$$\Sigma^{(k+1)} \leftarrow \sum_{i=1}^{N} \hat{f}\left(\mathbf{z}_{i}\right) \left(\mathbf{z}_{i} - \boldsymbol{\mu}^{(k)}\right) \left(\mathbf{z}_{i} - \boldsymbol{\mu}^{(k)}\right)^{\top}$$