



Expectation Maximization

1 Why

I am doing a homework on this.

2 Definition

Let Z and X be non-empty finite sets. We want to model a distribution $p^\theta : Z \times X \rightarrow \mathbf{R}$. We parameterize a family of distributions by a parameter θ . We have a dataset (x^1, \dots, x^n) . Given a parameter θ^0 , we want to solve

$$\begin{aligned} & \text{find } \theta \\ & \text{to maximize } \sum_{k=1}^n \mathbf{E}_{p_{z|x}^{\theta^0}(z, x^k)} [\log p^\theta(z, x)] \end{aligned}$$

2.1 Binary Gaussian Mixture Example

The

