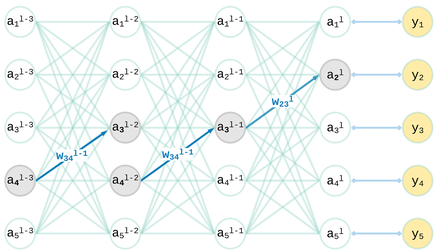
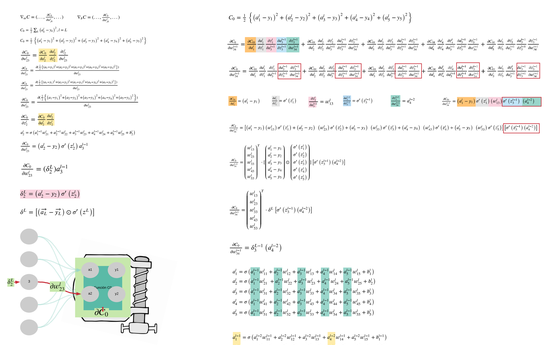
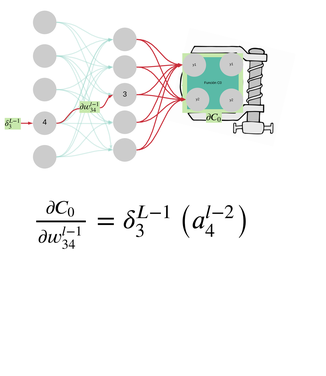




$$\delta_3^{L-1} = \begin{pmatrix} w_{13}^l \\ w_{23}^l \\ w_{33}^l \\ w_{43}^l \\ w_{53}^l \end{pmatrix}^T \cdot \delta^L \left[\sigma'\left(z_3^{l-1}\right)\right]$$

$$\delta^{L-1} = \left(\left\{\overrightarrow{w^L}\right\} \cdot \left\{\overrightarrow{\delta^L}\right\}\right) \odot \left[\sigma'\left(z^{l-1}\right)\right]$$



$$\frac{\partial C_0}{\partial w_{34}^{l-1}} = \delta_3^{L-1}\left(a_4^{l-2}\right)$$

$$C_0 = \frac{1}{5}\left\{\left(a_1^l - y_1\right)^2 + \left(a_2^l - y_2\right)^2 + \left(a_3^l - y_3\right)^2 + \left(a_4^l - y_4\right)^2 + \left(a_5^l - y_5\right)^2\right\}$$

$$\frac{\partial C_0}{\partial w_{34}^{l-1}} = \frac{\partial C_0}{\partial a_1^l}\frac{\partial a_1^l}{\partial w_{34}^{l-1}} + \frac{\partial C_0}{\partial a_2^l}\frac{\partial a_2^l}{\partial w_{34}^{l-1}} + \frac{\partial C_0}{\partial a_3^l}\frac{\partial a_3^l}{\partial w_{34}^{l-1}} + \frac{\partial C_0}{\partial a_4^l}\frac{\partial a_4^l}{\partial w_{34}^{l-1}} + \frac{\partial C_0}{\partial a_5^l}\frac{\partial a_5^l}{\partial w_{34}^{l-1}}$$

$$\frac{\partial C_0}{\partial w_{34}^{l-1}} = \frac{\partial C_0}{\partial a_1^l}\left(\frac{\partial a_1^l}{\partial z_1^{l-1}}\frac{\partial z_1^{l-1}}{\partial a_1^{l-1}}\frac{\partial a_1^{l-1}}{\partial z_1^{l-2}}\frac{\partial z_1^{l-2}}{\partial w_{34}^{l-1}} + \frac{\partial a_1^l}{\partial z_2^{l-1}}\frac{\partial z_2^{l-1}}{\partial a_2^{l-1}}\frac{\partial a_2^{l-1}}{\partial z_2^{l-2}}\frac{\partial z_2^{l-2}}{\partial w_{34}^{l-1}} + \frac{\partial a_1^l}{\partial z_3^{l-1}}\frac{\partial z_3^{l-1}}{\partial a_3^{l-1}}\frac{\partial a_3^{l-1}}{\partial z_3^{l-2}}\frac{\partial z_3^{l-2}}{\partial w_{34}^{l-1}} + \frac{\partial a_1^l}{\partial z_4^{l-1}}\frac{\partial z_4^{l-1}}{\partial a_4^{l-1}}\frac{\partial a_4^{l-1}}{\partial z_4^{l-2}}\frac{\partial z_4^{l-2}}{\partial w_{34}^{l-1}} + \frac{\partial a_1^l}{\partial z_5^{l-1}}\frac{\partial z_5^{l-1}}{\partial a_5^{l-1}}\frac{\partial a_5^{l-1}}{\partial z_5^{l-2}}\frac{\partial z_5^{l-2}}{\partial w_{34}^{l-1}}\right)$$

$$\frac{\partial C_0}{\partial w_{34}^{l-1}} = \frac{\partial C_0}{\partial a_2^l}\left(\frac{\partial a_2^l}{\partial z_1^{l-1}}\frac{\partial z_1^{l-1}}{\partial a_1^{l-1}}\frac{\partial a_1^{l-1}}{\partial z_1^{l-2}}\frac{\partial z_1^{l-2}}{\partial w_{34}^{l-1}} + \frac{\partial a_2^l}{\partial z_2^{l-1}}\frac{\partial z_2^{l-1}}{\partial a_2^{l-1}}\frac{\partial a_2^{l-1}}{\partial z_2^{l-2}}\frac{\partial z_2^{l-2}}{\partial w_{34}^{l-1}} + \frac{\partial a_2^l}{\partial z_3^{l-1}}\frac{\partial z_3^{l-1}}{\partial a_3^{l-1}}\frac{\partial a_3^{l-1}}{\partial z_3^{l-2}}\frac{\partial z_3^{l-2}}{\partial w_{34}^{l-1}} + \frac{\partial a_2^l}{\partial z_4^{l-1}}\frac{\partial z_4^{l-1}}{\partial a_4^{l-1}}\frac{\partial a_4^{l-1}}{\partial z_4^{l-2}}\frac{\partial z_4^{l-2}}{\partial w_{34}^{l-1}} + \frac{\partial a_2^l}{\partial z_5^{l-1}}\frac{\partial z_5^{l-1}}{\partial a_5^{l-1}}\frac{\partial a_5^{l-1}}{\partial z_5^{l-2}}\frac{\partial z_5^{l-2}}{\partial w_{34}^{l-1}}\right)$$

$$\frac{\partial C_0}{\partial w_{34}^{l-1}} = \frac{\partial C_0}{\partial a_3^l}\left(\frac{\partial a_3^l}{\partial z_1^{l-1}}\frac{\partial z_1^{l-1}}{\partial a_1^{l-1}}\frac{\partial a_1^{l-1}}{\partial z_1^{l-2}}\frac{\partial z_1^{l-2}}{\partial w_{34}^{l-1}} + \frac{\partial a_3^l}{\partial z_2^{l-1}}\frac{\partial z_2^{l-1}}{\partial a_2^{l-1}}\frac{\partial a_2^{l-1}}{\partial z_2^{l-2}}\frac{\partial z_2^{l-2}}{\partial w_{34}^{l-1}} + \frac{\partial a_3^l}{\partial z_3^{l-1}}\frac{\partial z_3^{l-1}}{\partial a_3^{l-1}}\frac{\partial a_3^{l-1}}{\partial z_3^{l-2}}\frac{\partial z_3^{l-2}}{\partial w_{34}^{l-1}} + \frac{\partial a_3^l}{\partial z_4^{l-1}}\frac{\partial z_4^{l-1}}{\partial a_4^{l-1}}\frac{\partial a_4^{l-1}}{\partial z_4^{l-2}}\frac{\partial z_4^{l-2}}{\partial w_{34}^{l-1}} + \frac{\partial a_3^l}{\partial z_5^{l-1}}\frac{\partial z_5^{l-1}}{\partial a_5^{l-1}}\frac{\partial a_5^{l-1}}{\partial z_5^{l-2}}\frac{\partial z_5^{l-2}}{\partial w_{34}^{l-1}}\right)$$

$$\frac{\partial C_0}{\partial w_{34}^{l-1}} = \frac{\partial C_0}{\partial a_4^l}\left(\frac{\partial a_4^l}{\partial z_1^{l-1}}\frac{\partial z_1^{l-1}}{\partial a_1^{l-1}}\frac{\partial a_1^{l-1}}{\partial z_1^{l-2}}\frac{\partial z_1^{l-2}}{\partial w_{34}^{l-1}} + \frac{\partial a_4^l}{\partial z_2^{l-1}}\frac{\partial z_2^{l-1}}{\partial a_2^{l-1}}\frac{\partial a_2^{l-1}}{\partial z_2^{l-2}}\frac{\partial z_2^{l-2}}{\partial w_{34}^{l-1}} + \frac{\partial a_4^l}{\partial z_3^{l-1}}\frac{\partial z_3^{l-1}}{\partial a_3^{l-1}}\frac{\partial a_3^{l-1}}{\partial z_3^{l-2}}\frac{\partial z_3^{l-2}}{\partial w_{34}^{l-1}} + \frac{\partial a_4^l}{\partial z_4^{l-1}}\frac{\partial z_4^{l-1}}{\partial a_4^{l-1}}\frac{\partial a_4^{l-1}}{\partial z_4^{l-2}}\frac{\partial z_4^{l-2}}{\partial w_{34}^{l-1}} + \frac{\partial a_4^l}{\partial z_5^{l-1}}\frac{\partial z_5^{l-1}}{\partial a_5^{l-1}}\frac{\partial a_5^{l-1}}{\partial z_5^{l-2}}\frac{\partial z_5^{l-2}}{\partial w_{34}^{l-1}}\right)$$

$$\frac{\partial C_0}{\partial w_{34}^{l-1}} = \frac{\partial C_0}{\partial a_5^l}\left(\frac{\partial a_5^l}{\partial z_1^{l-1}}\frac{\partial z_1^{l-1}}{\partial a_1^{l-1}}\frac{\partial a_1^{l-1}}{\partial z_1^{l-2}}\frac{\partial z_1^{l-2}}{\partial w_{34}^{l-1}} + \frac{\partial a_5^l}{\partial z_2^{l-1}}\frac{\partial z_2^{l-1}}{\partial a_2^{l-1}}\frac{\partial a_2^{l-1}}{\partial z_2^{l-2}}\frac{\partial z_2^{l-2}}{\partial w_{34}^{l-1}} + \frac{\partial a_5^l}{\partial z_3^{l-1}}\frac{\partial z_3^{l-1}}{\partial a_3^{l-1}}\frac{\partial a_3^{l-1}}{\partial z_3^{l-2}}\frac{\partial z_3^{l-2}}{\partial w_{34}^{l-1}} + \frac{\partial a_5^l}{\partial z_4^{l-1}}\frac{\partial z_4^{l-1}}{\partial a_4^{l-1}}\frac{\partial a_4^{l-1}}{\partial z_4^{l-2}}\frac{\partial z_4^{l-2}}{\partial w_{34}^{l-1}} + \frac{\partial a_5^l}{\partial z_5^{l-1}}\frac{\partial z_5^{l-1}}{\partial a_5^{l-1}}\frac{\partial a_5^{l-1}}{\partial z_5^{l-2}}\frac{\partial z_5^{l-2}}{\partial w_{34}^{l-1}}\right)$$

$$\frac{\partial z_1^{l-1}}{\partial w_{34}^{l-1}}\frac{\partial a_1^{l-1}}{\partial z_1^{l-2}}\frac{\partial z_1^{l-2}}{\partial a_2^{l-2}} = \left(w_{11}^l\right)\sigma'\left(z_1^{l-1}\right)\left(w_{13}^{l-1}\right)\sigma'\left(z_3^{l-2}\right)\left(a_4^{l-3}\right) \qquad \frac{\partial z_2^{l-1}}{\partial a_2^{l-1}}\frac{\partial a_2^{l-1}}{\partial z_2^{l-2}}\frac{\partial z_2^{l-2}}{\partial a_3^{l-2}} = \left(w_{52}^l\right)\sigma'\left(z_2^{l-1}\right)\left(w_{23}^{l-1}\right)\sigma'\left(z_3^{l-2}\right)\left(a_4^{l-3}\right)$$

$$\frac{\partial C_0}{\partial w_{34}^{l-1}} = \left(a_1^l - y_1\right)\sigma'\left(z_1^l\right)\left[\left(w_{11}^l\right)\sigma'\left(z_1^{l-1}\right)\left(w_{13}^{l-1}\right) + \left(w_{12}^l\right)\sigma'\left(z_2^{l-1}\right)\left(w_{23}^{l-1}\right) + \left(w_{13}^l\right)\sigma'\left(z_3^{l-1}\right)\left(w_{33}^{l-1}\right) + \left(w_{14}^l\right)\sigma'\left(z_4^{l-1}\right)\left(w_{43}^{l-1}\right) + \left(w_{15}^l\right)\sigma'\left(z_5^{l-1}\right)\left(w_{53}^{l-1}\right)\right]\sigma'\left(z_3^{l-2}\right)\left(a_4^{l-3}\right)$$

$$\frac{\partial C_0}{\partial w_{34}^{l-1}} = \left(a_2^l - y_2\right)\sigma'\left(z_2^l\right)\left[\left(w_{21}^l\right)\sigma'\left(z_1^{l-1}\right)\left(w_{13}^{l-1}\right) + \left(w_{22}^l\right)\sigma'\left(z_2^{l-1}\right)\left(w_{23}^{l-1}\right) + \left(w_{23}^l\right)\sigma'\left(z_3^{l-1}\right)\left(w_{33}^{l-1}\right) + \left(w_{24}^l\right)\sigma'\left(z_4^{l-1}\right)\left(w_{43}^{l-1}\right) + \left(w_{25}^l\right)\sigma'\left(z_5^{l-1}\right)\left(w_{53}^{l-1}\right)\right]\sigma'\left(z_3^{l-2}\right)\left(a_4^{l-3}\right)$$

$$\frac{\partial C_0}{\partial w_{34}^{l-1}} = \left(a_3^l - y_3\right)\sigma'\left(z_3^l\right)\left[\left(w_{31}^l\right)\sigma'\left(z_1^{l-1}\right)\left(w_{13}^{l-1}\right) + \left(w_{32}^l\right)\sigma'\left(z_2^{l-1}\right)\left(w_{23}^{l-1}\right) + \left(w_{33}^l\right)\sigma'\left(z_3^{l-1}\right)\left(w_{33}^{l-1}\right) + \left(w_{34}^l\right)\sigma'\left(z_4^{l-1}\right)\left(w_{43}^{l-1}\right) + \left(w_{35}^l\right)\sigma'\left(z_5^{l-1}\right)\left(w_{53}^{l-1}\right)\right]\sigma'\left(z_3^{l-2}\right)\left(a_4^{l-3}\right)$$

$$\frac{\partial C_0}{\partial w_{34}^{l-1}} = \left(a_4^l - y_4\right)\sigma'\left(z_4^l\right)\left[\left(w_{41}^l\right)\sigma'\left(z_1^{l-1}\right)\left(w_{13}^{l-1}\right) + \left(w_{42}^l\right)\sigma'\left(z_2^{l-1}\right)\left(w_{23}^{l-1}\right) + \left(w_{43}^l\right)\sigma'\left(z_3^{l-1}\right)\left(w_{33}^{l-1}\right) + \left(w_{44}^l\right)\sigma'\left(z_4^{l-1}\right)\left(w_{43}^{l-1}\right) + \left(w_{45}^l\right)\sigma'\left(z_5^{l-1}\right)\left(w_{53}^{l-1}\right)\right]\sigma'\left(z_3^{l-2}\right)\left(a_4^{l-3}\right)$$

$$\frac{\partial C_0}{\partial w_{34}^{l-1}} = \left(a_5^l - y_5\right)\sigma'\left(z_5^l\right)\left[\left(w_{51}^l\right)\sigma'\left(z_1^{l-1}\right)\left(w_{13}^{l-1}\right) + \left(w_{52}^l\right)\sigma'\left(z_2^{l-1}\right)\left(w_{23}^{l-1}\right) + \left(w_{53}^l\right)\sigma'\left(z_3^{l-1}\right)\left(w_{33}^{l-1}\right) + \left(w_{54}^l\right)\sigma'\left(z_4^{l-1}\right)\left(w_{43}^{l-1}\right) + \left(w_{55}^l\right)\sigma'\left(z_5^{l-1}\right)\left(w_{53}^{l-1}\right)\right]\sigma'\left(z_3^{l-2}\right)\left(a_4^{l-3}\right)$$

$$\frac{\partial C_0}{\partial w_{34}^{l-1}} = \delta_1^l\left[\left(w_{11}^l\right)\sigma'\left(z_1^{l-1}\right)\left(w_{13}^{l-1}\right) + \left(w_{12}^l\right)\sigma'\left(z_2^{l-1}\right)\left(w_{23}^{l-1}\right) + \left(w_{13}^l\right)\sigma'\left(z_3^{l-1}\right)\left(w_{33}^{l-1}\right) + \left(w_{14}^l\right)\sigma'\left(z_4^{l-1}\right)\left(w_{43}^{l-1}\right) + \left(w_{15}^l\right)\sigma'\left(z_5^{l-1}\right)\left(w_{53}^{l-1}\right)\right]\sigma'\left(z_3^{l-2}\right)\left(a_4^{l-3}\right)$$

$$\frac{\partial C_0}{\partial w_{34}^{l-1}} = \delta_2^l\left[\left(w_{21}^l\right)\sigma'\left(z_1^{l-1}\right)\left(w_{13}^{l-1}\right) + \left(w_{22}^l\right)\sigma'\left(z_2^{l-1}\right)\left(w_{23}^{l-1}\right) + \left(w_{23}^l\right)\sigma'\left(z_3^{l-1}\right)\left(w_{33}^{l-1}\right) + \left(w_{24}^l\right)\sigma'\left(z_4^{l-1}\right)\left(w_{43}^{l-1}\right) + \left(w_{25}^l\right)\sigma'\left(z_5^{l-1}\right)\left(w_{53}^{l-1}\right)\right]\sigma'\left(z_3^{l-2}\right)\left(a_4^{l-3}\right)$$

$$\frac{\partial C_0}{\partial w_{34}^{l-1}} = \delta_3^l\left[\left(w_{31}^l\right)\sigma'\left(z_1^{l-1}\right)\left(w_{13}^{l-1}\right) + \left(w_{32}^l\right)\sigma'\left(z_2^{l-1}\right)\left(w_{23}^{l-1}\right) + \left(w_{33}^l\right)\sigma'\left(z_3^{l-1}\right)\left(w_{33}^{l-1}\right) + \left(w_{34}^l\right)\sigma'\left(z_4^{l-1}\right)\left(w_{43}^{l-1}\right) + \left(w_{35}^l\right)\sigma'\left(z_5^{l-1}\right)\left(w_{53}^{l-1}\right)\right]\sigma'\left(z_3^{l-2}\right)\left(a_4^{l-3}\right)$$

$$\frac{\partial C_0}{\partial w_{34}^{l-1}} = \delta_4^l\left[\left(w_{41}^l\right)\sigma'\left(z_1^{l-1}\right)\left(w_{13}^{l-1}\right) + \left(w_{42}^l\right)\sigma'\left(z_2^{l-1}\right)\left(w_{23}^{l-1}\right) + \left(w_{43}^l\right)\sigma'\left(z_3^{l-1}\right)\left(w_{33}^{l-1}\right) + \left(w_{44}^l\right)\sigma'\left(z_4^{l-1}\right)\left(w_{43}^{l-1}\right) + \left(w_{45}^l\right)\sigma'\left(z_5^{l-1}\right)\left(w_{53}^{l-1}\right)\right]\sigma'\left(z_3^{l-2}\right)\left(a_4^{l-3}\right)$$

$$\frac{\partial C_0}{\partial w_{34}^{l-1}} = \delta_5^l\left[\left(w_{51}^l\right)\sigma'\left(z_1^{l-1}\right)\left(w_{13}^{l-1}\right) + \left(w_{52}^l\right)\sigma'\left(z_2^{l-1}\right)\left(w_{23}^{l-1}\right) + \left(w_{53}^l\right)\sigma'\left(z_3^{l-1}\right)\left(w_{33}^{l-1}\right) + \left(w_{54}^l\right)\sigma'\left(z_4^{l-1}\right)\left(w_{43}^{l-1}\right) + \left(w_{55}^l\right)\sigma'\left(z_5^{l-1}\right)\left(w_{53}^{l-1}\right)\right]\sigma'\left(z_3^{l-2}\right)\left(a_4^{l-3}\right)$$

$$\left[\left(\delta_1^l\ \delta_2^l\ \delta_3^l\ \delta_4^l\ \delta_5^l\right)\cdot\begin{pmatrix}\left[\left(w_{11}^l\right)\sigma'\left(z_1^{l-1}\right)\left(w_{13}^{l-1}\right) + \left(w_{12}^l\right)\sigma'\left(z_2^{l-1}\right)\left(w_{23}^{l-1}\right) + \left(w_{13}^l\right)\sigma'\left(z_3^{l-1}\right)\left(w_{33}^{l-1}\right) + \left(w_{14}^l\right)\sigma'\left(z_4^{l-1}\right)\left(w_{43}^{l-1}\right) + \left(w_{15}^l\right)\sigma'\left(z_5^{l-1}\right)\left(w_{53}^{l-1}\right)\right] \\ \left[\left(w_{21}^l\right)\sigma'\left(z_1^{l-1}\right)\left(w_{13}^{l-1}\right) + \left(w_{22}^l\right)\sigma'\left(z_2^{l-1}\right)\left(w_{23}^{l-1}\right) + \left(w_{23}^l\right)\sigma'\left(z_3^{l-1}\right)\left(w_{33}^{l-1}\right) + \left(w_{24}^l\right)\sigma'\left(z_4^{l-1}\right)\left(w_{43}^{l-1}\right) + \left(w_{25}^l\right)\sigma'\left(z_5^{l-1}\right)\left(w_{53}^{l-1}\right)\right] \\ \left[\left(w_{31}^l\right)\sigma'\left(z_1^{l-1}\right)\left(w_{13}^{l-1}\right) + \left(w_{32}^l\right)\sigma'\left(z_2^{l-1}\right)\left(w_{23}^{l-1}\right) + \left(w_{33}^l\right)\sigma'\left(z_3^{l-1}\right)\left(w_{33}^{l-1}\right) + \left(w_{34}^l\right)\sigma'\left(z_4^{l-1}\right)\left(w_{43}^{l-1}\right) + \left(w_{35}^l\right)\sigma'\left(z_5^{l-1}\right)\left(w_{53}^{l-1}\right)\right] \\ \left[\left(w_{41}^l\right)\sigma'\left(z_1^{l-1}\right)\left(w_{13}^{l-1}\right) + \left(w_{42}^l\right)\sigma'\left(z_2^{l-1}\right)\left(w_{23}^{l-1}\right) + \left(w_{43}^l\right)\sigma'\left(z_3^{l-1}\right)\left(w_{33}^{l-1}\right) + \left(w_{44}^l\right)\sigma'\left(z_4^{l-1}\right)\left(w_{43}^{l-1}\right) + \left(w_{45}^l\right)\sigma'\left(z_5^{l-1}\right)\left(w_{53}^{l-1}\right)\right] \\ \left[\left(w_{51}^l\right)\sigma'\left(z_1^{l-1}\right)\left(w_{13}^{l-1}\right) + \left(w_{52}^l\right)\sigma'\left(z_2^{l-1}\right)\left(w_{23}^{l-1}\right) + \left(w_{53}^l\right)\sigma'\left(z_3^{l-1}\right)\left(w_{33}^{l-1}\right) + \left(w_{54}^l\right)\sigma'\left(z_4^{l-1}\right)\left(w_{43}^{l-1}\right) + \left(w_{55}^l\right)\sigma'\left(z_5^{l-1}\right)\left(w_{53}^{l-1}\right)\right]\end{pmatrix}\right]\left[\sigma'\left(z_3^{l-2}\right)\left(a_4^{l-3}\right)\right]$$

$$\begin{pmatrix} w_{13}^{l-1} \\ w_{23}^{l-1} \\ w_{33}^{l-1} \\ w_{43}^{l-1} \\ w_{53}^{l-1} \end{pmatrix}^T \cdot \begin{pmatrix} w_{11}^l & w_{12}^l & w_{13}^l & w_{14}^l & w_{15}^l \\ w_{21}^l & w_{22}^l & w_{23}^l & w_{24}^l & w_{25}^l \\ w_{31}^l & w_{32}^l & w_{33}^l & w_{34}^l & w_{35}^l \\ w_{41}^l & w_{42}^l & w_{43}^l & w_{44}^l & w_{45}^l \\ w_{51}^l & w_{52}^l & w_{53}^l & w_{54}^l & w_{55}^l \end{pmatrix}^T \cdot \begin{pmatrix} \delta_1^l \\ \delta_2^l \\ \delta_3^l \\ \delta_4^l \\ \delta_5^l \end{pmatrix} \odot \begin{pmatrix} \sigma'\left(z_1^{l-1}\right) \\ \sigma'\left(z_2^{l-1}\right) \\ \sigma'\left(z_3^{l-1}\right) \\ \sigma'\left(z_4^{l-1}\right) \\ \sigma'\left(z_5^{l-1}\right) \end{pmatrix}$$

$$\left[\left(w_{13}^{l-1}\ w_{23}^{l-1}\ w_{33}^{l-1}\ w_{43}^{l-1}\ w_{53}^{l-1}\right)\right] \cdot \begin{pmatrix} w_{11}^l & w_{21}^l & w_{31}^l & w_{41}^l & w_{51}^l \\ w_{12}^l & w_{22}^l & w_{32}^l & w_{42}^l & w_{52}^l \\ w_{13}^l & w_{23}^l & w_{33}^l & w_{43}^l & w_{53}^l \\ w_{14}^l & w_{24}^l & w_{34}^l & w_{44}^l & w_{54}^l \\ w_{15}^l & w_{25}^l & w_{35}^l & w_{45}^l & w_{55}^l \end{pmatrix} \cdot \begin{pmatrix} \delta_1^l \\ \delta_2^l \\ \delta_3^l \\ \delta_4^l \\ \delta_5^l \end{pmatrix} \odot \begin{pmatrix} \sigma'\left(z_1^{l-1}\right) \\ \sigma'\left(z_2^{l-1}\right) \\ \sigma'\left(z_3^{l-1}\right) \\ \sigma'\left(z_4^{l-1}\right) \\ \sigma'\left(z_5^{l-1}\right) \end{pmatrix}$$

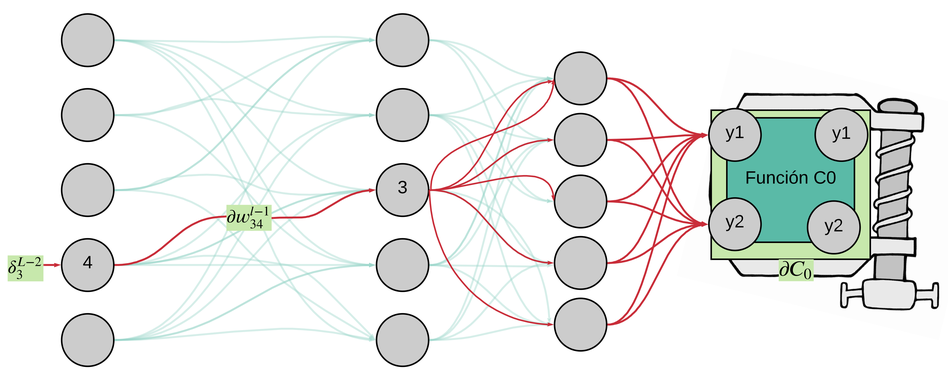
$$\left[\left[w_3^{l-1}\right]^T \cdot \left\{\left[\left(w^l\right)^T \cdot \delta^l\right] \odot \sigma'\left(z^{l-1}\right)\right\}\right]\left[\sigma'\left(z_3^{l-2}\right)\left(a_4^{l-3}\right)\right]$$

$$\left[\left(w_3^{l-1}\right)^T \cdot \left\{\delta^{l-1}\right\}\right]\sigma'\left(z_3^{l-2}\right)\left(a_4^{l-3}\right)$$

$$\left\{\delta_3^{l-2}\right\}\left(a_4^{l-3}\right)$$

$$\delta_3^{L-2} = \left[\left(w_3^{l-1}\right)^T \cdot \left\{\delta^{l-1}\right\}\right]\sigma'\left(z_3^{l-2}\right)$$

$$\delta^{L-2} = \left[\left(w^{l-1}\right)^T \cdot \left\{\delta^{l-1}\right\}\right]\sigma'\left(z^{l-2}\right)$$



$$\delta_2^L = \left(a_2^l - y_2\right)\sigma'\left(z_2^l\right)$$

$$\delta^L = \left[\left(\overrightarrow{a_L} - \overrightarrow{y_L}\right) \odot \sigma'\left(z^L\right)\right]$$

$$\delta_3^{L-1} = \begin{pmatrix} w_{13}^l \\ w_{23}^l \\ w_{33}^l \\ w_{43}^l \\ w_{53}^l \end{pmatrix}^T \cdot \delta^L \left[\sigma'\left(z_3^{l-1}\right)\right]$$

$$\delta^{L-1} = \left(\left\{\overrightarrow{w^L}\right\} \cdot \left\{\overrightarrow{\delta^L}\right\}\right) \odot \left[\sigma'\left(z^{l-1}\right)\right]$$

$$\delta_3^{L-2} = \left[\left(w_3^{l-1}\right)^T \cdot \left\{\delta^{l-1}\right\}\right]\sigma'\left(z_3^{l-2}\right)$$

$$\delta^{L-2} = \left[\left(w^{l-1}\right)^T \cdot \left\{\delta^{l-1}\right\}\right]\sigma'\left(z^{l-2}\right)$$