

Lets try and compute  $\frac{\partial loss}{\partial w_{ij}^1}$ :

$$\frac{\partial loss}{\partial w_{ij}^1} = \frac{\partial loss}{\partial z_i^1} \cdot \frac{\partial z_i^1}{\partial w_{ij}^2} = \star$$

$$\frac{\partial z_i^1}{\partial w_{ij}^2} = x_j^1 \text{ --- easy :)}$$

$$\begin{aligned} \frac{\partial loss}{\partial z_i^1} &= \frac{\partial loss}{\partial z^2} \cdot \frac{\partial z^2}{\partial g^1(z_i^1)} \cdot \frac{\partial g^1(z_i^1)}{\partial z_i^1} = \\ &= \sum_{k=1}^{dim(z^2)} \left( \frac{\partial loss}{\partial z_k^2} \cdot \frac{\partial z_k^2}{\partial g^1(z_i^1)} \cdot \frac{\partial g^1(z_i^1)}{\partial z_i^1} \right) = \end{aligned}$$