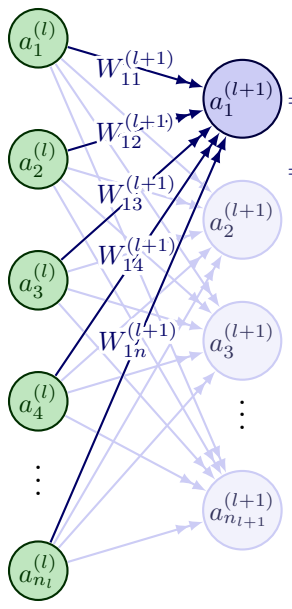

$$= \text{act}_{l+1}\left(W_{11}^{(l+1)}a_0^{(0)} + W_{12}^{(l+1)}a_1^{(0)} + \ldots + W_{1n}^{(l+1)}a_n^{(0)} + b_1^{(l+1)}\right)$$

$$= \text{act}_{l+1}\left(\sum_{i=1}^{n} W_{1i}^{(l+1)}a_i^{(0)} + b_1^{(l+1)}\right)$$

$$\begin{pmatrix} a_1^{(l+1)} \\ a_2^{(l+1)} \\ \vdots \\ a_{n_{l+1}}^{(l+1)} \end{pmatrix} = \text{act}_{l+1}\left[\begin{pmatrix} W_{11}^{(l+1)} & W_{12}^{(l+1)} & \cdots & W_{1n_l}^{(l+1)} \\ W_{21}^{(l+1)} & W_{22}^{(l+1)} & \cdots & W_{2n_l}^{(l+1)} \\ \vdots & \vdots & \ddots & \vdots \\ W_{n_{l+1}1}^{(l+1)} & W_{n_{l+1}2}^{(l+1)} & \cdots & W_{n_{l+1}n_l}^{(l+1)} \end{pmatrix}\begin{pmatrix} a_1^{(l)} \\ a_2^{(l)} \\ \vdots \\ a_{n_l}^{(l)} \end{pmatrix} + \begin{pmatrix} b_1^{(l+1)} \\ b_2^{(l+1)} \\ \vdots \\ b_m^{(l+1)} \end{pmatrix}\right]$$

$$a^{(l+1)} = \text{act}_{l+1}\left(\mathbf{W}^{(l+1)}a^{(l)} + \mathbf{b}^{(l+1)}\right)$$