ElementSets from MeshConnectivity

VertexOneRing, NeighborVerticesInFace from Neighborhoods(M)

$$
\begin{aligned}
&M: \text{ TriangleMesh}\\
&x_i \in \mathbb{R}^3
\end{aligned}
$$

$$V, E, F = \mathit{ElementSets}(M)$$

$$\mathit{UpdateStep}(i,j,k,d) = \begin{cases} p & \text{if } s_{1,1} < 0 \text{ and } s_{2,1} < 0 \\ \min(d_j + \|x_j - x_i\|, d_k + \|x_k - x_i\|) & \text{otherwise} \end{cases}$$

where

$$
\begin{aligned}
i,j,k &\in V\\
d_i &\in \mathbb{R}\\
X &= \begin{bmatrix} x_j - x_i & x_k - x_i \end{bmatrix}\\
t &= \begin{bmatrix} d_j & d_k \end{bmatrix}^T\\
Q &= (X^T X)^{-1}\\
1 &= \begin{bmatrix} 1 \\ 1 \end{bmatrix}\\
p &= \frac{1^T Q t + \sqrt{(1^T Q t)^2 - 1^T Q 1 \cdot (t^T Q t - 1)}}{1^T Q 1}\\
n &= XQ(t - p \cdot 1)\\
s &= QX^T n
\end{aligned}
$$

$$\mathit{GetNextLevel}(U) = v - s$$

where

$$
\begin{aligned}
U_i &\subset V\\
s &= \bigcup_i U_i\\
v &= \mathit{VertexOneRing}(s)
\end{aligned}
$$

$$\mathit{GetRangeLevel}(U, a, b) = \bigcup_{i=a}^{b} U_i \text{ where } U_j \subset V, a, b \in \mathbb{Z}, \text{ index}$$

$$\mathit{GetLevelSequence}(U) = \begin{cases} \mathit{sequence}(U, \mathit{next}) & \text{if } |\mathit{next}| \neq 0 \\ U & \text{otherwise} \end{cases}$$

where

$$
\begin{aligned}
U_i &\subset V\\
\mathit{next} &= \mathit{GetNextLevel}(U)
\end{aligned}
$$