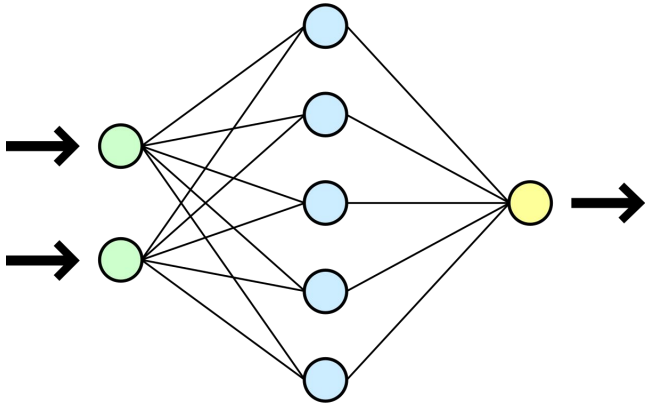

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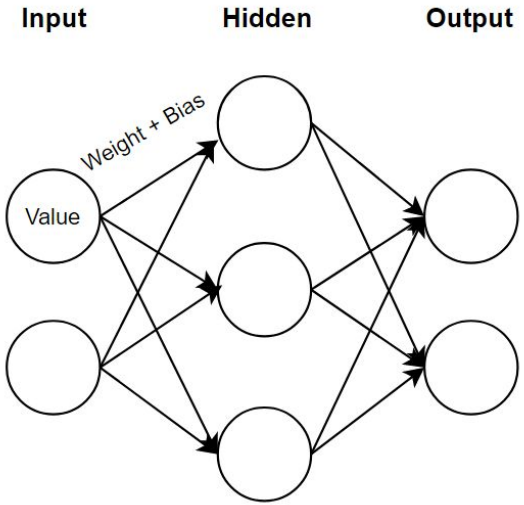
Neural Networks

Layer Parameters

Discord Link in Description

Layer Parameters in Neural Networks

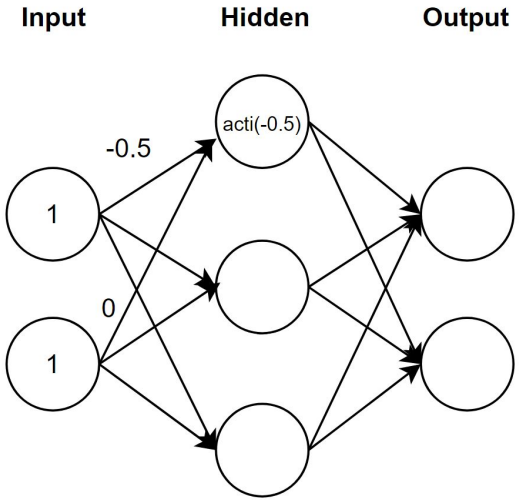
- Weights and Biases
- Layer parameters are learnable and learned during training



Bias in Neural Networks

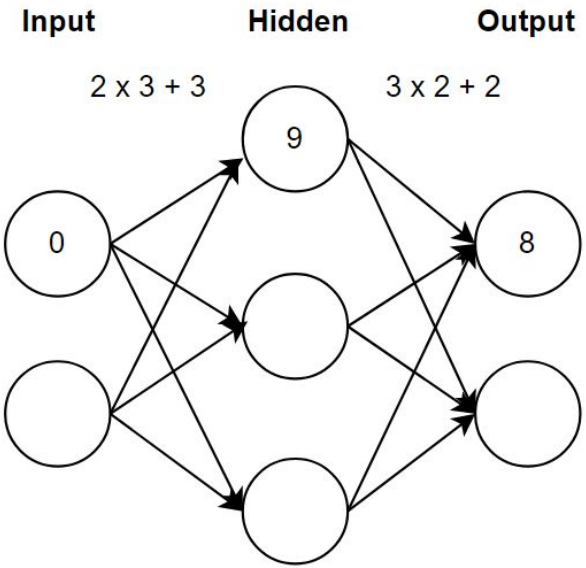
- Determines if a neuron is activated and how much
- Increases the flexibility of the model which is good during training

Output = activation(sum of weights + biases)



How to find the number of Parameters

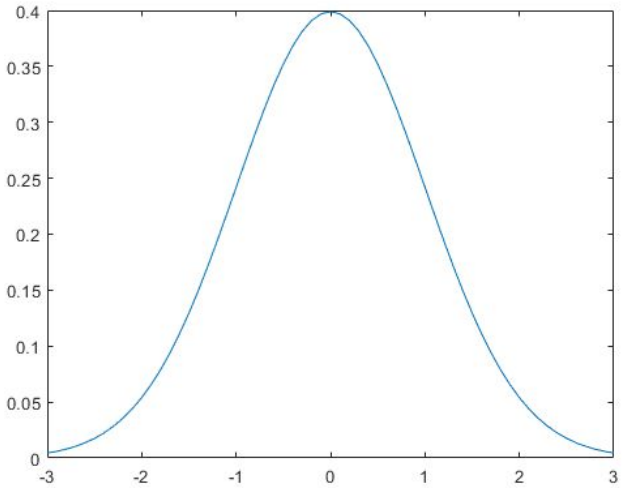
Inputs x Outputs + Biases




```
Model: "sequential"
_________________________________________________________________
Layer (type)                 Output Shape              Param #
=================================================================
dense (Dense)                (None, 2)                 4
_________________________________________________________________
dense_1 (Dense)              (None, 24)                72
_________________________________________________________________
dense_2 (Dense)              (None, 12)                300
_________________________________________________________________
dense_3 (Dense)              (None, 2)                 26
=================================================================
Total params: 402
Trainable params: 402
Non-trainable params: 0
_________________________________________________________________
```

Weight Initialization

- What is it and why do we use it?
- Use a seed if you want to replicate results



Layer weight initializers

- RandomNormal class
- RandomUniform class
- TruncatedNormal class
- Zeros class
- Ones class
- GlorotNormal class
- GlorotUniform class
- Identity class
- Orthogonal class
- Constant class
- VarianceScaling class

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Parameters in CNNs

number of filters x (number of filters x size of filters) + biases