

$$f_j \sim \mathcal{GP}(0, \kappa_j(\cdot, \cdot)) \rightarrow p(\mathbf{f} | \boldsymbol{\theta}_0) = \prod_{j=1}^Q p(\mathbf{f}_{\bullet j} | \boldsymbol{\theta}_0) = \prod_{j=1}^Q \mathcal{N}(\mathbf{f}_{\bullet j}; \mathbf{0}, \mathbf{K}_j)$$

Diagram illustrating the relationship between the Gaussian Process (GP) prior and the joint latent function distribution:

- $\kappa_j(\cdot, \cdot)$: Covariance function of j^{th} GP
- $\prod_{j=1}^Q$: All $N \times Q$ latent function values
- $\boldsymbol{\theta}_0$: Covariance Hyper-parameters
- $\mathbf{f}_{\bullet j}$: All N latent values for function j
- \mathbf{K}_j : Covariance matrix induced by κ_j