

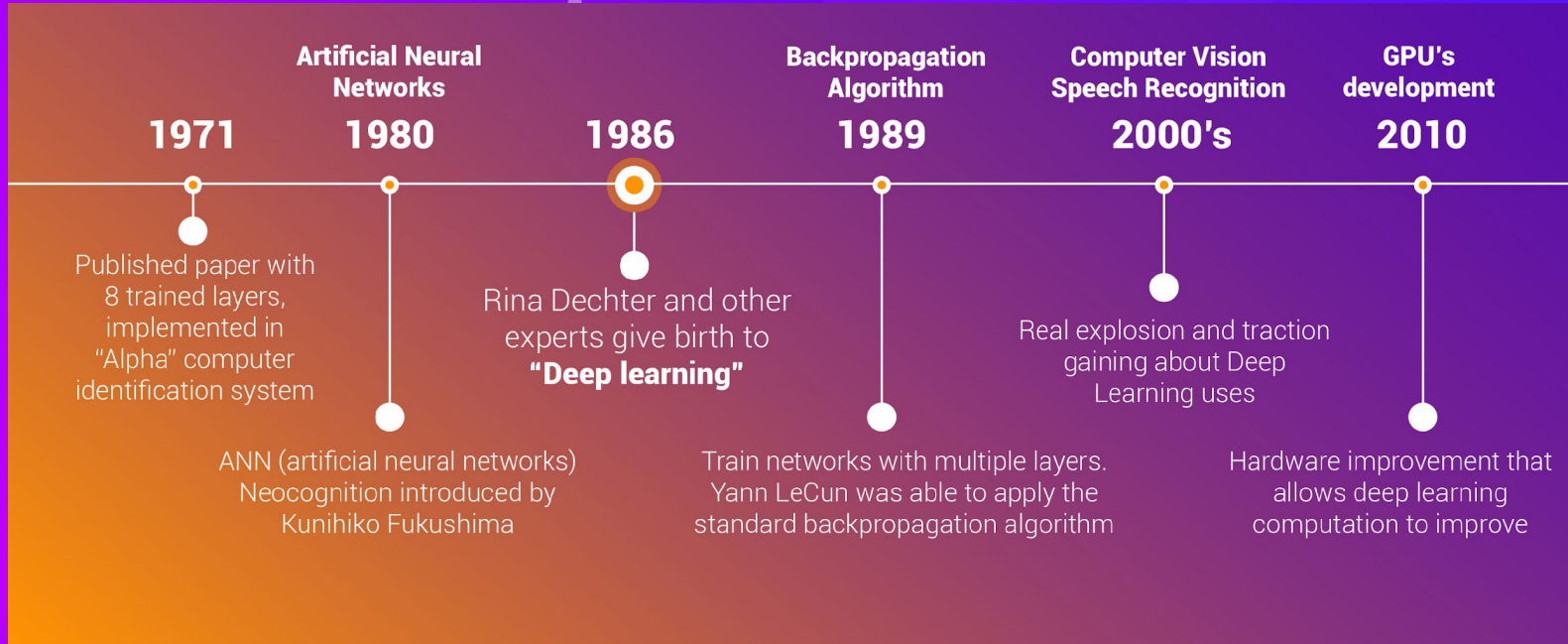
Intro to TensorFlow

Discovering the mystery

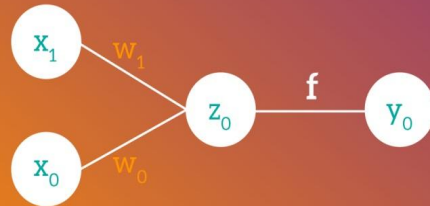


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History of Deep Learning



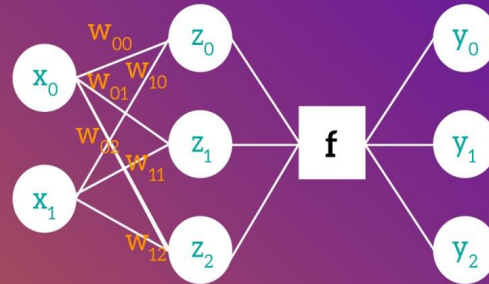
What is a neural network?



Neural networks

$$z = w * x$$

$$y = f(z)$$





is this
a horse?

Output
layer



Oh! It's an unicorn!



Activated
neurons

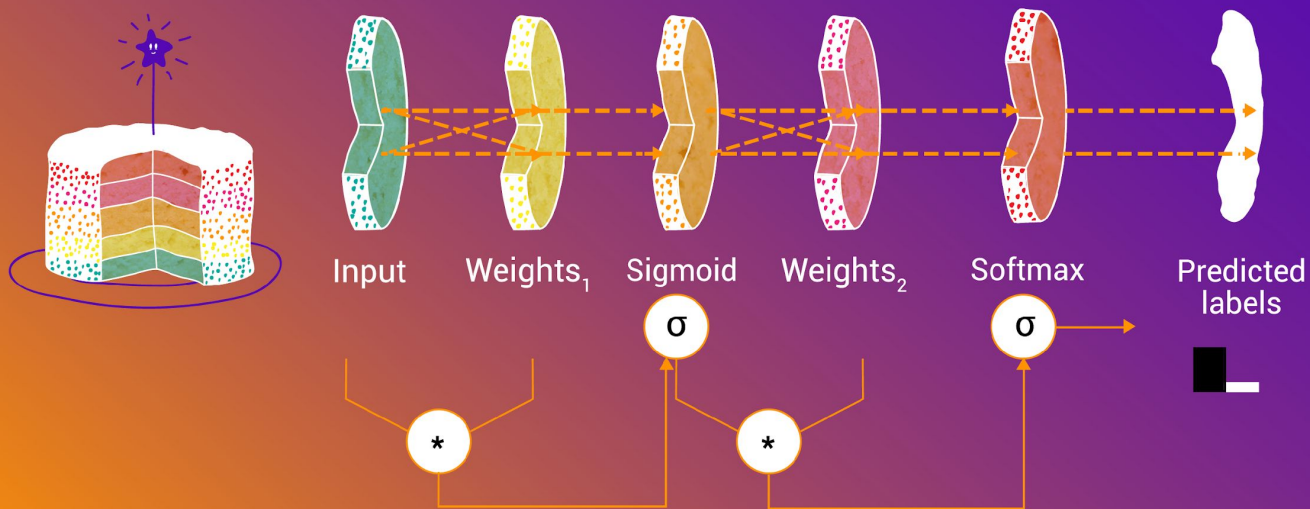


Input
layer



DEEP
NEURAL
NETWORKS

How does a neural network learns?



The main architecture of Tensorflow

• TRAIN

When you train a model, you use variables to hold and update parameters. Variables contains tensors.

Can be shaped and restored. It has an specific class **tf.Variable** class

```
#Create two variables.  
Weights =  
tf.Variable(tf.random_normal([10,200], stddev=0.35),  
            name="weights")
```

```
v1 = tf.Variable(..., name="v1")  
v2 = ff.Variable(..., name="v2")
```

VARIABLES

ARCHITECTURE TIP



During the training phase, you might discover a variable useful value. Weights and biases are variables.

By now you should know what the following terms are:

♥ **Feature:** The input(s) to our model

♥ **Examples:** An input/output pair used for training

♥ **Labels:** The output of the model

♥ **Layer:** A collection of nodes connected together within a neural network.

♥ **Model:** The representation of your neural network

♥ **Dense and Fully Connected (FC):** Each node in one layer is connected to each node in the previous layer.

By now you should know what the following terms are:

♥ **Weights and biases:** The internal variables of model

♥ **Loss:** The discrepancy between the desired output and the actual output

♥ **MSE:** Mean squared error, a type of loss function that counts a small number of large discrepancies as worse than a large number of small ones.

♥ **Gradient Descent:** An algorithm that changes the internal variables a bit at a time to gradually reduce the loss function.

♥ Regression: A model that outputs a single value. For example, an estimate of a house's value.

♥ Classification: A model that outputs a probability distribution across several categories.



THANKS!

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