$$\Omega = \begin{bmatrix} e_1 & e_2 \end{bmatrix} \begin{bmatrix} k_1 & 0 \\ 0 & k_2 \end{bmatrix} \begin{bmatrix} {e_1}^T \\ {e_2}^T \end{bmatrix}$$

where

- $k_1 \in \mathbb{R}$:control the desired kernel variance in either edge or orthogonal direction
- $k_2 \in \mathbb{R}$:control the desired kernel variance in either edge or orthogonal direction
- $e_1 \in \mathbb{R}^3$:orthogonal direction vectors
- $e_2 \in \mathbb{R}^3$:orthogonal direction vectors