SNIJDERS Conference Abstract

Conference presentation:

Maximum likelihood estimators for statistical inference on network dynamics

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Longitudinal studies of complete social networks often have collected panel data: at two or more time points, it is recorded which ties exist in the group under consideration. A fruitful model for longitudinal network data is the actor-oriented model for network dynamics. For this model, several estimation procedures have been proposed which all are based on Markov chain Monte Carlo methods and computer simulation of the network evolution. A method of moments estimator was proposed (Snijders, *Sociological Methodology*, 2001) and has been used in various applications. Recently, Bayesian and maximum likelihood estimators have been developed (Koskinen and Snijders; Snijders, Koskinen, and Schweinberger; papers under review). This presentation reviews and compares the moment estimator and the maximum likelihood estimator. Aspects considered are the following: (1) the differences in the kind of simulations used for either procedure, and the use of the likelihood-based simulation for visualization of the network dynamics; (2) computation time; (3) the extent to which these estimators give different results in a number of examples, and the use of this information in a Hausman-type goodness of fit test; (4) practical recommendations.