

$$\mathcal{L} = \sigma_n^2 = \frac{1}{n-1} \sum_{i=1}^n \left| \det \left( \frac{\partial \vec{z}(\vec{x}_{(i)})}{\partial \vec{x}_{(i)}} \right) I(\vec{z}(\vec{x}_{(i)})) - \langle I \rangle \right|^2$$