Department of Computer Engineering

Artificial Intelligence

Assignment 6 Part 2

Dr. Rohban

Parsa Mohammadian — 98102284

December 24, 2021
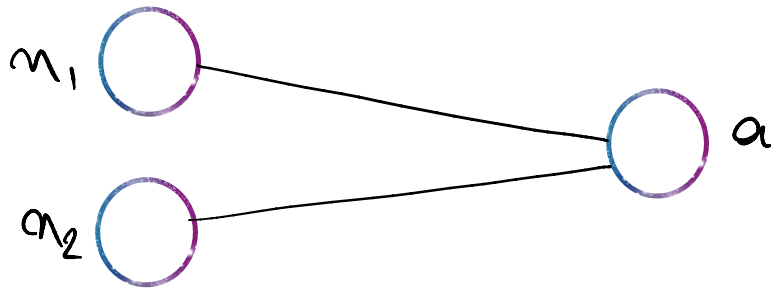
Contents

1

1.1

$$\left.\begin{array}{l} f(w,x) = \dfrac{1}{1 + e^{-(w_0 x_0 + w_1 x_1 + w_2)}} \\[2mm] w_0 = 2, x_0 = 1, w_1 = 3, x_1 = 2, w_2 = 3 \end{array}\right\} \Rightarrow f(w,x) = \dfrac{1}{1 + e^{-(-2+6-3)}}$$

$$= \frac{1}{1 + e^{-1}}$$

$$= \frac{1}{1 + \frac{1}{e}} = \frac{1}{\frac{1+e}{e}} = \frac{e}{1+e} = 0.73105857863$$

$$\partial$$

1.2

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activation func. : $g_{(x)} = \dfrac{1}{1 + e^{-x}}$ (sigmoid)

weighted sum func. : $Z_{(w,x)} = w_0 x_0 + w_1 x_1 + w_2 x_2$
                                                                            bias

$a = g(z(w,x)) = f(w,x)$

$-1 \times e^{1 \times \frac{-1}{x^2}} \times 1 \times \frac{-1}{x^2}$ $\Big\}$ $e^{1 \times \frac{-1}{x^2}} \times 1 \times \frac{-1}{x^2}$

$1 \times \frac{-1}{x^2}$ $\Big\}$ $\frac{-1}{x^2}$

$- \left(\dfrac{1+e}{e}\right)^{2}$ $-\left(\dfrac{1+e}{e}\right)^{2}$ $\Big\}$ 1

$- e^{-1} \left(\dfrac{1+e}{e}\right)^{2}$ $e^{-1} \left(\dfrac{1+e}{e}\right)^{2}$