University of Konstanz
Algorithmics Group
V. Amati / J. Lerner / M. Nasim / B. Nick

Network Modeling
Winter Term 2012/2013

Assignments $\mathcal{N}^{\underline{o}}$ 4 - part ii

released: 19.12.2012 **due:** 08.01.2013, 10am

Task 1: Model Interpretation 2+3+1+4 points

Download the datatutorial.zip from the webpage.

These data are about a friendship network in a Dutch school class. The data were collected between September 2003 and June 2004 by Andrea Knecht. The 26 students were followed over their first year at secondary school during which friendship networks as well as other data were assessed at four time points (net1 to net4 in the data folder) at intervals of three months. There were 17 girls and 9 boys in the class (gender: 1 = girl, 2 = boy), aged 11-13 at the beginning of the school year. Only 3 of them were non-Dutch (ethnicity: 1 = Dutch, 2 = other). Network data were assessed by asking students to indicate up to twelve classmates which they considered good friends.

1. Load the data in R. Decide if the data contain enough information for applying the SAOM.

2. Consider the following statements:

a) the friend of my friend is also my friend

b) there is a tendency towards an undirected reciprocation of ties

c) there is a tendency towards intra-gender friendship relations

d) ethnicity plays no role in network evolution

Decide which effects must be included in the model according to the statements mentioned above (*Hint: some effects must always be included*).

3. Estimate the model specified in 2 using R and report the table with the results.

4. Interpret your results and compute the contribution of gender to the objective function.

If you encounter any problem with the R code, then please send us an email at viviana.amati, mehwish.nasim