Model selection for the gestalt model

1 The likelihood function

The full likelihood looks like this for a set of N images

$$p(X \mid V, G, Z, C_{1..k}) = \prod_{n=1}^{N} p(x_n \mid v_n, z_n) \tag{1}$$

marginalising over all the latents will produce

$$p(X \mid C_{1..k}) = \iiint_{-\infty}^{\infty} \prod_{n=1}^{N} p(x_n \mid v_n, z_n) p(v_n \mid g_n) p(g_n) p(z_n) \mathrm{d}V \mathrm{d}G \mathrm{d}Z \tag{2}$$

taking NL samples from the priors of all latents, we can approximate this as

$$p(X \mid C_{1..k}) \approx \frac{1}{L} \sum_{l=1}^{L} \prod_{n=1}^{N} p(x_n \mid v_{n,l}, z_{n,l}) \tag{3}$$