

RandomFeatures.jl

RandomFeature Method

Scalar Feature

FeatureSampler

$$\Phi(x, \theta) = \sigma f(x\theta + b)$$

$\mathbb{R}^{n \times 1}, \mathbb{R}^{d_H \times m}, x \rightarrow \mathbb{R}$

(X, Y) fit β to data
via

$$\left(\frac{1}{m} \Phi^T \Phi + n \lambda I \right) \beta = \Phi^T Y$$

saving a decomp of this

Optimizer

HypoSampler

$\theta \sim p_1(\theta)$: optimize p_1 via θ
 $\sigma \sim p_2$: optimize σ via p_2