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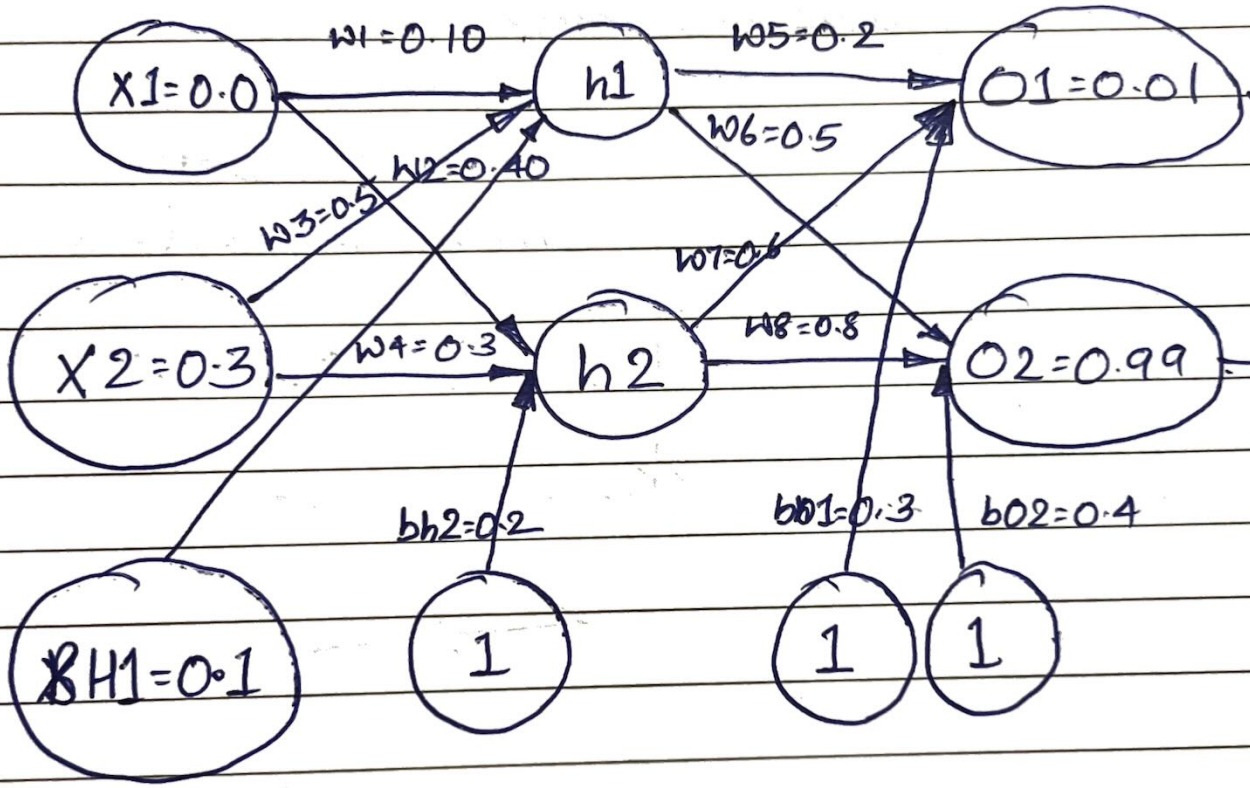
HW-2 HXD220000



$h1 = \text{sigmoid}(0 \times 0.1 + 0.5 \times 0.3 + 0.1 \times 1)$

$= \text{sigmoid}(0.25)$

$= 0.5622$

$h2 = \text{sigmoid}(0 \times 0.4 + 0.3 \times 0.3 + 0.2 \times 1)$

$= \text{sigmoid}(0 + 0.29)$

$= 0.572$

$\hat{O}_1 = 0.2 \times h_1 + 0.3 \times 1 + 0.6 \times h_2$

$= 0.2 \times 0.5622 + 0.3 \times 1 + 0.6 \times 0.572$

$= 0.75564$

$\hat{O}_2 = 0.5 \times h_1 + 0.8 \times h_2 + 0.4 \times 1$

$= 0.5 \times 0.5622 + 0.8 \times 0.572 + 0.4$

$= 1.1387$

$E_1 = \frac{1}{2}(0.75564 - 0.01)^2$

$= 0.278$

$E_2 = \frac{1}{2}(1.1387 - 0.99)^2$

$= 0.0110$

$E = 0.289$

$\delta_1^3 = EX$ gradient

$$\delta_1^3 = ((0_1 - 0.01) + (0_2 - 0.99)) \times 1$$
$$= 0.894$$

$$w_5 = 0.2 - (\delta_1^3 \times h_1) \times 10$$
$$= -4.828$$

$$w_6 = 0.5 - (\delta_1^3 \times h_1) \times 10$$
$$= -4.527$$

$$w_7 = 0.6 - (\delta_8^3 \times h_2) \times 10$$
$$= -4.575$$

$$w_8 = 0.8 - (\delta_1^3 \times h_2) \times 10 = +4.3154$$

$$bo_1 = 0.3 - \delta_1^3 \times 10 = -8.634$$

$$bo_2 = 0.4 - \delta_1^3 \times 10 = -8.543$$

$$\delta_1^2 = h_1 \times (1 - h_1) \times (0.2 \times (0_1 - 0.01) + 0.5 \times (0_2 - 0.99))$$
$$= 0.055$$

$$\delta_2^2 = h_2 \times (1 - h_2) \times (0.6 \times (0_1 - 0.01) + 0.8 \times (0_2 - 0.99))$$
$$= 0.0991$$

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$W_1 = 0.1 - (\delta_1^2 \times 0) \times 10$

$= 0.1$

$W_2 = 0.4 - 0 = 0.4$

$W_3 = 0.2028$ $\quad bh1 = -0.25$

$W_4 = 0.002$ $\quad bh2 = -8.743$

All calculations are in notebook