

$$\min_{u \in \mathbb{R}^6} u^T \left( \sum_i \begin{bmatrix} x_i \times \hat{n}_i \\ \hat{n}_i \end{bmatrix} \begin{bmatrix} (x_i \times \hat{n}_i)^T & \hat{n}_i^T \end{bmatrix} \right) u - 2u^T \left( \sum_i \begin{bmatrix} x_i \times \hat{n}_i \\ \hat{n}_i \end{bmatrix} \hat{n}_i^T (p_i - x_i) \right) + \sum_i (p_i - x_i)^T \hat{n}_i \hat{n}_i^T (p_i - x_i)$$

where

$$x_i \in \mathbb{R}^3$$

$$\hat{n}_i \in \mathbb{R}^3$$

$$p_i \in \mathbb{R}^3$$