

$$\left[ \begin{array}{c} w^{(k)} \in \mathbb{R}^{m^{(k-1)} \times m^{(k)}} \end{array} \right] = \left[ \begin{array}{c} U \in \mathbb{R}^{m^{(k-1)} \times m^{(k-1)}} \end{array} \right] \left[ \begin{array}{c} S \in \mathbb{R}^{m^{(k-1)} \times m^{(k)}} \end{array} \right] \left[ \begin{array}{c} V \in \mathbb{R}^{m^{(k)} \times m^{(k)}} \end{array} \right]$$

$$\left[ \begin{array}{c} w^{(k)} \in \mathbb{R}^{m^{(k-1)} \times m^{(k)}} \end{array} \right] \approx \left[ \begin{array}{c} U' \in \mathbb{R}^{m^{(k-1)} \times n} \end{array} \right] \left[ \begin{array}{c} S' \in \mathbb{R}^{n \times n} \end{array} \right] \left[ \begin{array}{c} V'^T \in \mathbb{R}^{n \times m^{(k)}} \end{array} \right]$$

$$\left[ \begin{array}{c} w^{(k)} \in \mathbb{R}^{m^{(k-1)} \times m^{(k)}} \end{array} \right] \approx \left[ \begin{array}{c} U_{w^{(k)}} = U' S' \end{array} \right] \left[ \begin{array}{c} V_{w^{(k)}} = V'^T \end{array} \right]$$