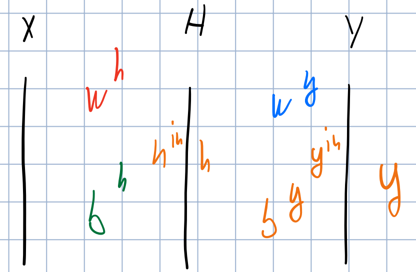


$$\frac{\partial L}{\partial y^{in}_i} = (y-t)_i$$

$$\frac{\partial L}{\partial b^y_i} = \frac{\partial L}{\partial y^{in}_i} \cdot \boxed{\frac{\partial y^{in}_i}{\partial b^y_i}} = 1$$

$$y^{in}_i = (h \cdot w^y)_i + b^y_i$$

$$= (y-t)_i \;\; \longrightarrow \;\; \frac{\partial L}{\partial b^y} = y - t$$

to stejné pro hidden layer

$$\frac{\partial L}{\partial w^y_{ij}} = \frac{\partial L}{\partial y^{in}_j} \cdot \frac{\partial y^{in}_j}{\partial w^y_{ij}} = (y-t)_j \cdot h_i$$

$$\frac{\partial L}{\partial h^{(in)}} = \frac{\partial L}{\partial h_i} \cdot \frac{\partial h_i}{\partial h_i^{(in)}}$$

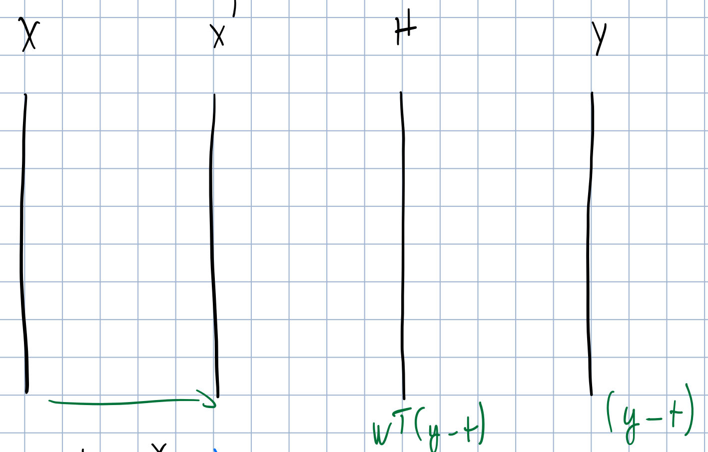
$$= (y-t) \cdot w_i^T \cdot 1 - \tanh^2(x)$$

$$\frac{\partial L}{\partial h_i} = \sum_j \frac{\partial L}{\partial y^{in}_j} \cdot \frac{\partial y^{in}_j}{\partial h_i} = \sum_j (y-t)_j \cdot w_{ij} = w_i^T (y-t)$$

derivace ReLU: $\mathrm{ReLU}' = [x > 0]$

derivace tanh: $\tanh(x)' = 1 - \tanh^2(x)$

derivace vstupního škálování: $\frac{d}{dx}\left(\frac{x}{255}\right) = \frac{1}{255}$



$$\frac{\partial L}{\partial y} =$$

$$x' = \frac{x}{255}$$

$$\frac{d}{dx} = \frac{1}{255}$$

tuhle vrstvu ale nemusím nějak řešit, protože to je konstantní lin. zobrazení, které mi tedy nezmění loss mezi objekty