

CNATOOLS - COMPLEX NETWORK ANALYSIS TOOLS
COMMAND REFERENCE

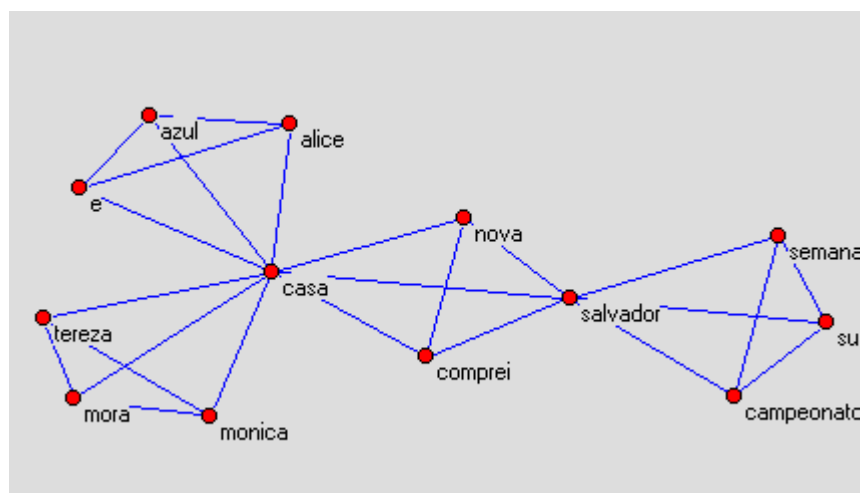
05/01/2012

SNETDENS

Create a network from a sentence database.

Usage: `snetdens option1 value1 [option1 value1]`

```
-h      --help          show the options summary
-i      input file
-o      output file
-l      log file
--mode  sentence insertion mode(default=clique)*
--pg    population growing mode
--rg    relationship growing mode
--noadj  ignore adjectives
--noadv  ignore adverbs
--nonoun ignore nouns
--nonotfound ignore unknown words
--nosigl ignore symbols
--noverbs ignore verbs
```



Semantic network created from test01.txt file.

* Sentence insertion mode can be:

- clique** – each sentence will be inserted creating cliques;
- cicle** – each sentence will be inserted creating cycles;
- chain** – each sentence will be inserted creating chains.

CNACALC

Calculate properties given a Pajek file.

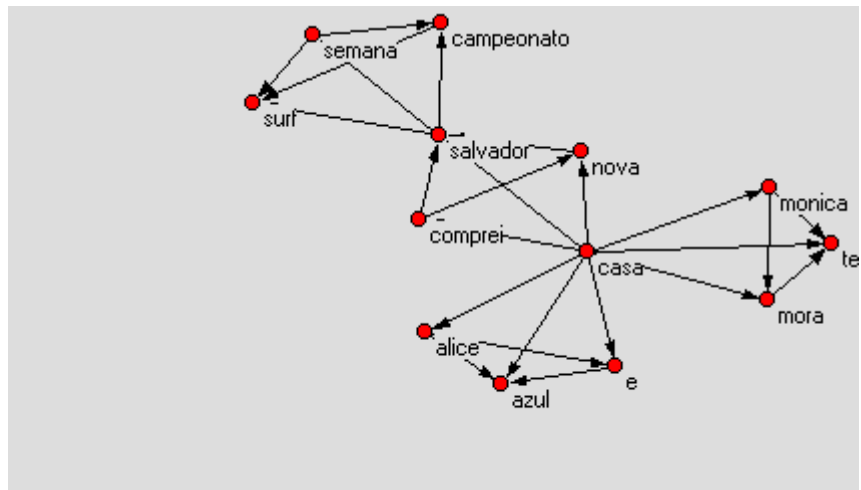
Usage: cnacalc option1 value1 [option1 value1]

-h	--help	show the options summary
-i		input file
-o		output file
-t		output file type(default=edges)
-l		log file
	--all	calculate all network parameters
	--title	print a title for each parameter on the log file
	--colnames	print the column names for each table on the log file
	--stat	calculate statistics
	--density	calculate the network density
	--degrees	calculate vertices degrees
	--degdist	calculate the degree distribution
	--avgdeg	calculate the average vertex degree
	--clustering	calculate the clustering coefficient matrix
	--avgclustering	calculate the average clustering coefficient
	--diameter	calculate the network diameter
	--geodesics	calculate the geodesics matrix
	--centrality	calculate the centrality matrix
	--nodeefficiency	calculate the node efficiency matrix
	--avgglobaleff	calculate the average global efficiency
	--localefficiency	calculate the local efficiency matrix
	--avglocaleff	calculate the average local efficiency
	--adj	print the adjacency matrix on the log file
	--directed	it is a directed graph

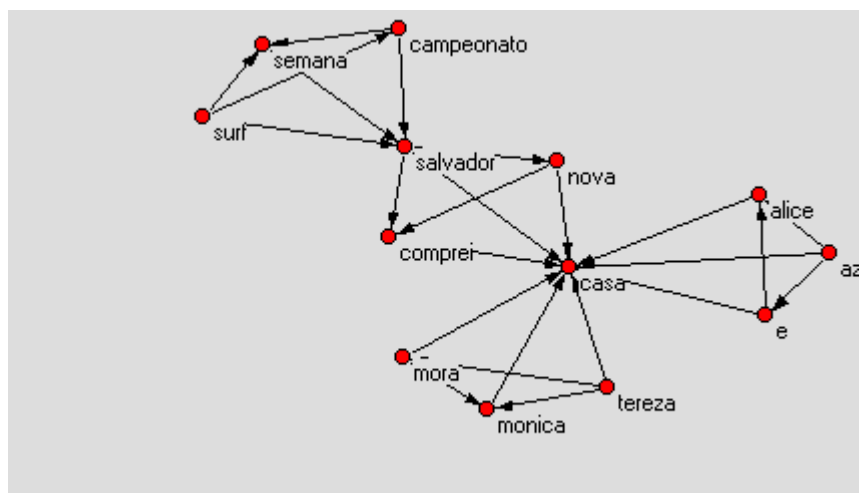
CNTRANS

Do transformations to a network, described using the Pajek file format.

```
Usage: cntrans option1 value1 [option1 value1]
-h      --help          show the options summary
-i      input file
-o      output file
-t      output file type(default=edges)
        --rml           remove multiple lines
        --arcs2edges    converts arcs to edges
        --transpose      calculate the matrix transpose
```



Network after remove multiple lines.



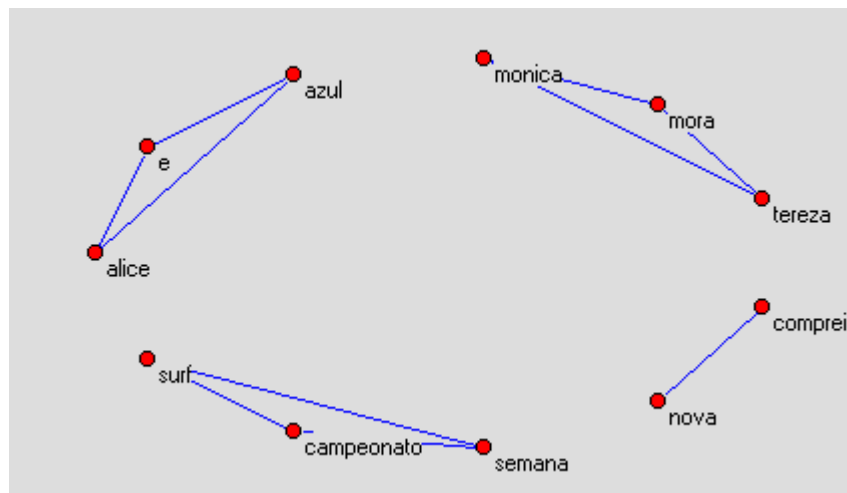
Previous network after transposition.

CNDISCO

Create unconnected networks.

Usage: cndisco option1 value1 [option1 value1]

```
-h      --help      show the options sumary
-i      input file
-o      output file
-l      log file
--hubs  hubs deletion
--random random node/link deletion
--tax   tax for random node/link deletion
--pd    population decrease mode
--rd    relationship decrease mode
```



First network after hubs deletion.

COUNTSENTENCES

Count sentences in a sentence database.

Usage: countsentences option1 value1 [option1 value1]
-h --help show the options summary
-i input file

RMSENTENCES

Usage: rmsentences option1 value1 [option1 value1]

-h	--help	show the options sumary
-i		input file
-o		output file
-l		log file
-n		remove the specified number of sentences
	--rmtax	remove tax(default=10)
	--letn	let only the specified number of sentences in the file

NETEXTRACT

Extract a network mode from a bimodal network.

Usage: netextract option1 value1 [option1 value1]
-h --help show the options sumary
-i input file
-o output file
-t output file type(default=edges)
--mode mode to extract(default=1)

ER2NETCSV

Create a NetCSV file, given to csv tables and the relationship between them.

```
Usage: er2netcsv option1 value1 [option1 value1]
-h      --help      show the options sumary
--i1     first input file
--i2     second input file
-o       output file
--file1c1 table 1 relationship column number(default=0)
--file1c2 table 1 data column number(default=1)
--file2c1 table 2 relationship column number(default=0)
--file2c2 table 2 data column number(default=1)
--file1sep first file field separator(default=",")
--file2sep second file field separator(default=",")
--file3sep output file field separator(default=",")
```

CSV2NETCSV

Create a NetCSV given a csv file(self-relationship).

```
Usage: csv2netcsv option1 value1 [option1 value1]
-h      --help      show the options sumary
-i      input file
-o      output file
--c1    first column number(default=0)
--c2    second column number(default=1)
--s1    record field separator(default=",")
--s2    internal column field separator(default=";")
--s3    new record field separator(default=",")
```

CSV2NET

Create a network Pajek given a NetCSV network file.

```
Usage: csv2net option1 value1 [option1 value1]
-h      --help      show the options sumary
-i      input file
-o      output file
--modes      selects one or two modes network(default=1)
--separator  column separator(default=",")
--ignore     ignore fields with the specified patern(default=NULL)
--addsufix   add a mode sufix to each vertex
```

CSVSTAT

Calculate statistics from a NetCSV network file.

```
Usage: csvstat option1 value1 [option1 value1]
-h      --help      show the options summary
-i      input file
-o      output file
--column column number(default=0)
--separator field separator(default=",")
--firstline first line to include in calculations
--printfirst print first line
```

PDB2NETCSV

Create a NetCSV network file from a PDB(Protein Data Base).

Usage: `pdb2netcsv option1 value1 [option1 value1]`

```
-h      --help      show the options sumary
-i      input file
-o      output file
-s      column separator(default=",")
-d      minimum distance between two atoms to conect them
      --ca      only measure distance from CA atoms
```

EVOLNET

Simulate evolution of a network, based in affinity properties.

Usage: evolnet option1 value1 [option1 value1]

```
-h      --help          show the options sumary
-i      input file
-o      output file
-l      log file
      --mtax            mutation tax(default = 1)
      --ngen            number of generations(default = 10)
      --atax            affinity tax(default = 30)
      --method          method for natural selection(default = centrality)
      --snapshots       take snapshots
      --prefix          snapshot prefix(default = "snapshot")
      --interval        snapshots interval(default = 1)
```

EXAMPLES

LINUX

```
./snetdens.gua -i test01.txt -o test01.net -l test01-density.log
./cntrans.gua -i test01.net -o test01-arcs.net -t arcs
./cntrans.gua -i test01-arcs.net -o test01-arcs2edges.net --arcs2edges
./cntrans.gua -i test01.net -o test01-arcs.mat -t matrix
./cntrans.gua -i test01.net -o test01-rml.net --rml
./cntrans.gua -i test01.net -o test01-rml.mat --rml -t matrix
./cntrans.gua -i test01-rml.mat --transpose -o test01-transpose.mat -t matrix
./cntrans.gua -i test01-rml.mat --transpose -o test01-transpose.net
./cndisco.gua -i test01.net -o test01-hubs.net -l test01-hubs.log --hubs
./cndisco.gua -i test01.net -o test01-random.net -l test01-random.log --random --tax 30
```

WINDOWS

```
guash.exe snetdens.gua -i test01.txt -o test01-win32.net -l test01-density-win32.log
guash.exe cntrans.gua -i test01-win32.net -o test01-arcs-win32.net -t arcs
guash.exe cntrans.gua -i test01-arcs-win32.net -o test01-arcs2edges-win32.net
--arcs2edges
guash.exe cntrans.gua -i test01-win32.net -o test01-arcs-win32.mat -t matrix
guash.exe cntrans.gua -i test01-win32.net -o test01-rml-win32.net --rml
guash.exe cntrans.gua -i test01-win32.net -o test01-rml-win32.mat --rml -t matrix
guash.exe cntrans.gua -i test01-rml-win32.mat --transpose -o test01-transpose-win32.mat
-t matrix
guash.exe cntrans.gua -i test01-rml-win32.mat --transpose -o test01-transpose-win32.net
guash.exe cndisco.gua -i test01-win32.net -o test01-hubs-win32.net -l test01-hubs-
win32.log --hubs
guash.exe cndisco.gua -i test01-win32.net -o test01-random-win32.net -l test01-random-
win32.log --random --tax 30
```