

Modelling Dynamic Network Structures

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Analyzing dynamic network data helps in identifying, understanding and interpreting patterns and trends that may not be apparent in static snapshots. Temporal changes in the connectivity structures reveal valuable information about the emergence and dissolution of clusters, the evolution of communities, and the propagation of information or influence.

Statistical models for dynamic networks can be used to model both panel data reflecting relational states observed at two or more discrete points in time (Snijders, 2001, Hanneke et al., 2010, Krivitsky et al., 2014) and relational event data entailing information regarding the sequence and timing of link changes in the network (Butts, 2008).

This project concerns the development of flexible time-inhomogeneous or piece-wise time-homogeneous statistical models for the analysis of dynamic networks characterized by complex weighted, signed, and polyadic interactions. Particular focus will be given to the use of probabilistic computational methodologies to carry out inference. Additionally, easy-to-use software tools will be made available in order to encourage collaboration between different research areas and make the results of this project widely accessible.

References

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