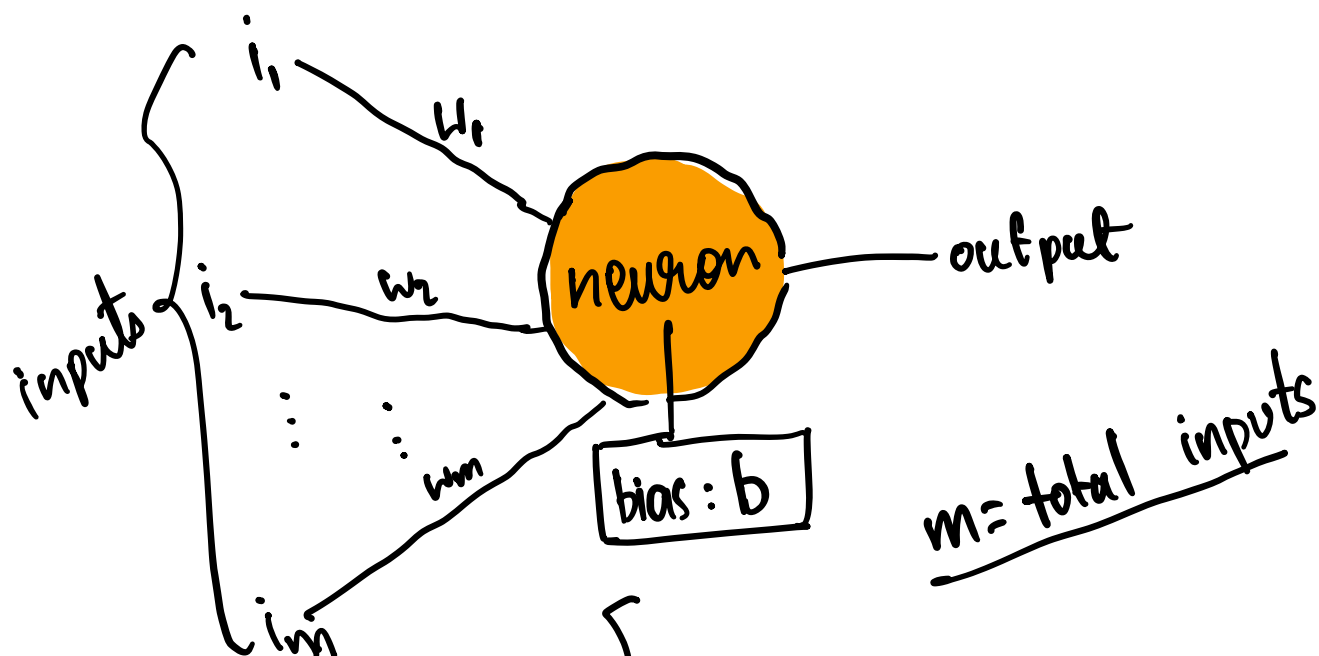


@Shreydan
Notes //
nnfs.io
sentdex.

Neural Networks.



for each input, we
have a weight



& each neuron
has a bias.

$$\text{output} = \left(\sum_{i=1}^m i_j \cdot w_j \right) + b$$

if we have layers, we also take the output
through an activation fⁿ based on data.

Activation Functions.

Step:

$$y = \begin{cases} 0 & , x < 0 \\ 1 & , x \geq 0 \end{cases} \quad \left. \vphantom{\begin{cases} 0 \\ 1 \end{cases}} \right\} \text{linear act}^v \text{fn}$$

Sigmoid:

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

ReLU [Rectified Linear Unit]:

$$y = \begin{cases} x & , x \geq 0 \\ 0 & , x < 0 \end{cases}$$

// also $y = \max(0, x)$

non-linear
act^v
fⁿ

Dense Layer

- (W) Weights shape: no. of inputs \times no. of neurons
- (I) inputs: no. of batches \times input values
Shape
- (B) bias: vector, 1 bias per neuron.

$$\text{output} = \text{activation}_{f^n} (I \cdot W + B)$$

Why we need activation fns:

- to fit better to data especially non-linear data
- for non-linear data:
 - ↳ use ReLU/Sigmoid
- for non-linear actⁿ fns always have at least 2 hidden layers.

Softmax Activation.

1) used for outputs.