Homework 3

周雨豪 2018013399 软件92

(1)

$$z = W_{Layer1}x = \begin{bmatrix} 1.0 & 2.0 \\ 0.5 & 1.2 \\ -0.5 & 1.0 \end{bmatrix} \begin{bmatrix} 0.2 \\ 0.5 \end{bmatrix} = \begin{bmatrix} 1.2 \\ 0.7 \\ 0.4 \end{bmatrix}$$

$$a = \sigma(z) = \begin{bmatrix} 0.7685 \\ 0.6682 \\ 0.5987 \end{bmatrix}$$

$$output = W_{Layer2}a = \begin{bmatrix} -0.5 & 1.0 & 0.5 \\ 1.0 & -0.5 & 0.2 \end{bmatrix} \begin{bmatrix} 0.7685 \\ 0.6682 \\ 0.5987 \end{bmatrix} = \begin{bmatrix} 0.5833 \\ 0.5542 \end{bmatrix}$$

$$Loss = 0.6787$$

(2)

$$W_{Layer1} = \begin{bmatrix} 0.9974 & 1.9934 \\ 0.5033 & 1.2082 \\ -0.4993 & 1.0018 \end{bmatrix}$$

$$W_{Layer2} = \begin{bmatrix} -0.4621 & 1.0329 & 0.5295 \\ 0.9621 & -0.5329 & 0.1705 \end{bmatrix}$$