

Introduction to exponential random graph models with MPNet

Wednesday, 9 January 2019 (10:00–18:00)

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Recent developments in computational and estimation methods have sustained significant progress in the development of statistical models for social networks.

Exponential random graph models (ERGMs) are among the most important demonstrations of such progress. These models are uniquely valuable in their ability to connect local structural configurations induced by specific social mechanisms that are not directly observable (e.g., reciprocity, transitivity) to global features of observed network data (e.g., clustering, community structures).

The workshop introduces participants to the general theoretical background of ERGMs; then it discusses more technical aspects such as model specification, estimation, goodness of fit, and parameter interpretation.

Examples of empirical applications and hands-on exercises using the MPnet software are also presented. The software packages MPnet is freely available to participants.

Requirements

While no prior experience with ERGMs is assumed, participants are expected to be familiar with social network concepts and terminology, and to have some knowledge of basic concepts in statistical inference.

The main reference book for the workshop is: Lusher D., Koskinen, J., and Robins, G. (Eds.) 2013. Exponential Random Graph Models for Social Networks: Theories, Models and Applications. Cambridge University Press, New York.

For an introduction to ERGMs participants may want to read: Robins, G., Pattison, P., Kalish, Y., and Lusher, D. 2007. An introduction to exponential random graph (p^*) models for social networks. *Social Networks* 29: 173–191.

Learning outcomes

At the end of the workshop participants will:

- 1) be aware of the potential benefits offered by ERGMs for the analysis of social networks between individuals and between organisations;
- 2) understand the importance of linking the micro-macro levels in the analysis of social networks;
- 3) be able to develop research hypotheses that can be tested by using ERGMs;
- 4) have sufficient familiarity with the specification and estimation of ERGMs;
- 5) be able to provide meaningful interpretation of parameter estimates that is theory-driven.