
readImgData	Read neuroimaging data.
readImgHdr	Read header information for neuroimaging data.
writeImgData	Write neuroimaging data to a NIFTI file.
<i>perf</i>	
getPageSize	Get page size using getconf.
monMem	Monitor memory usage using the proc filesystem.
monPerf	Monitor performance based on event counters using perf stat.
<i>plot</i>	
blend	Composite image A over image B.
pngcolorbar	Save a colorbar in png format.
<i>pool</i>	
poolmgr	Unified parallel pool management across Matlab versions.
<i>ui</i>	
drawOutline	Draw 2D outline.
getAxesBelowPointer	Get axes below the mouse pointer.

If you use *conan*, please cite:

Loewe K, Donohue SE, Schoenfeld MA, Kruse R, Borgelt C (2016).
Memory-efficient analysis of dense functional connectomes.
Frontiers in Neuroinformatics 10:50.
doi

Loewe K, Grueschow M, Stoppel C, Kruse R, and Borgelt C (2014).
Fast construction of voxel-level functional connectivity graphs.
BMC Neuroscience 15:78.
doi