

Next Layer

$$r_1 = \text{ReLU}(a_1)$$

$$\frac{\partial \mathcal{J}}{\partial r_1} = \dots$$

$$r_2 = \text{ReLU}(a_2)$$

$$\frac{\partial \mathcal{J}}{\partial r_2} = \dots$$

$$b_1$$

$$\frac{\partial \mathcal{J}}{\partial b_1} = \frac{\partial \mathcal{J}}{\partial a_1} \cdot \frac{\partial a_1}{\partial b_1}$$

$$a_1 = m_{1,1} + m_{1,2} + b_1$$

$$\frac{\partial \mathcal{J}}{\partial a_1} = \frac{\partial \mathcal{J}}{\partial r_1} \cdot \frac{\partial r_1}{\partial a_1}$$

$$a_2 = m_{2,1} + m_{2,2} + b_2$$

$$\frac{\partial \mathcal{J}}{\partial a_2} = \frac{\partial \mathcal{J}}{\partial r_2} \cdot \frac{\partial r_2}{\partial a_2}$$

$$b_2$$

$$\frac{\partial \mathcal{J}}{\partial b_2} = \frac{\partial \mathcal{J}}{\partial a_2} \cdot \frac{\partial a_2}{\partial b_2}$$

$$m_{1,1} = w_{1,1} \cdot x_1$$

$$\frac{\partial \mathcal{J}}{\partial m_{1,1}} = \frac{\partial \mathcal{J}}{\partial a_1} \cdot \frac{\partial a_1}{\partial m_{1,1}}$$

$$m_{1,2} = w_{1,2} \cdot x_2$$

$$\frac{\partial \mathcal{J}}{\partial m_{1,2}} = \frac{\partial \mathcal{J}}{\partial a_1} \cdot \frac{\partial a_1}{\partial m_{1,2}}$$

$$m_{2,1} = w_{2,1} \cdot x_1$$

$$\frac{\partial \mathcal{J}}{\partial m_{2,1}} = \frac{\partial \mathcal{J}}{\partial a_2} \cdot \frac{\partial a_2}{\partial m_{2,1}}$$

$$m_{2,2} = w_{2,2} \cdot x_2$$

$$\frac{\partial \mathcal{J}}{\partial m_{2,2}} = \frac{\partial \mathcal{J}}{\partial a_2} \cdot \frac{\partial a_2}{\partial m_{2,2}}$$

$$w_{1,1}$$

$$\frac{\partial \mathcal{J}}{\partial w_{1,1}} = \frac{\partial \mathcal{J}}{\partial m_{1,1}} \cdot \frac{\partial m_{1,1}}{\partial w_{1,1}}$$

$$w_{1,2}$$

$$\frac{\partial \mathcal{J}}{\partial w_{1,2}} = \frac{\partial \mathcal{J}}{\partial m_{1,2}} \cdot \frac{\partial m_{1,2}}{\partial w_{1,2}}$$

$$w_{2,1}$$

$$\frac{\partial \mathcal{J}}{\partial w_{2,1}} = \frac{\partial \mathcal{J}}{\partial m_{2,1}} \cdot \frac{\partial m_{2,1}}{\partial w_{2,1}}$$

$$w_{2,2}$$

$$\frac{\partial \mathcal{J}}{\partial w_{2,2}} = \frac{\partial \mathcal{J}}{\partial m_{2,2}} \cdot \frac{\partial m_{2,2}}{\partial w_{2,2}}$$

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