

Inferring community characteristics in labelled networks

IIB Project

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Motivation

The feature-first block model (FFBM)

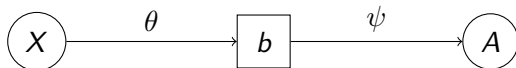


Figure: The feature-first block model (FFBM)

$$p(b|X; \theta) = \prod_{i \in [M]} \phi_{b_i}(x_i; \theta) = \prod_{i \in [M]} \frac{\exp(w_{b_i}^T x_i)}{\sum_{k \in [B]} \exp(w_k^T x_i)} \quad (1)$$

$$p(A|b; \psi) \sim \text{DC-SBM}_{\text{MC}}(b, \psi_e, \psi_k) \quad (2)$$

Inference procedure

We want to draw:

$$\theta^{(t)} \sim p(\theta|A, X). \quad (3)$$

We achieve this by:

$$b^{(t)} \sim p(b|A, X) \quad (4)$$

$$\theta^{(t)} \sim p(\theta|X, b^{(t)}) \quad (5)$$

Sampling sequence

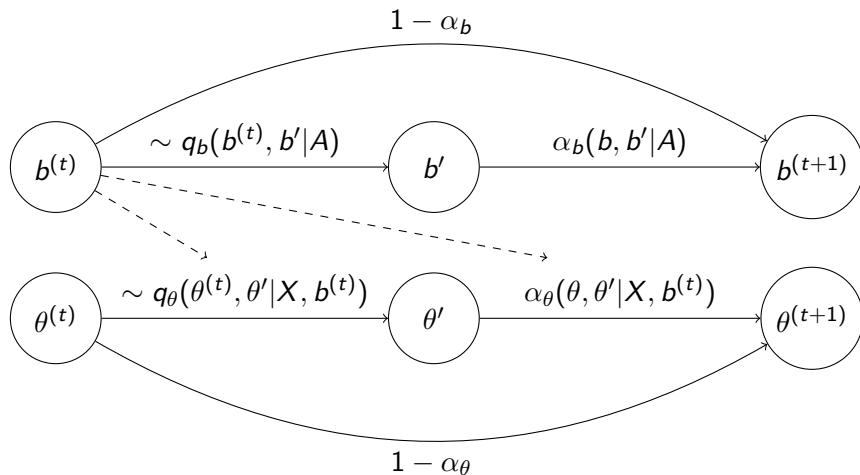


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