| Name | Kernel function | dim $(\mathcal{K})$ |
|---|---|---|
| $p$th degree polynomial | $k\left(\vec{u}, \vec{v}\right) = \left(\langle \vec{u}, \vec{v} \rangle_{\mathcal{X}}\right)^p$ <br> $p \in \mathbb{N}^+$ | $\binom{N+p-1}{p}$ |
| complete polynomial | $k\left(\vec{u}, \vec{v}\right) = \left(\langle \vec{u}, \vec{v} \rangle_{\mathcal{X}} + c\right)^p$ <br> $c \in \mathbb{R}^+, \ p \in \mathbb{N}^+$ | $\binom{N+p}{p}$ |
| RBF kernel | $k\left(\vec{u}, \vec{v}\right) = \exp\left(-\frac{\|\vec{u}-\vec{v}\|_{\mathcal{X}}^2}{2\sigma^2}\right)$ <br> $\sigma \in \mathbb{R}^+$ | $\infty$ |
| Mahalanobis kernel | $k\left(\vec{u}, \vec{v}\right) = \exp\left(-\left(\vec{u}-\vec{v}\right)' \boldsymbol{\Sigma} \left(\vec{u}-\vec{v}\right)\right)$ <br> $\boldsymbol{\Sigma} = \mathrm{diag}\left(\sigma_1^{-2}, \ldots, \sigma_N^{-2}\right),$ <br> $\sigma_1, \ldots, \sigma_N \in \mathbb{R}^+$ | $\infty$ |