

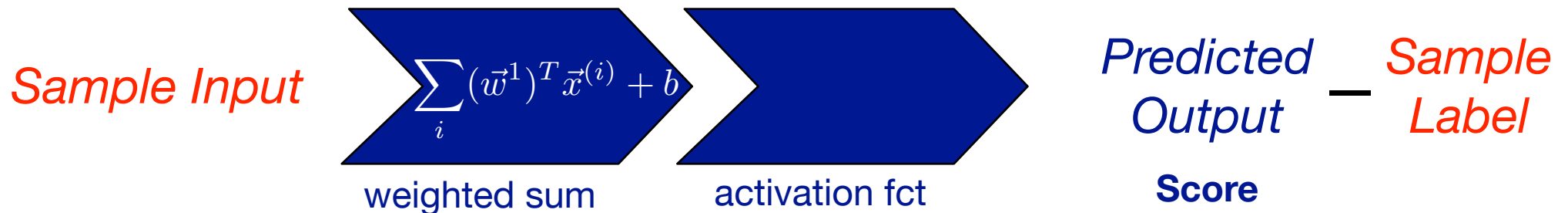
Backward = Learning: Gradient Descent

$$\Delta \vec{w}, b \leftarrow \nabla_{\vec{w}, b} E(\vec{w})$$

$$\nabla_{\vec{w}} E(\vec{w}, b) = \sum_i^{n_x} (\vec{w}^T \vec{x}^{(i)} + b - y^{(i)}) \vec{x}^{(i)T}$$

$$\nabla_b E(\vec{w}, b) = \sum_i^{n_x} \vec{w}^T \vec{x}^{(i)} + b - y^{(i)}$$

$$a(\vec{x}) = \vec{w}^T \vec{x} + b = \begin{pmatrix} w_1 & w_2 \end{pmatrix} \begin{pmatrix} x_A \\ x_B \end{pmatrix} + b \quad \underbrace{\text{Error } E(\vec{w})}$$



Forward = Computation