EE7403 2020-2021

5. (a) (i) vector form: $y = Wx + \theta$

scalar form: $y_i = \sum_{j=1}^{100} w_{ij} \cdot x_j + \theta_i$

(ii) num of trainable parameters = $98 \times (100+1) = 9898$

multiplication = $100 \times 98 = 9800$

summation = $100 \times 98 = 9800$

(iii) $R = \frac{\text{num. of outputs}}{\text{num. of parameters}} = \frac{98}{9898} = \frac{1}{101}$

(b) (i) $y_i^k = \sum_{j=-1}^{1} w_j \cdot x_i + \theta^k$

(ii) num of trainable parameters = $(3+1) \times 20 = 80$

multiplication = $3 \times (99-1) \times 20 = 5880$

summation = $3 \times (99-1) \times 20 = 5880$

(iii) $R = \frac{20 \times 98}{4 \times 20} = \frac{49}{2}$