Supplementary: Stochastic blockmodeling of relational event dynamics

Anonymous Author(s)
Affiliation
Address
email

We take advantage of our restriction on the types of statistics $\mathbf{s}$ to reduce the computational complexity of computing our likelihood as

$$\mathcal{L}(\mathcal{A}_{t_M}|\theta) = \prod_{m=1}^{M} \lambda_{i_m,j_m}(t_m|\cdot) \prod_{(i,j)\in\mathcal{R}_{i_m,j_m}} \exp\{-(t_m - \tau_{m,i,j})\lambda_{ij}(t_m|\cdot)\}$$

where event m is the dyad (i_m, j_m), $\tau_{m,i,j}$ is the time of the changepoint for $\lambda_{i,j}(t|\cdot)$ prior to the mth event, and $\mathcal{R}_{i,j}$ is the set of dyads whose intensity changes if (i, j) occurs.

By limiting the changepoints, computing the likelihood $p(\mathcal{A}|\mathbf{z}, \boldsymbol{\beta})$ for Gibbs sampling z_r is $O(|\mathcal{U}_r| \cdot P \cdot N)$, avoiding a factor of N^2. In practice, we precompute $\tau_{m,i,j}$ and $\mathbf{s}(t_m, i, j, \mathcal{A}_t)$ for all m, i, and j.