

 $\left(z_1^{(l)}, \dots, z_{n_l}^{(l)}\right) \in \mathbb{R}^{d_l \times n_l}$

 $R^{(l)} \in \mathbb{R}^{d_l \times n_l}$

 $R^{(1)} \in \mathbb{R}^{n_1 \times n_1 \times r_1}$

 $\left(z_1^{(1)},\dots,z_m^{(1)}\right) \in \mathbb{R}^{d_1 \times n_1}$

 $(z_1^{(2)}, \dots, z_{n_2}^{(2)}) \in \mathbb{R}^{d_2 \times n_2}$