$$
\begin{aligned}
p_i &= poly_{i,*} \\
q_i &= poly2_{i,*} \\
d_i &= p_i - q_i \\
H &= \sum_i \frac{1}{\|d_i\|_2} \begin{bmatrix} {d_{i,2}}^2 + {d_{i,3}}^2 & -d_{i,1} \cdot d_{i,2} & -d_{i,1} \cdot d_{i,3} \\ -d_{i,1} \cdot d_{i,2} & {d_{i,1}}^2 + {d_{i,3}}^2 & -d_{i,2} \cdot d_{i,3} \\ -d_{i,1} \cdot d_{i,3} & -d_{i,2} \cdot d_{i,3} & {d_{i,1}}^2 + {d_{i,2}}^2 \end{bmatrix} \\
\mathcal{J} &= \sum_i \frac{1}{\|d_i\|_2} \begin{bmatrix} -d_{i,2} \cdot p_{i,2} \cdot q_{i,1} - d_{i,3} \cdot p_{i,3} \cdot q_{i,1} + d_{i,2} \cdot p_{i,1} \cdot q_{i,2} + d_{i,3} \cdot p_{i,1} \cdot q_{i,3} \\ d_{i,1} \cdot p_{i,2} \cdot q_{i,1} - d_{i,1} \cdot p_{i,1} \cdot q_{i,2} - d_{i,3} \cdot p_{i,3} \cdot q_{i,2} + d_{i,3} \cdot p_{i,2} \cdot q_{i,3} \\ d_{i,1} \cdot p_{i,3} \cdot q_{i,1} + d_{i,2} \cdot p_{i,3} \cdot q_{i,2} - d_{i,1} \cdot p_{i,1} \cdot q_{i,3} - d_{i,2} \cdot p_{i,2} \cdot q_{i,3} \end{bmatrix}
\end{aligned}
$$

where

$$
\begin{aligned}
poly &\in \mathbb{R}^{n \times 3} \\
poly2 &\in \mathbb{R}^{n \times 3}
\end{aligned}
$$