

## Home Assignment 1.3

Version 1.0

### 1. Network A (2 mode network):

- a. Develop a MatLab function that “folds” a two-mode network (both top and bottom projections, depending on a parameter) into a one-mode network. Apply this function to your Network A and store the resulting weighted one-mode networks in `networkA_t.csv` and `networkA_b.csv`.
- b. Develop a MatLab function that calculates and draws the KNC-Plot of a given weighted one-mode network. Apply this function to your `networkA_t` and `networkA_b`, and store the resulting plots in (`networkA_t_KNC.png` and `networkA_b_KNC.png`).

*Bonus Task (voluntary, no points!)*

- *Visualize networkA\_t and networkA\_b with Pajek. Apply different thresholds  $k$  and illustrate their effect on the connectivity of the network. Include network visualizations (png files) with different thresholds  $k$ .*
- *Identify the most prominent actor in your network B based on degree centrality.*

Detailed interface descriptions are provided in a separate file (see below).

### Provided files:

[http://www.kmi.tugraz.at/staff/markus/courses/SS2009/707.000\\_web-science/provided-files2.rar](http://www.kmi.tugraz.at/staff/markus/courses/SS2009/707.000_web-science/provided-files2.rar)

- `script2.m`: contains interface descriptions for the required MatLab functions

### Submission:

Home assignment 1.3 is due in week 5 (23.3.2009). However, you don't need to submit your results *yet*. You will submit the results of this assignment together with home assignment 1.4 in week 6.

**Deadline: Mo, 30<sup>th</sup> of March 2009, 12.15 pm**

Your submission “`swt_ass1_3_<YOURMATR.NR>.zip`“ should be structured as follows:

`swt_ass1_3_<YOURMATR.NR>/report.pdf` # contains your results and interpretations  
`swt_ass1_3_<YOURMATR.NR>/matlab`

`fold.m`  
`knc.m`  
`networkA_t.csv`  
`networkA_b.csv`  
`networkA_t_KNC.png`  
`networkA_b_KNC.png`

optional

`swt_ass1_3_<YOURMATR.NR>/bonus_task` # contains png files

### Policies:

- No external Matlab packages are allowed.
- Your MatLab code will be tested with independent datasets and checked for plagiarism.

### Resources:

- MatLab
  - [http://www.math.umn.edu/~lerman/math5467/matlab\\_adv.pdf](http://www.math.umn.edu/~lerman/math5467/matlab_adv.pdf)