

Let \mathbf{f} be the neural network

Let $\hat{\mathbf{x}}$ be an input in the training data set

Let $|| \cdot - \cdot ||$ be some notion of distance.

Then:

$$\forall \mathbf{x} : || \mathbf{x} - \hat{\mathbf{x}} || \leq \varepsilon \Rightarrow || \mathbf{f}(\mathbf{x}) - \mathbf{f}(\hat{\mathbf{x}}) || \leq \delta$$