Neural Networks

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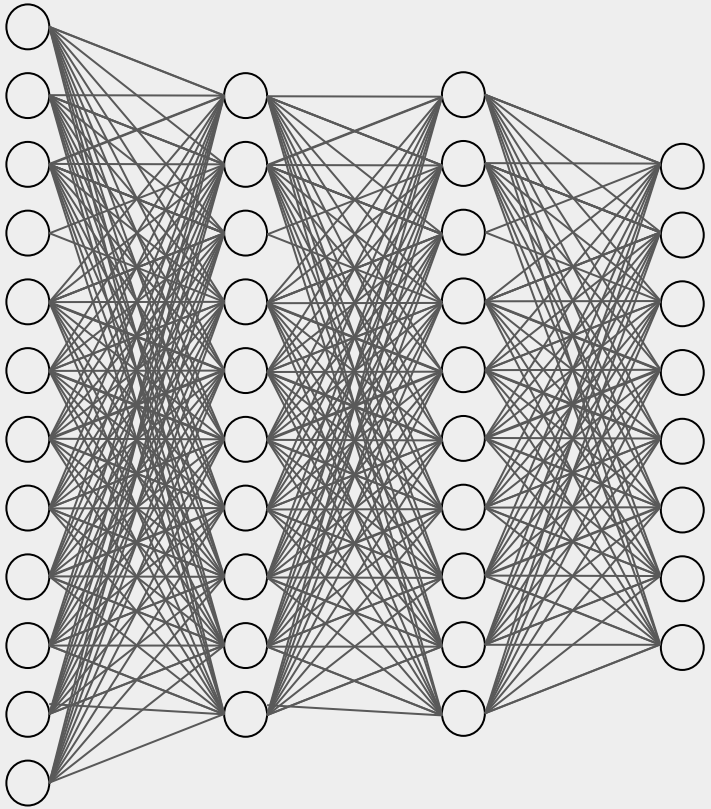
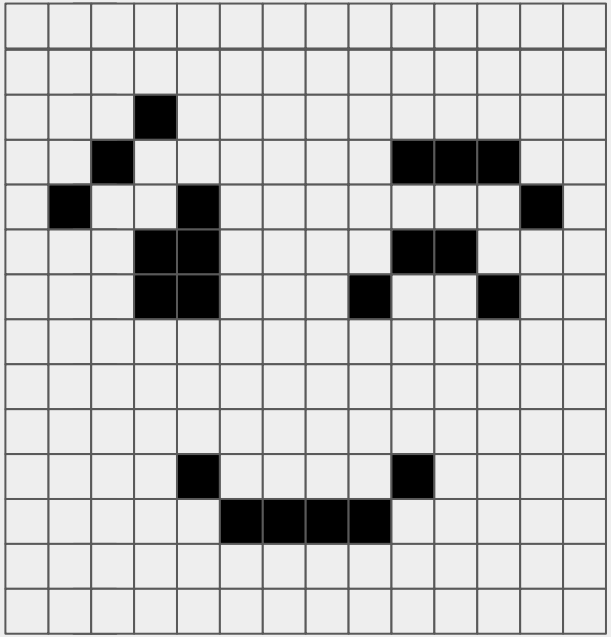
What is a Neural Network?

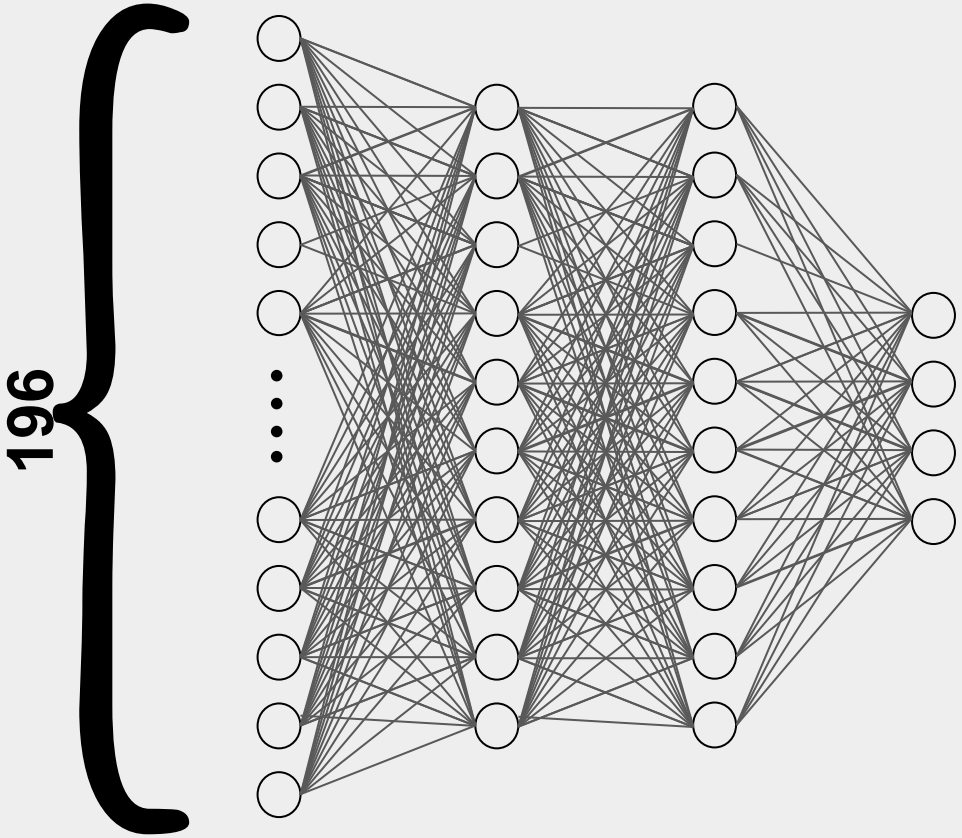
- A neural network is a computational model inspired by the human brain.
- It's composed of interconnected nodes, or 'neurons,' that are arranged in layers.
- Neural Networks are the backbone of AI and machine learning.



Understanding the Neural Net

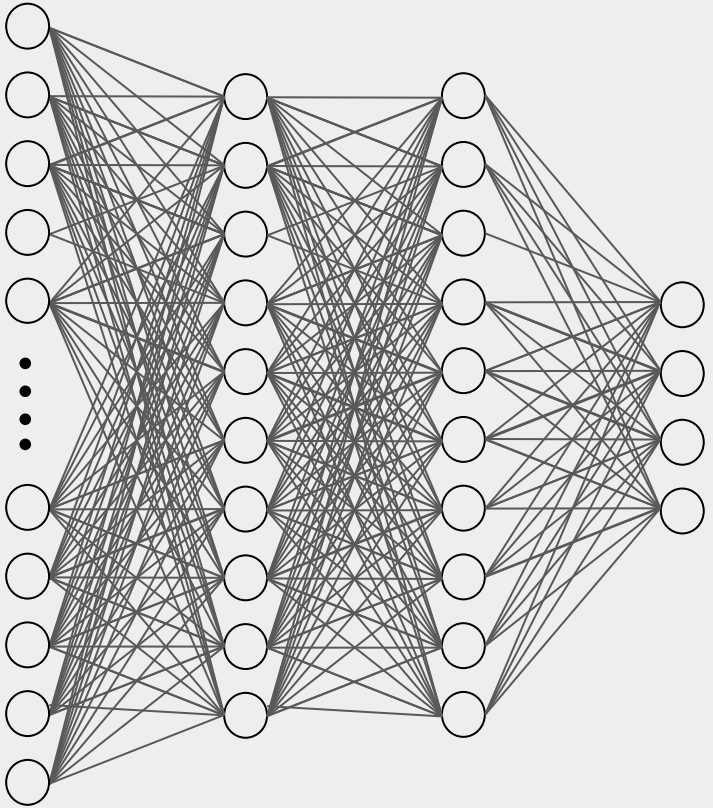
- What are the layers of a neural net?



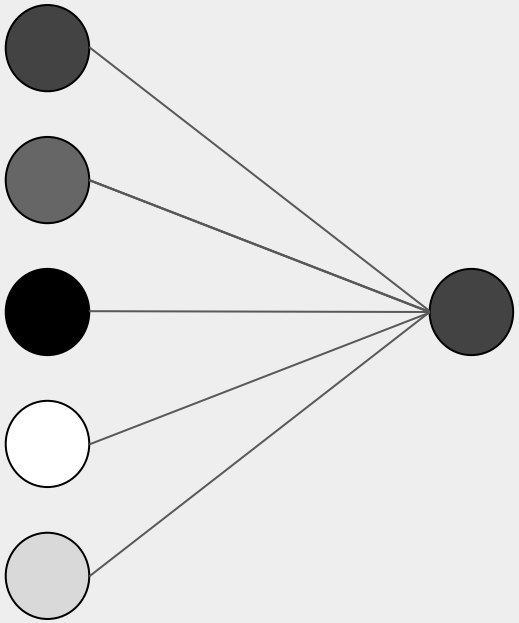


Hidden Layers

- How do you, as a person, identify what face it is?



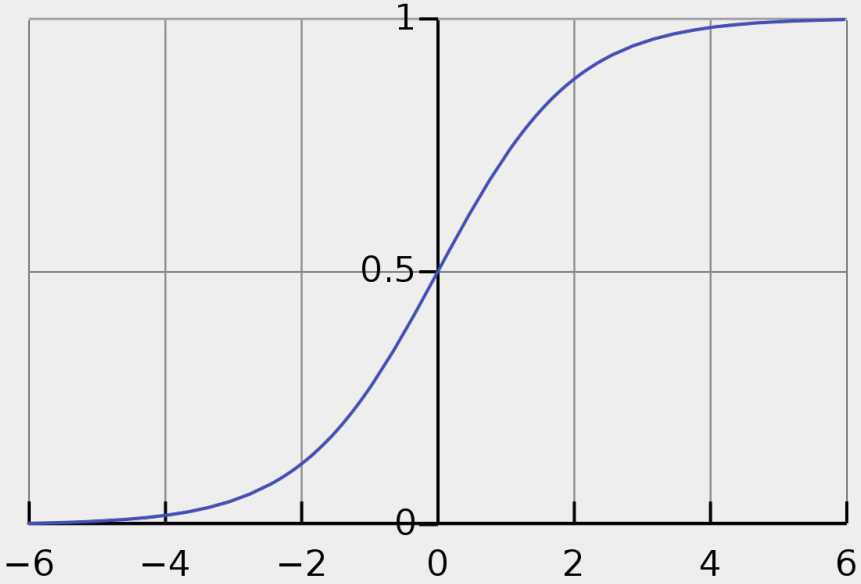
Weights and Biases



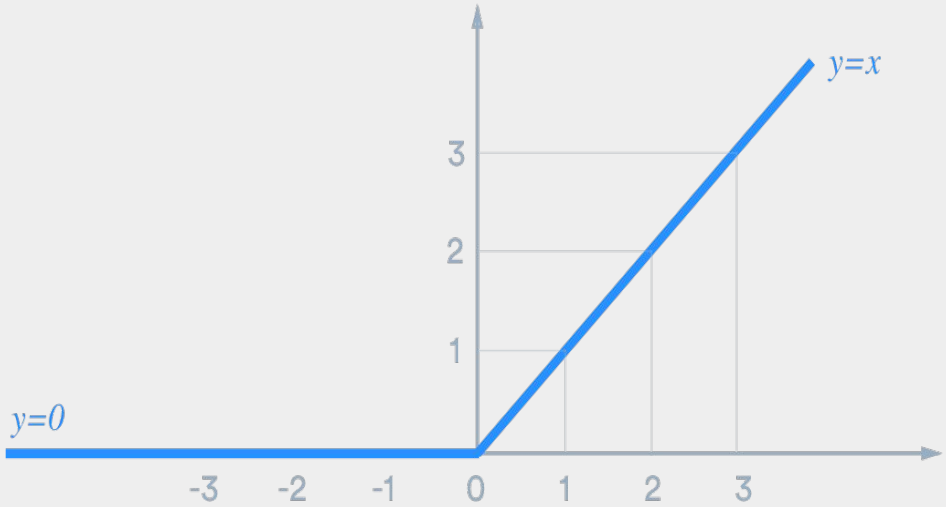
- All edges in the Neural Network have a weight.
- The value of a node is computed by applying an activation function to the sum of the products of the weighted values of the nodes, plus a bias term.
- The way that a neural network “learns” is by changing these weights and biases.

Activation Functions

Sigmoid Function



Relu Function



Cost Function

$$\mathrm{MSE} = \frac{1}{N}\sum_{i=1}^{N} (y_i - \hat{y}_i)^2$$

- Cost Functions are used to determine how close the neural nets prediction was to being correct
- A common cost function is used is the “mean squared error loss function”