The statistical analysis of social networks

Pip Pattison and Garry Robins
School of Behavioural Science
University of Melbourne
Australia

We review the development of statistical models for social networks, from an early reliance on simple random graph models to the construction of progressively more realistic models for human social networks. We hence show how statistical models for social networks are increasingly able to inform our understanding of the emergence and structure of social networks in a wide variety of settings. We illustrate progress with two examples. In the first we show how to assess the effect of individual characteristics on network tie formation in the presence of endogenous tie formation processes. The application shows how personal identity effects may shape strong communication ties in a multinational corporation, in particular that identity is important in understanding boundary-crossing communications. In the second example, we show how a model for the co-evolution of multiple inter-organisational networks can be used to explore the impact of a system-level intervention.