

How to run TwoModel?

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Program `TwoModel` supports the optimization approach to generalized blockmodeling of (small) two-mode networks as described in [3] and [4].

The program was written for personal use and is very **user unfriendly**. We plan to include it into **Pajek** [1, 2].

You can get the program at

<http://vlado.fmf.uni-lj.si/pub/networks/stran/default.htm>

Unzip the content of the `TwoModel.zip` into a special directory – for example `test`. Then select in Windows from Start / All Programs / Accessories the option Command Prompt – DOS environment. Go to the `test` directory. In it run the command:

```
twomodel net=dgg.net mdl=structural.mdl
```

Then press the ENTER. Answer `n` to the question and by pressing ENTER confirm the proposed files (see Figure 1).

Change the title to reflect the content of your analysis (start of Figure 2). Then select the parameters of analysis and run it (Figure 2 and 3).

Program `TwoModel` remembers (on file `Cluse.ENV`) the current settings. So you have to change only the parameters that change in the new run (see Figure 4).

In program `TwoModel` you can change the following parameters:

- `net` – network data in **Pajek** format (only Pajek Arcs/Edges (*.net) supported);
- `mdl` – model description file – see Model 2 manual;
- `lst` – program `TwoModel` report file;
- `paj` – **Pajek** project file with the best obtained partitions.

```
Command Prompt - twomodel net=dgg.net mdl=structural.mdl
D:\vlado\work\Delphi\Model\2mode\test>twomodel net=dgg.net mdl=structural.mdl
S T R A N / PC - research
network structure analysis programs
2 M O D E L - 2-mode blockmodeling by local optimization
version: 30 Oct 05
Copyright (c)1990/2003/2005 Vladimir Batagelj, All rights reserved

STRAN / 2 Mode Blockmodeling
Load ENU file Cluse.ENU
Saving ENU on Cluse.ENU
Cluse PC / - research
USER = Test version, Aug 17, 2003, only for nonprofit personal use
TIT = *** STRAN PC, August 2003 (c)1990, 2003 Vladimir Batagelj
RAW = *.RAW
NET = dgg.net
NAM = *.NAM
UAR = *.UAR
LST = Model.LST
PAJ = Model.PAJ
MDL = structural.mdl
EXT = *.EXT
DIS = *.DIS

units = 0 vars = 0
debug = 0 source = 0
dism = 0 assc = 0
norm = 0

Change parameters? (y/n) n

SELECT FILE: LST - list file
Press RETURN to confirm current value
Current file = Model.LST
New file =
Rewrite Model.LST

SELECT FILE: NET - network data file
Press RETURN to confirm current value
Current file = dgg.net
New file =
Reset dgg.net

SELECT FILE: MDL - model data file
Press RETURN to confirm current value
Current file = structural.mdl
New file =
Reset structural.mdl

2-mode blockmodeling by local optimization
ch = *
form = 3
*** reading network 32 = 18 + 14 form = 3
*** STRAN / 2 MODEL - 2 mode blockmodeling by local optimization
Title = 2-mode blockmodeling by local optimization
New title or <ENTER> :
```

Figure 1: Parameters

```

Command Prompt - twomodel net=dgg.net mdl=structural.mdl
*** reading network 32 = 18 + 14 form = 3
*** STRAN / 2 MODEL - 2 mode blockmodeling by local optimization
Title = 2-mode blockmodeling by local optimization

New title or <ENTER> :
Test - July 17, 2006
*** STRAN / MODEL 2 - blockmodeling by local optimization
W E I G H T S
Int [ 1, 2] error type: 1 - constant, 2 - size = 1
Int [ 1, 32] minimal dom/fun/reg size = 2
Int [ 0, 1] values: 0 - without, 1 - average = 1
0 1.000 null
1 1.000 complete
2 1.000 row-dominant
3 1.000 col-dominant
4 1.000 regular
5 1.000 row-regular
6 1.000 col-regular
7 1.000 row-function
8 1.000 col-function
9 1.000 density = 0.75000 0.50000
10 1.000 do not care
11 1.000 non-null
12 1.000 symmetric

Priorities: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13
Int [ -1, 13] -1 - stop, 13 - priority, i - change i-th weight = -1

*** S T R A N - 2 mode MODEL
blockmodeling by local optimization
Int [ 0, 2] 0 - stop, 1 - read file, 2 - random = 2
Int [ 1, 15] Number of Row clusters = 4
Int [ 1, 14] Number of Col clusters = 3
Int [ 0,2147483646] Number of random repetitions = 50
Int [ 0, 3] Save: 0 - no, 1 - ask, 2 - opt, 3 - all = 2
*** S T R A N - 2 MODEL
2 mode blockmodeling by local optimization
NETWORK FILE : dgg.net
NUMBER OF UNITS = 32
NUMBER OF CLUSTERS = 4 3
0
Int [ 1, 5] 1 - short list, 2 - list all = 1
1>
1 P = 53.000
1>
SELECT FILE: PAJ - partition file
Press RETURN to confirm current value
Current file = Model.PAJ
New file =
Rewrite Model.PAJ
*****
6 P = 51.000
6>..
9 P = 47.000
9>..

```

Figure 2: Analysis

```

C:\ Command Prompt
*** S T R A N - 2 mode MODEL
blockmodeling by local optimization
Int [ 0, 2] 0 - stop, 1 - read file, 2 - random = 2
Int [ 1, 15] Number of Row clusters = 4
Int [ 1, 14] Number of Col clusters = 3
Int [ 0,2147483646] Number of random repetitions = 50
Int [ 0, 3] Save: 0 - no, 1 - ask, 2 - opt, 3 - all = 2
*** S T R A N - 2 MODEl
2 mode blockmodeling by local optimization
NETWORK FILE : dgg.net
NUMBER OF UNITS = 32
NUMBER OF CLUSTERS = 4 3
0
Int [ 1, 5] 1 - short list, 2 - list all = 1
1>
1 P = 53.000
1>
SELECT FILE: PAJ - partition file
Press RETURN to confirm current value
Current file = Model.PAJ
New file =
Rewrite Model.PAJ
.....
6 P = 51.000
6>...
9 P = 47.000
9>..
11 P = 40.000
11>.....
26 P = 40.000
26>.....
33 P = 40.000
33>.....
42 P = 40.000
42>.....
48 P = 38.000
48>..
*** S T R A N - 2 mode MODEL
blockmodeling by local optimization
Int [ 0, 2] 0 - stop, 1 - read file, 2 - random = 0
Saving ENU on Cluse.ENU
2 M O D E L - end

```

Figure 3: Analysis – continued

```
Command Prompt - twomodel lst=dgg43.lst
version: 30 Oct 05
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STRAN / 2 Mode Blockmodeling
Load ENU file Cluse.ENU
Cluse PC / - research
USER = Test version, Aug 17, 2003, only for nonprofit personal use
TIT = test - July 17, 2006
RAW = *.RAW
NET = dgg.net
NAM = *.NAM
UAR = *.UAR
LST = Model.LST
PAJ = dgg43.paj
MDL = structural.mdl
EXT = *.EXT
DIS = *.DIS

units = 0 vars = 0
debug = 0 source = 0
dism = 0 assc = 0
norm = 0

Change parameters? <y/n> y
To change the parameters rerun the program

Saving ENU on Cluse.ENU

D:\vlado\work\Delphi\Model\2mode\test>twomodel lst=dgg43.lst
S T R A N / PC - research
network structure analysis programs
2 M O D E L - 2-mode blockmodeling by local optimization
version: 30 Oct 05
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STRAN / 2 Mode Blockmodeling
Load ENU file Cluse.ENU
Cluse PC / - research
USER = Test version, Aug 17, 2003, only for nonprofit personal use
TIT = test - July 17, 2006
RAW = *.RAW
NET = dgg.net
NAM = *.NAM
UAR = *.UAR
LST = dgg43.lst
PAJ = dgg43.paj
MDL = structural.mdl
EXT = *.EXT
DIS = *.DIS

units = 0 vars = 0
debug = 0 source = 0
dism = 0 assc = 0
norm = 0

Change parameters? <y/n> _
```

Figure 4: TwoModel remembers parameter settings

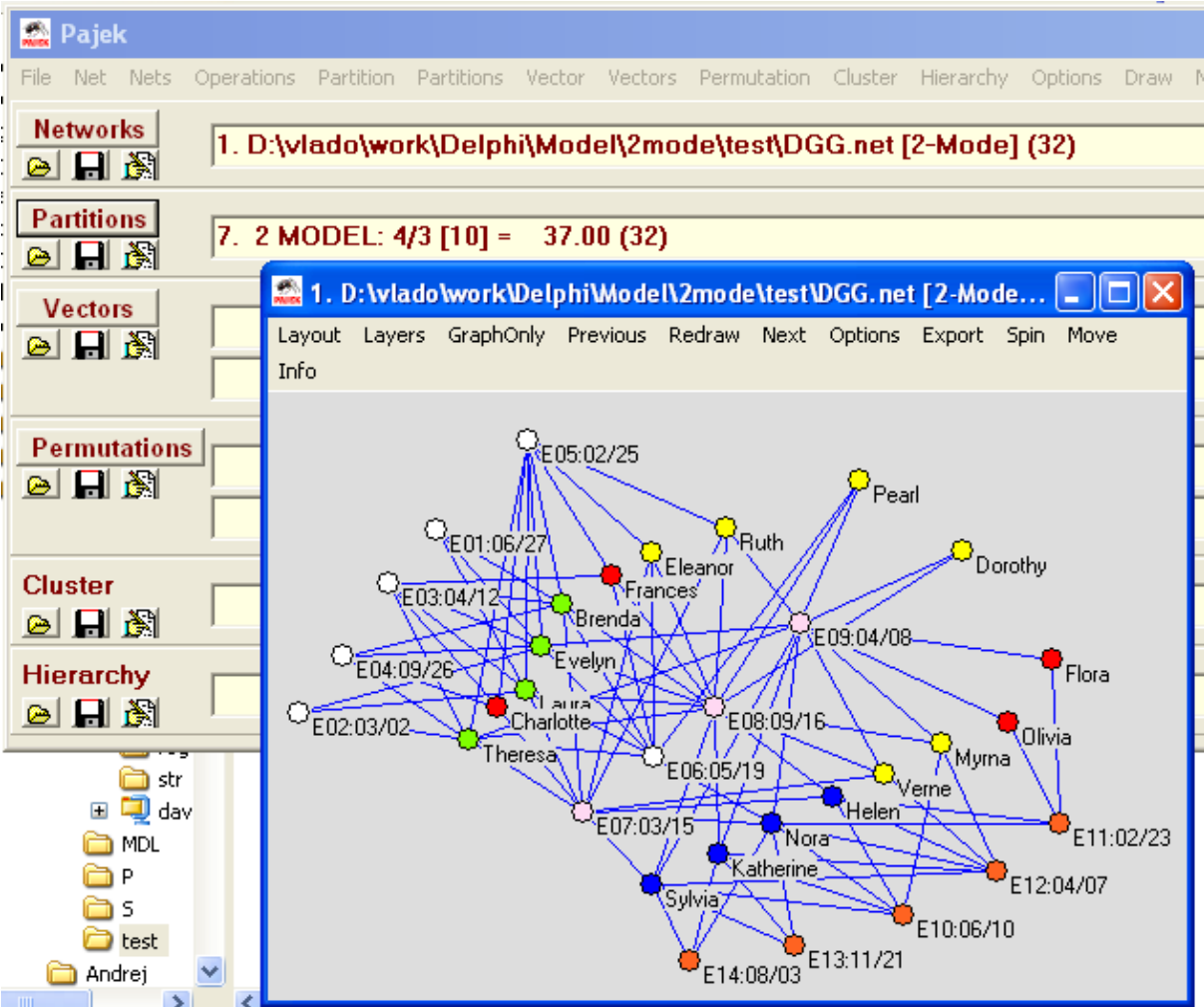


Figure 5: Display of solutions in **Pajek**

The best obtained partitions are stored on *.paj file. You can use **Pajek** to visualize them. Run **Pajek**, read the network file, and using

File/Pajek Project File/Read
input also all the obtained partitions. Then select a partition and using

Draw/Draw-Partition
display it (see Figure 5).

References

- [1] Batagelj, V. and Mrvar, A.(1996-): *Pajek– program for analysis and visualization of large network*, [home page](#), [data sets](#).
- [2] de Nooy, W., Mrvar, A. and Batagelj V. (2005): *Exploratory Social Network Analysis with Pajek*, [CUP](#). [Amazon](#). [ESNA page](#).
- [3] Doreian, P., Batagelj, V. and Ferligoj, A. (2004): *Generalized Blockmodeling*, [CUP](#).

- [4] Doreian, P., Batagelj, V. and Ferligoj, A. (2004): *Generalized blockmodeling of two-mode network data*. Social Networks 26, 29-53. [preprint](#).