

the first network can be represented as follows:

$$\vec{a}^{(1)} = w^{(1)} \vec{a}^{(0)} + \vec{b}^{(1)}$$

$$\vec{a}^{(2)} = w^{(2)} \vec{a}^{(1)} + \vec{b}^{(2)}$$

$$\vec{a}^{(3)} = w^{(3)} \vec{a}^{(2)} + \vec{b}^{(3)}$$

$$\begin{aligned} \vec{a}^{(3)} &= w^{(3)} (w^{(2)} (w^{(1)} \vec{a}^{(0)} + \vec{b}^{(1)}) + \vec{b}^{(2)}) + \vec{b}^{(3)} \\ &= w^{(3)} w^{(2)} w^{(1)} \vec{a}^{(0)} + w^{(3)} w^{(2)} \vec{b}^{(1)} + w^{(3)} \vec{b}^{(2)} + \vec{b}^{(3)} \end{aligned}$$

the second neural network can be represented as follows..

$$\vec{\hat{a}} = \vec{\hat{w}} \vec{a}^{(0)} + \vec{\hat{b}}$$

$$\vec{\hat{a}} = \vec{a}^{(3)}$$

\Rightarrow

$$\vec{\hat{w}} = w^{(3)} w^{(2)} w^{(1)}$$

$$\vec{\hat{b}} = w^{(3)} w^{(2)} w^{(1)} \vec{b}^{(1)} + w^{(3)} \vec{b}^{(2)} + \vec{b}^{(3)}$$