Models

A: Binary SC

latents: $\mathbf{s} \sim Bern(\mathbf{s}|\pi) = \prod_{h=1}^{H} \pi^{s_h} \left(1-\pi\right)^{1-s_h}$

observations: $\mathbf{y} \sim \mathcal{N}(\mathbf{y}; W\mathbf{s}, \sigma^2 I)$

B: Spike & Slab SC

latents: $\mathbf{s} = \mathbf{b} \odot \mathbf{z} \sim Bern(\mathbf{b}|\pi) \odot \mathcal{N}(\mathbf{z};\, \mu, \Sigma_h)$

observations: $\mathbf{y} \sim \mathcal{N}(\mathbf{y}; W\mathbf{s}, \sigma^2 I)$

C: Nonlinear Spike & Slab SC

latents: $\mathbf{s} = \mathbf{b} \odot \mathbf{z} \sim Bern(\mathbf{b}|\pi) \odot \mathcal{N}(\mathbf{z};\, \mu, \Sigma_h)$

observations: $\mathbf{y} \sim \mathcal{N}(\mathbf{y}; \max_h\{s_h \mathbf{W}_h\}, \sigma^2 I)$

Data

$\mathbf{W}_{\text{hand-derived}}$

$\mathbf{W}_{\text{GP-select}}$