Het Bhatt (D003)

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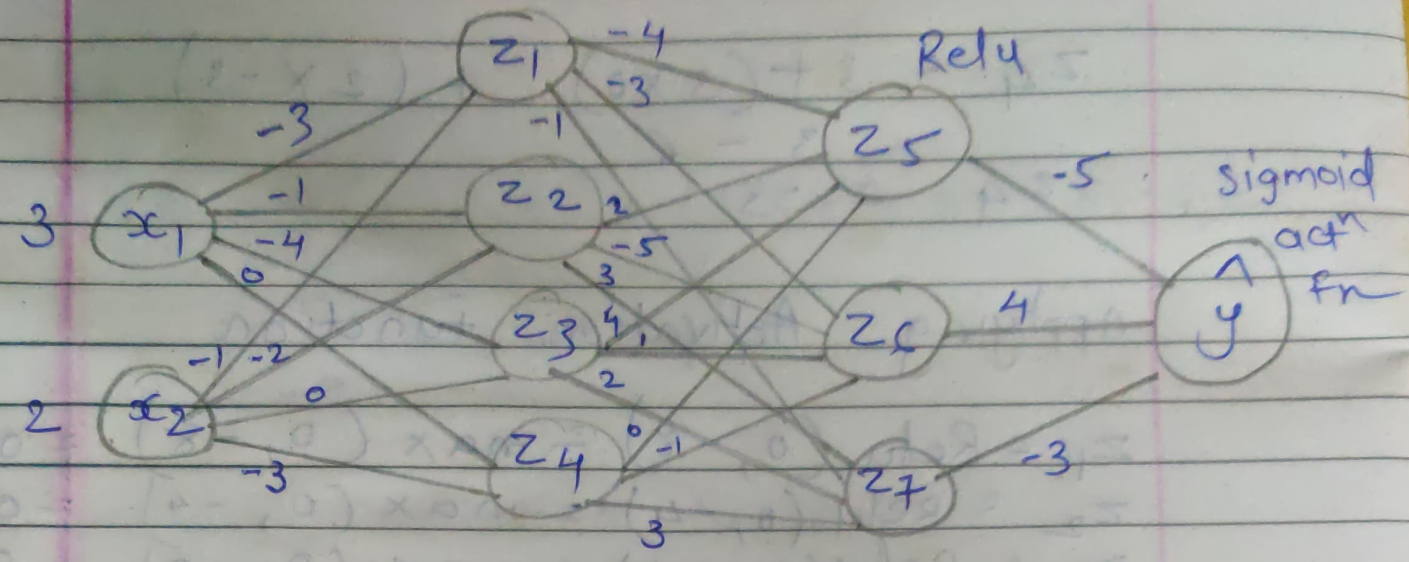
Relu activation funct^n



$$z = w_0 + \sum_{i=01}^{n} w_i x_i \; ; \; \text{Relu} = \max(0, z),$$

$$\text{sigmoid} = \frac{1}{1+e^{-z}}$$

Iteration for hidden layer 1

$$z_1 = 3 + (3 \times (-3)) + (2 \times (-1))$$
$$= 3 + (-9) + (-2)$$
$$z_1 = -8$$

$$z_2 = 3 + (2 \times (-2)) + (3 \times (-1))$$
$$= 3 - 4 - 3$$
$$z_2 = -4$$

$$z_3 = 3 + (3 \times (-4)) + (2 \times 0)$$
$$= 3 - 12$$
$$z_3 = -9$$

$$z_4 = 3 + (3 \times 0) + (2 \times -3)$$
$$= 3 - 6$$
$$z_4 = -3$$

Applying Activation function

$z_1 = \text{Relu}(0, -8) = \max(0, -8) = 0$
$z_2 = \text{Relu}(0, -4) = \max(0, -4) = 0$
$z_3 = \text{Relu}(0, -9) = \max(0, -9) = 0$
$z_4 = \text{Relu}(0, -3) = \max(0, -3) = 0$

Iteration for hidden layer 2

$$z_5 = 3 + (0 \times (-4)) + (0 \times 2) + (0 \times 4) + (6 \times 0)$$
$$z_5 = 3$$

$$z_6 = 3 + (0 \times -3) + (0 \times -5) + (0 \times 1) + (0 \times -1)$$
$$z_6 = 3$$

$$z_7 = 3 \times (0 \times -1) + (0 \times 3) + (0 \times 2) + (6 \times -3)$$
$$z_7 = 3$$

Applying activation function

$z_5 = \text{Relu}(0, 3) = \max(0, 3) = 3$
$z_6 = \text{Relu}(0, 3) = \max(0, 3) = 3$
$z_7 = \text{Relu}(0, 3) = \max(0, 3) = 3$

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Now

$$\hat{y} = 3 + (3 \times -5) + (3 \times 4) + (3 \times -3)$$
$$= 3 - 15 + 12 - 9$$
$$= -12 + 12 - 9$$
$$\hat{y} = -9$$

Applying activation function

$$\hat{y} = \frac{1}{1 + e^{-(-9)}} = \frac{1}{1 + e^{9}} = 0.0001234$$