

$$\begin{aligned}\phi &= \text{rad}(\text{lon}) \\ \theta &= \text{rad}(\text{lat}) \\ \vec{\mathbf{v}} = \begin{bmatrix} x \\ y \\ z \end{bmatrix} &= \begin{bmatrix} r \cos(\theta) \cos(\phi) \\ r \cos(\theta) \sin(\phi) \\ r \sin(\theta) \end{bmatrix}\end{aligned}$$

$$\begin{aligned}B &= \{\vec{\mathbf{v}}_1, \dots, \vec{\mathbf{v}}_m\} \\ B &= \left\{ \begin{bmatrix} v_{1_1} \\ \vdots \\ v_{1_n} \end{bmatrix}, \dots, \begin{bmatrix} v_{m_1} \\ \vdots \\ v_{m_n} \end{bmatrix} \right\} \\ \overrightarrow{b_{avg}} &= \begin{bmatrix} \text{avg}(v_{1_1}, \dots, v_{m_1}) \\ \vdots \\ \text{avg}(v_{1_n}, \dots, v_{m_n}) \end{bmatrix}\end{aligned}$$

$$\begin{aligned}\Delta UVW &= \left\{ \begin{bmatrix} x_u \\ y_u \end{bmatrix}, \begin{bmatrix} x_v \\ y_v \end{bmatrix}, \begin{bmatrix} x_w \\ y_w \end{bmatrix} \right\} \\ x_p &= u x_u + v x_v + w x_w \\ y_p &= u y_u + v y_v + w y_w \\ \vec{p} &= \begin{bmatrix} x_p \\ y_p \end{bmatrix}\end{aligned}$$

$$\begin{aligned}u &= \frac{(y_v - y_w)(x_p - x_w) + (x_w - x_v)(y_p - y_w)}{(y_v - y_w)(x_u - x_w) + (x_w - x_v)(y_u - y_w)} \\ v &= \frac{(y_w - y_u)(x_p - x_w) + (x_u - x_w)(y_p - y_w)}{(y_v - y_w)(x_u - x_w) + (x_w - x_v)(y_u - y_w)} \\ w &= 1 - u - v\end{aligned}$$

$$\begin{aligned}V &= \{\vec{\mathbf{v}}_1, \dots, \vec{\mathbf{v}}_i, \dots, \vec{\mathbf{v}}_m\} \\ &= \left\{ \begin{bmatrix} v_{1_1} \\ \vdots \\ v_{1_j} \\ \vdots \\ v_{1_n} \end{bmatrix}, \dots, \begin{bmatrix} v_{i_1} \\ \vdots \\ v_{i_j} \\ \vdots \\ v_{i_n} \end{bmatrix}, \dots, \begin{bmatrix} v_{m_1} \\ \vdots \\ v_{m_j} \\ \vdots \\ v_{m_n} \end{bmatrix} \right\} \\ \omega_i &= \text{mort}(\vec{\mathbf{v}}_i) \\ &= \text{mort}(v_{i_1}, \dots, v_{i_j}, \dots, v_{i_n}) \\ \text{home}_\omega(V) &= \{\omega_1, \dots, \omega_i, \dots, \omega_m\}\end{aligned}$$