atan2 from trigonometry

ElementSets from MeshConnectivity

OrientedVertices from Neighborhoods(M)

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

$$
\begin{aligned}
V, E, F &= \textit{ElementSets}(M) \\
\Omega_f(\mathbf{p}) &= 2atan2(\left|\begin{bmatrix}\mathbf{a} & \mathbf{b} & \mathbf{c}\end{bmatrix}\right|, (abc + (\mathbf{a}\cdot\mathbf{b})c + (\mathbf{b}\cdot\mathbf{c})a + (\mathbf{c}\cdot\mathbf{a})b)) \\
&\text{where} \\
&\quad f \in F \\
&\quad \mathbf{p} \in \mathbb{R}^3 \\
&\quad \mathbf{a} = x_i - \mathbf{p} \\
&\quad \mathbf{b} = x_j - \mathbf{p} \\
&\quad \mathbf{c} = x_k - \mathbf{p} \\
&\quad a = \|\mathbf{a}\| \\
&\quad b = \|\mathbf{b}\| \\
&\quad c = \|\mathbf{c}\| \\
&\quad i, j, k = \textit{OrientedVertices}(f) \\
w(\mathbf{p}) &= \frac{1}{4\pi}\sum_{f\in F}\Omega_f(\mathbf{p}) \text{ where } \mathbf{p} \in \mathbb{R}^3
\end{aligned}
$$