MLP Calculation Walkthrough

Hidden Layer Computations

Let the inputs be: $x_1 = 2.0$, $x_2 = -1.5$

Neuron 1

$$\begin{aligned} h_1 &= \text{ReLU}(1.2 \cdot 2.0 + (-2.1) \cdot (-1.5) + 0.5) \\ &= \text{ReLU}(2.4 + 3.15 + 0.5) \\ &= \text{ReLU}(6.05) = 6.05 \end{aligned}$$

Neuron 2

$$\begin{aligned} h_2 &= \text{ReLU}(0.5 \cdot 2.0 + 1.0 \cdot (-1.5) + (-1.0)) \\ &= \text{ReLU}(1.0 - 1.5 - 1.0) \\ &= \text{ReLU}(-1.5) = 0 \end{aligned}$$

Output Computation

$$\begin{aligned}\hat{y} &= 1.0 \cdot h_1 + (-1.2) \cdot h_2 + 0.8 \cdot h_3 + (-0.5) \\ &= 1.0 \cdot 6.05 + (-1.2) \cdot 0 + 0.8 \cdot 0 - 0.5 \\ &= 6.05 - 0.5 = \boxed{5.55}\end{aligned}$$