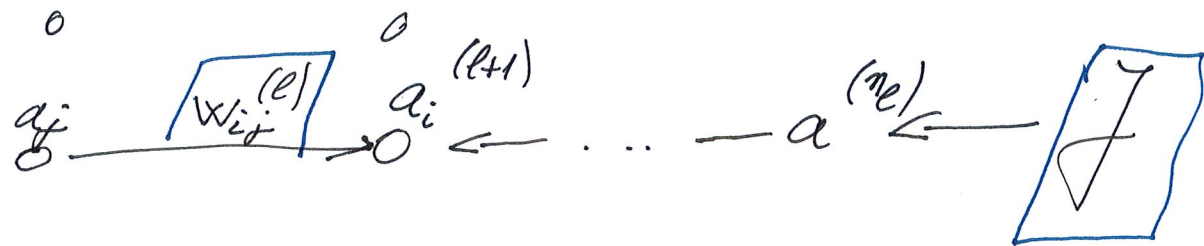


$$\frac{\partial Z}{\partial w_{ij}^{(e)}} = \frac{\partial Z}{\partial a_i^{(l+1)}} \cdot \frac{\partial a_i^{(l+1)}}{\partial w_{ij}^{(e)}}$$

$$= \frac{\partial Z}{\partial a_i^{(l+1)}} \cdot \frac{\partial a_i^{(l+1)}}{\partial z_i^{(l+1)}} \cdot \frac{\partial z_i^{(l+1)}}{\partial w_{ij}^{(e)}}$$

$$\delta_i^{(l+1)} = \frac{\partial Z}{\partial z_i^{(l+1)}} \quad a_j^{(e)}$$

$$\frac{\partial Z}{\partial w_{ij}^{(e)}} = \delta_i^{(l+1)} a_j^{(e)}$$



$$a_i^{(l+1)} = f(z_i^{(l+1)})$$

$$z_i^{(l+1)} = W^{(e)} \cdot a^{(e)} + b^{(e)}$$

$$z_i^{(l+1)} = \sum_{k=1}^{s_e} w_{ik} \cdot a_k^{(e)} + b_i^{(e)}$$

where $\delta_i^{(l+1)} = \frac{\partial Z}{\partial z_i^{(l+1)}}$