# Prediction

$f(x)$ is a Gaussian Process with stationary prior, $m(x) = 0$

$$p(f(x)|f(x_1), \ldots, f(x_n)) = \frac{p(f(x), f(x_1), \ldots, f(x_n))}{p(f(x_1), \ldots, f(x_n))}$$

$$= \frac{\mathcal{N}(f(x), f(x_1), \ldots, f(x_n)|0, \widetilde{C})}{\mathcal{N}(f(x_1), \ldots, f(x_n)|0, C)}$$

$$\widetilde{C} = \begin{pmatrix} K(0) & k^T \\ k & C \end{pmatrix} \qquad k = \begin{pmatrix} K(x - x_1) \\ K(x - x_2) \\ \cdots \\ K(x - x_n) \end{pmatrix}$$