



MI2

Machine Intelligence

Modern Infrastructure

<http://mi2.live>

**Training CNN
Models with
NVIDIA DIGITS**

What is MI2?

MI2 Webinars focus on the convergence of **machine intelligence** and **modern infrastructure**. Every alternate week, I deliver informative and insightful sessions covering cutting-edge technologies. Each webinar is complemented by a tutorial, code snippets, and a video.

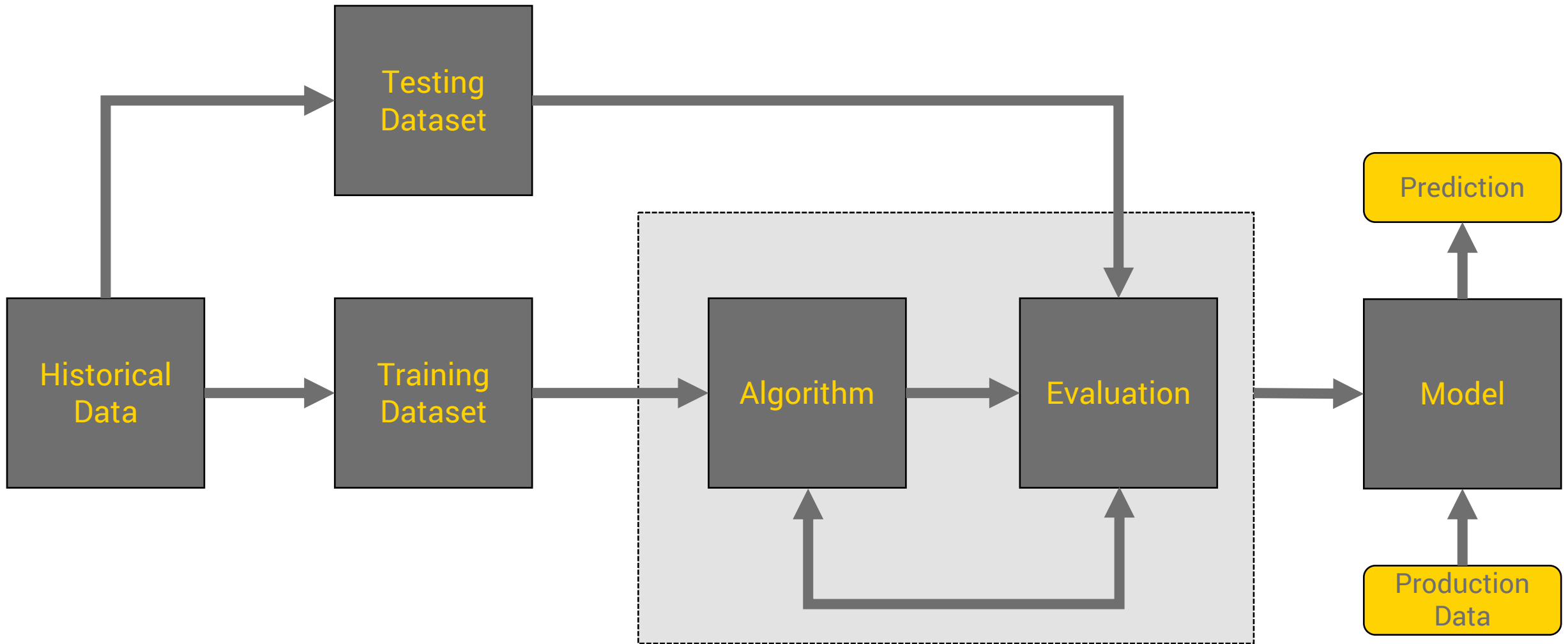
MI2 strives to be an independent and neutral platform for exploring emerging technologies.

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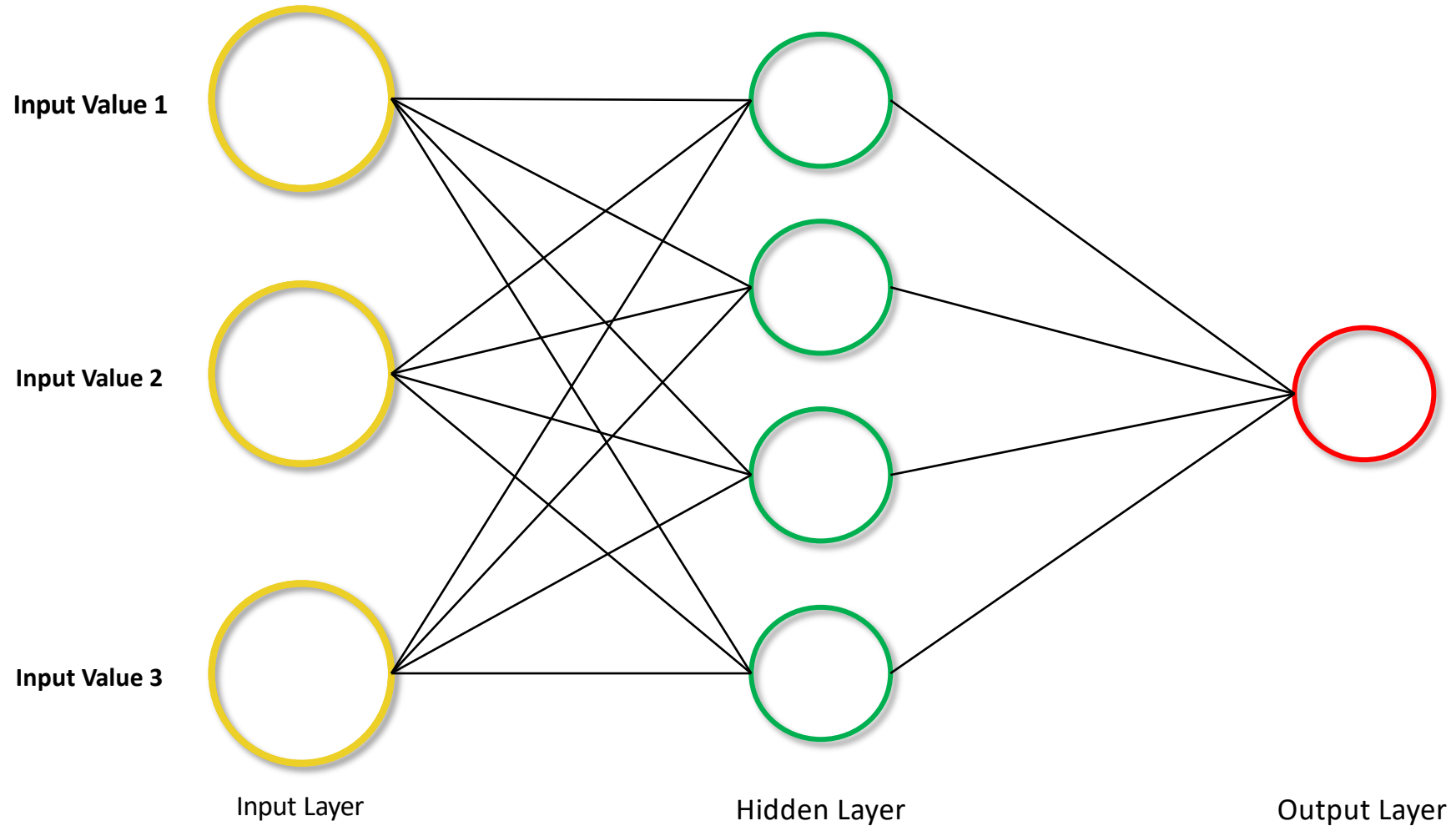
Objectives

- What is a Convolutional Neural Network (CNN)?
- Key Concepts
- Overview of NVIDIA DIGITS
- Demo
- Summary

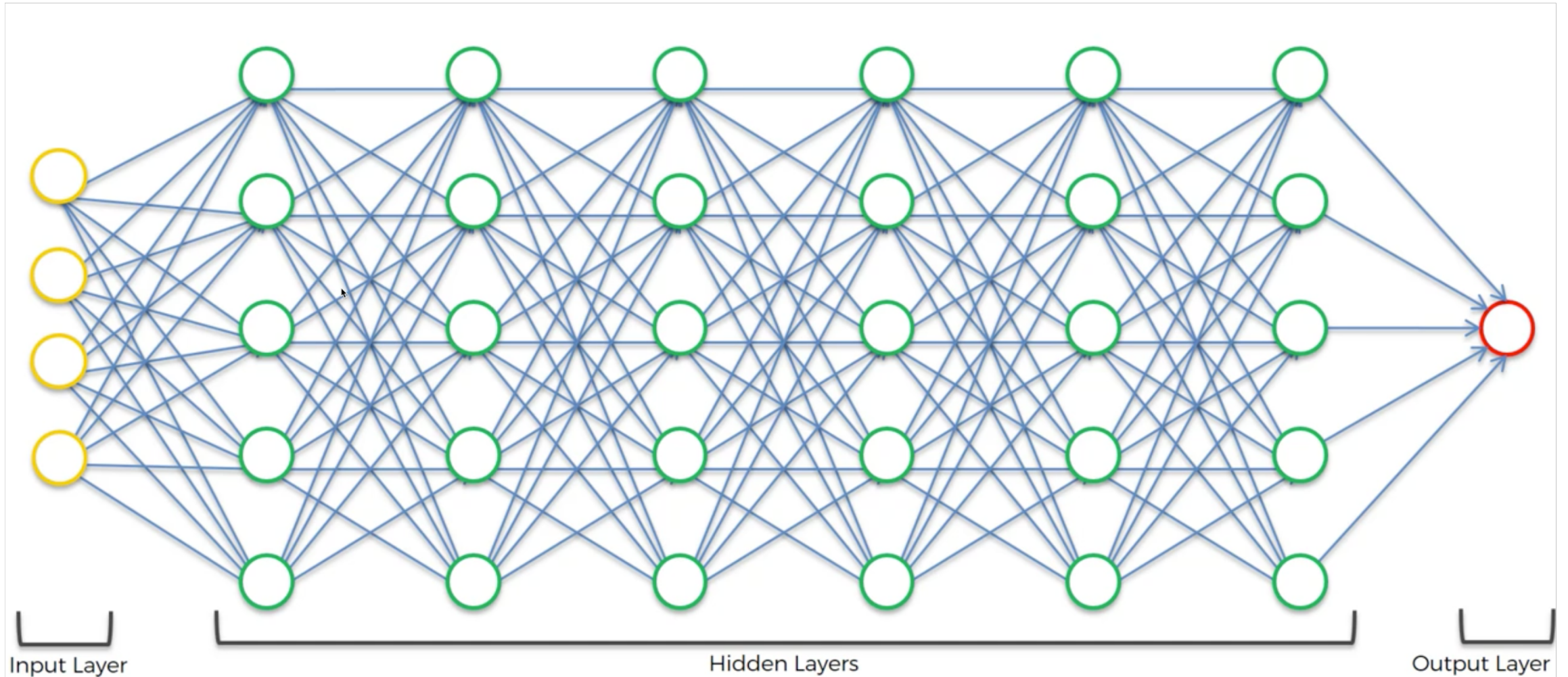
Lifecycle of an ML model



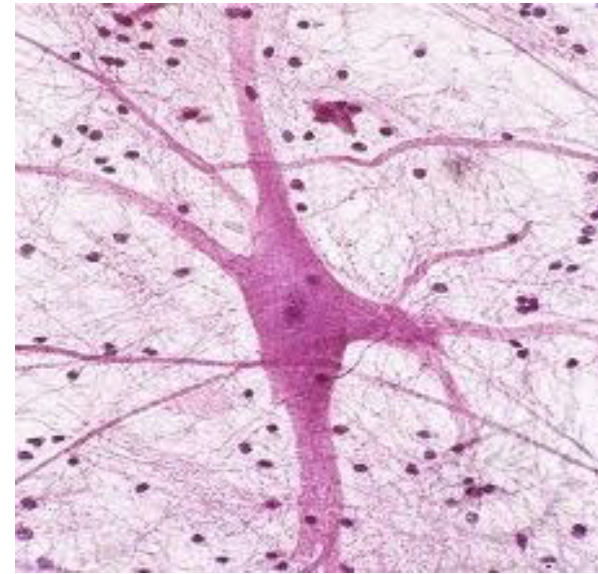
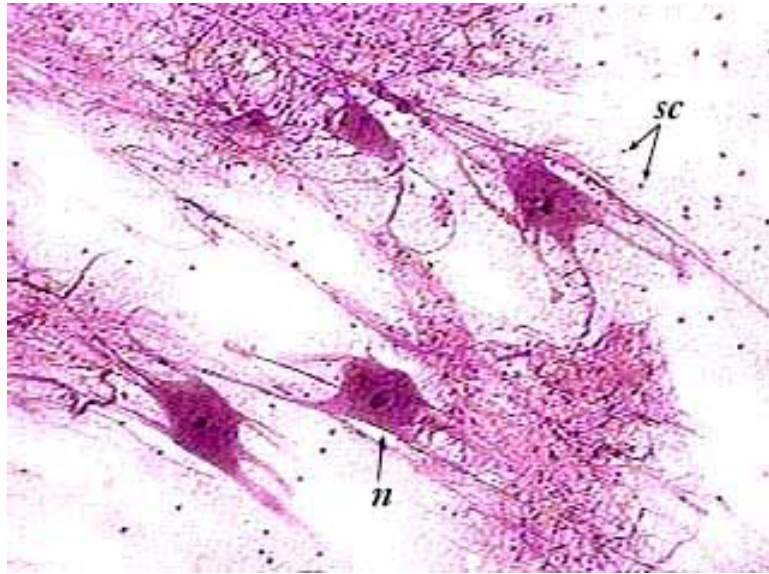
What is Deep Learning?



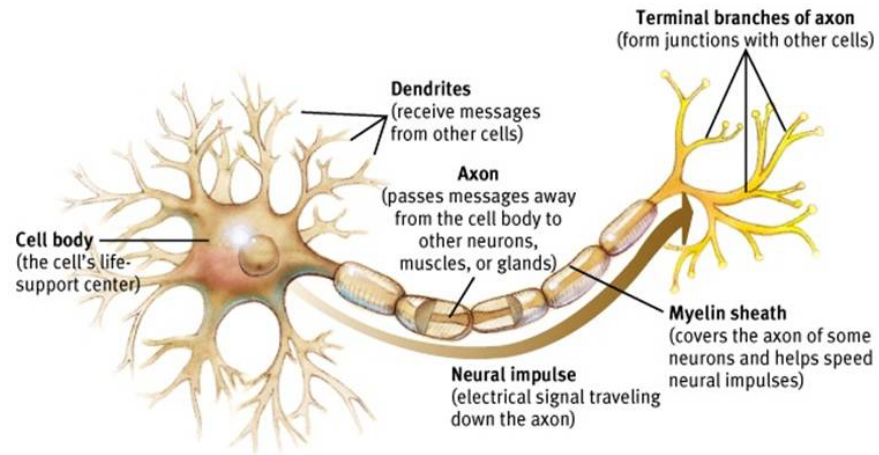
What is Deep Learning?



The Neuron

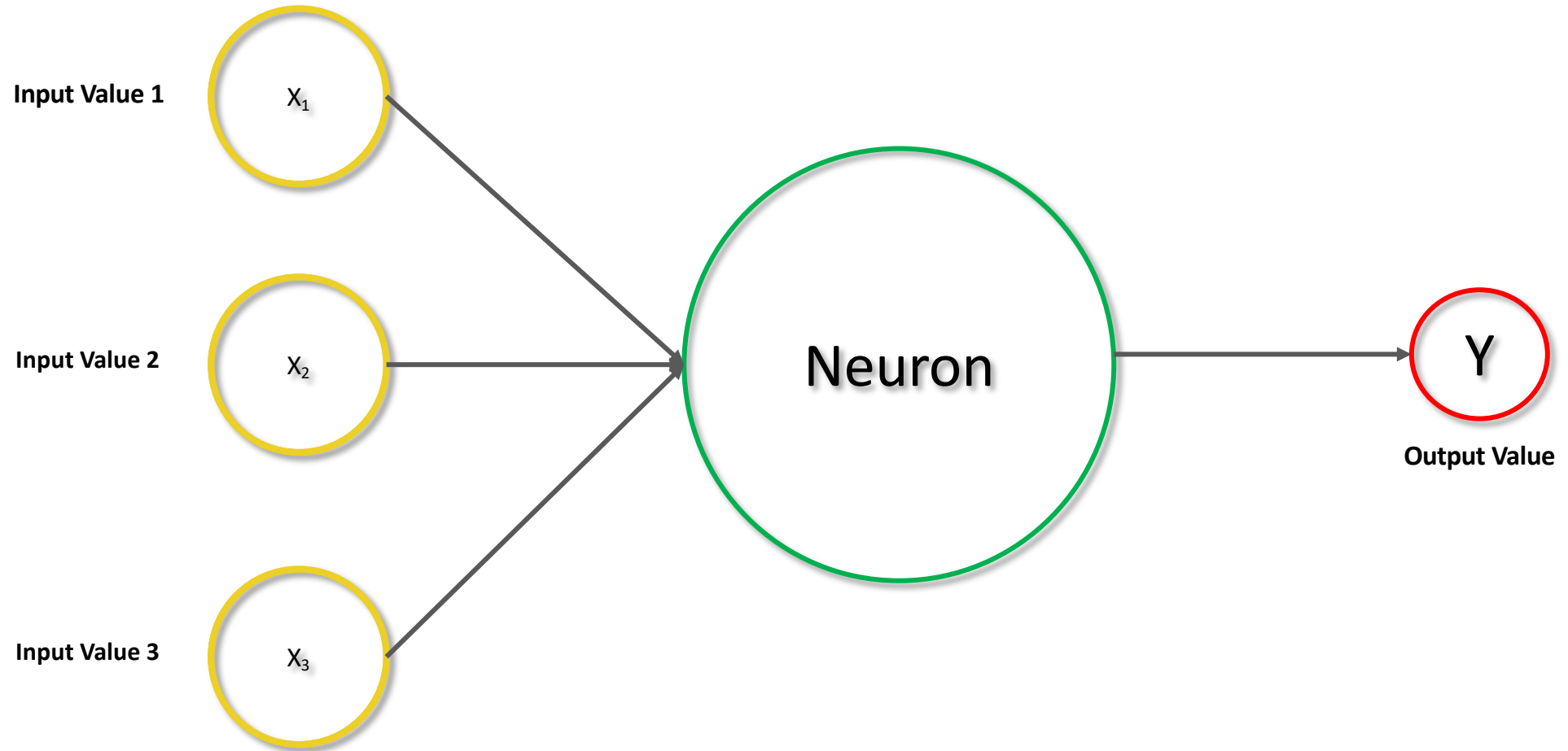


The Neuron

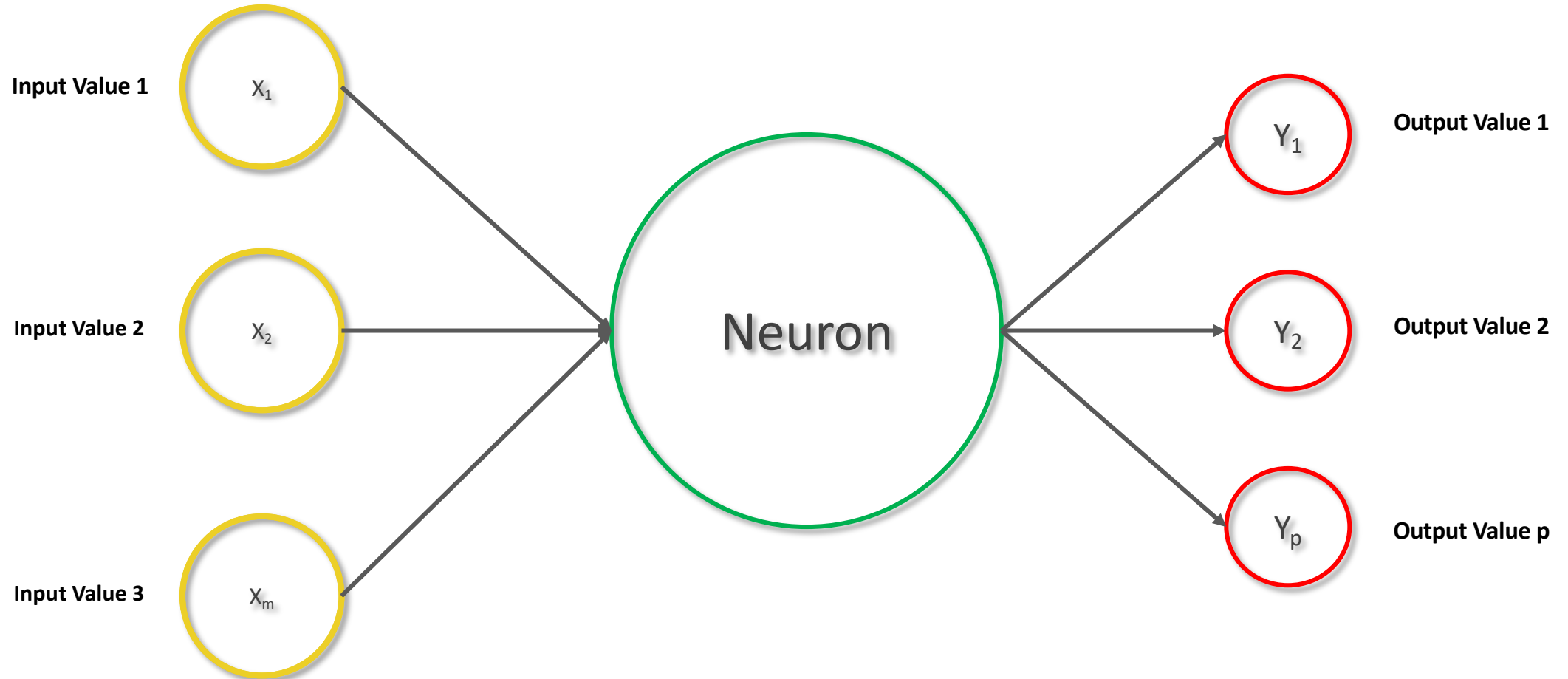


- Neuron
- Axon
- Dendrite

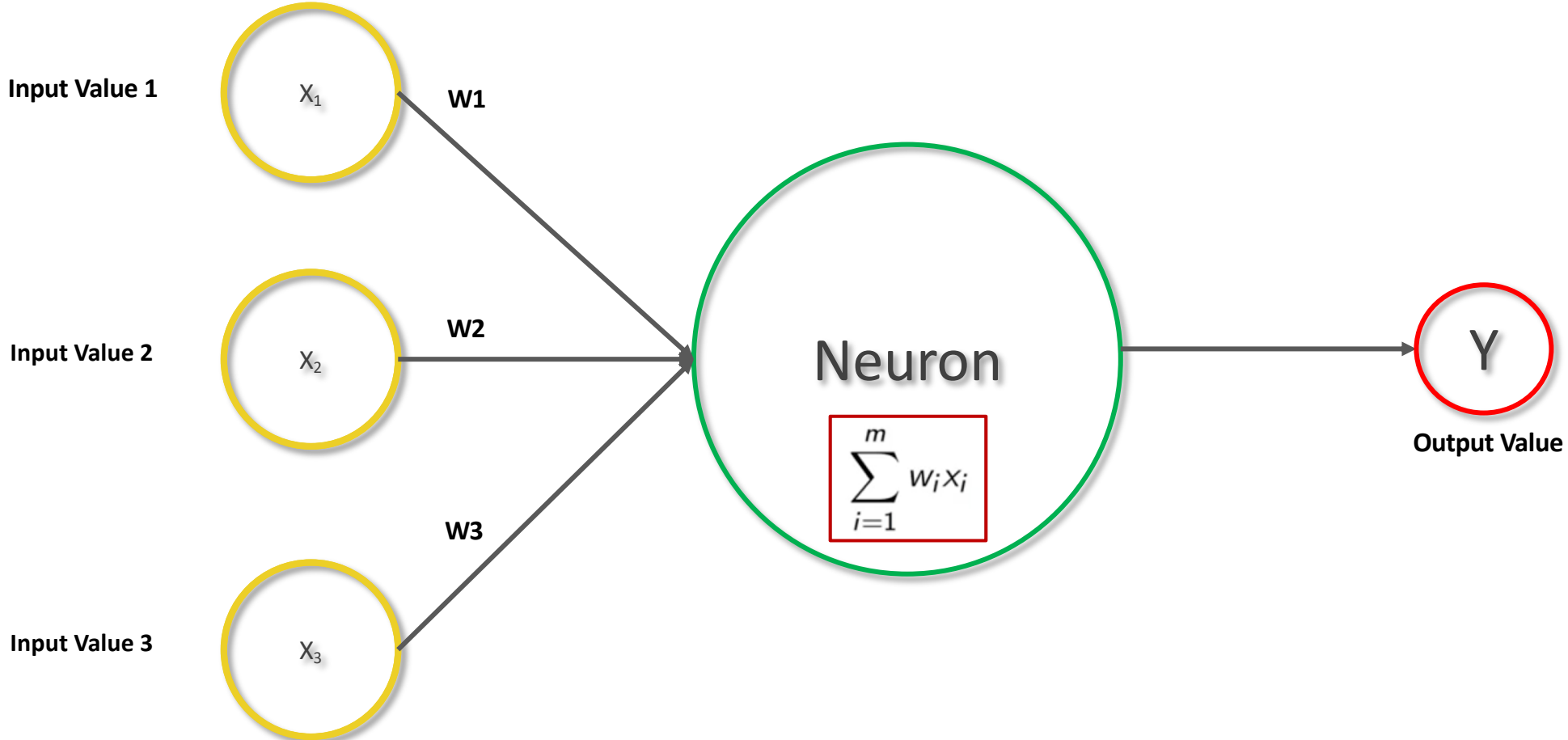
Neuron in an Artificial Neural Network



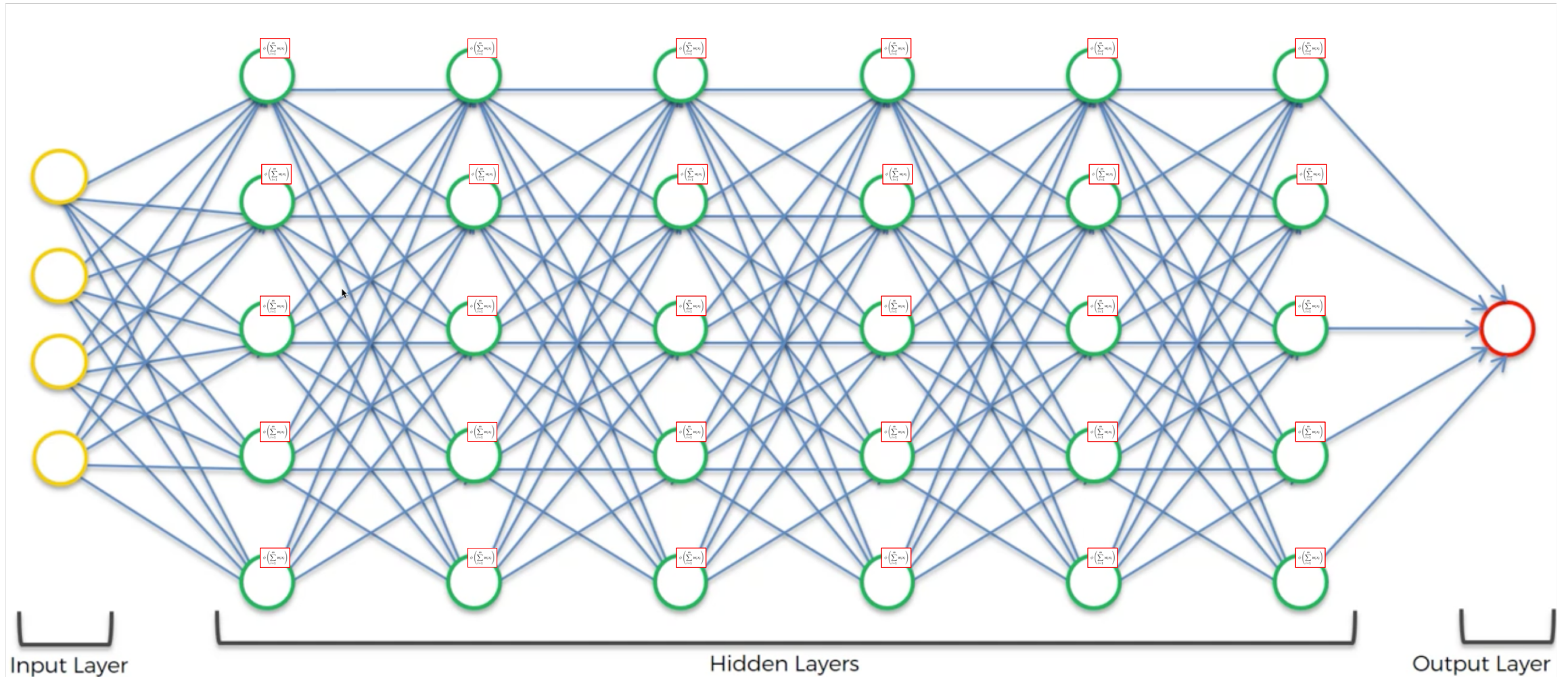
Neuron in an Artificial Neural Network



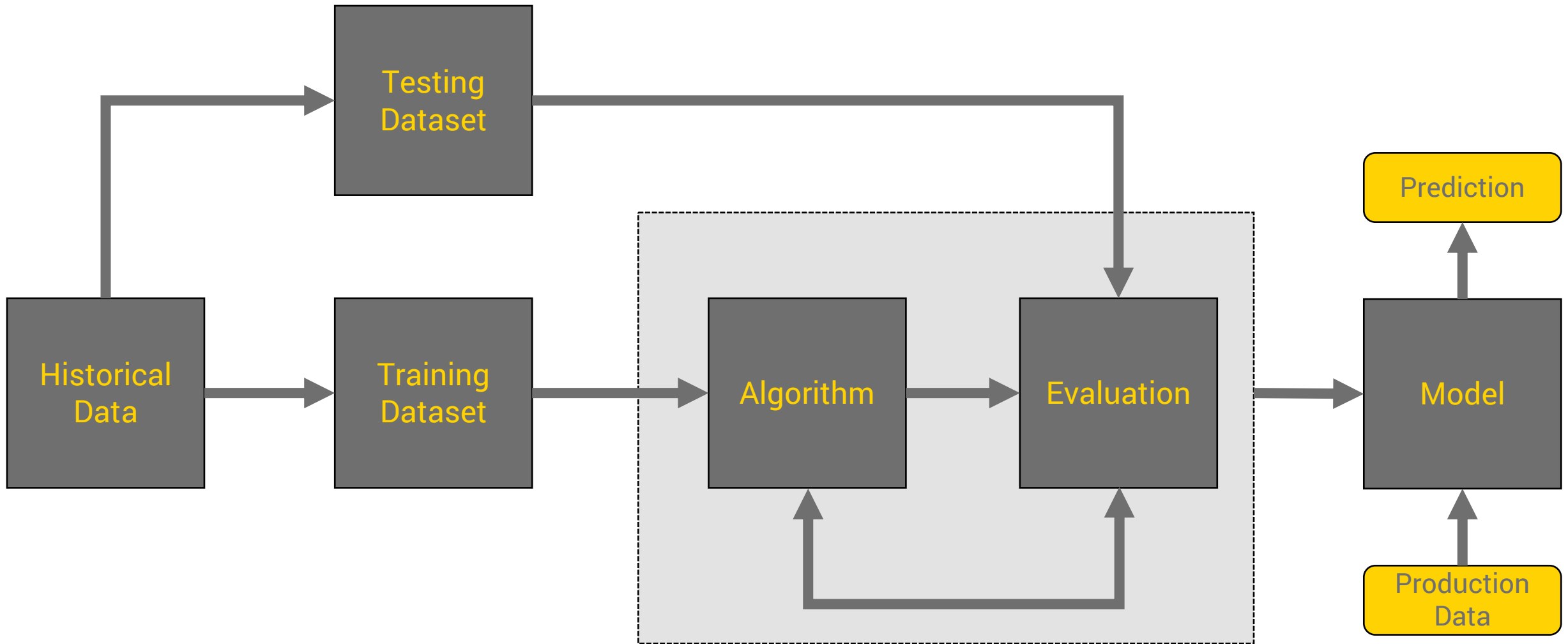
Artificial Neural Network



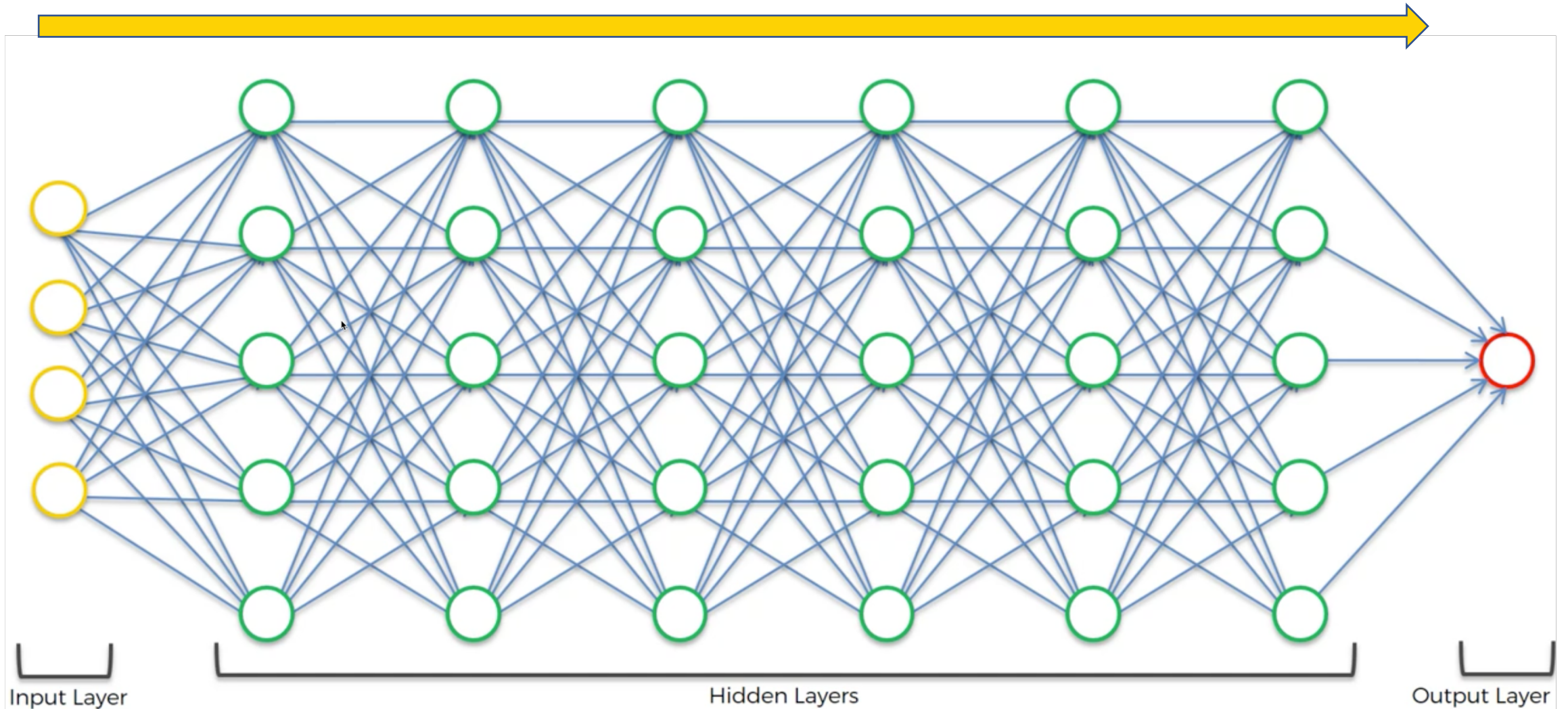
Deep Learning



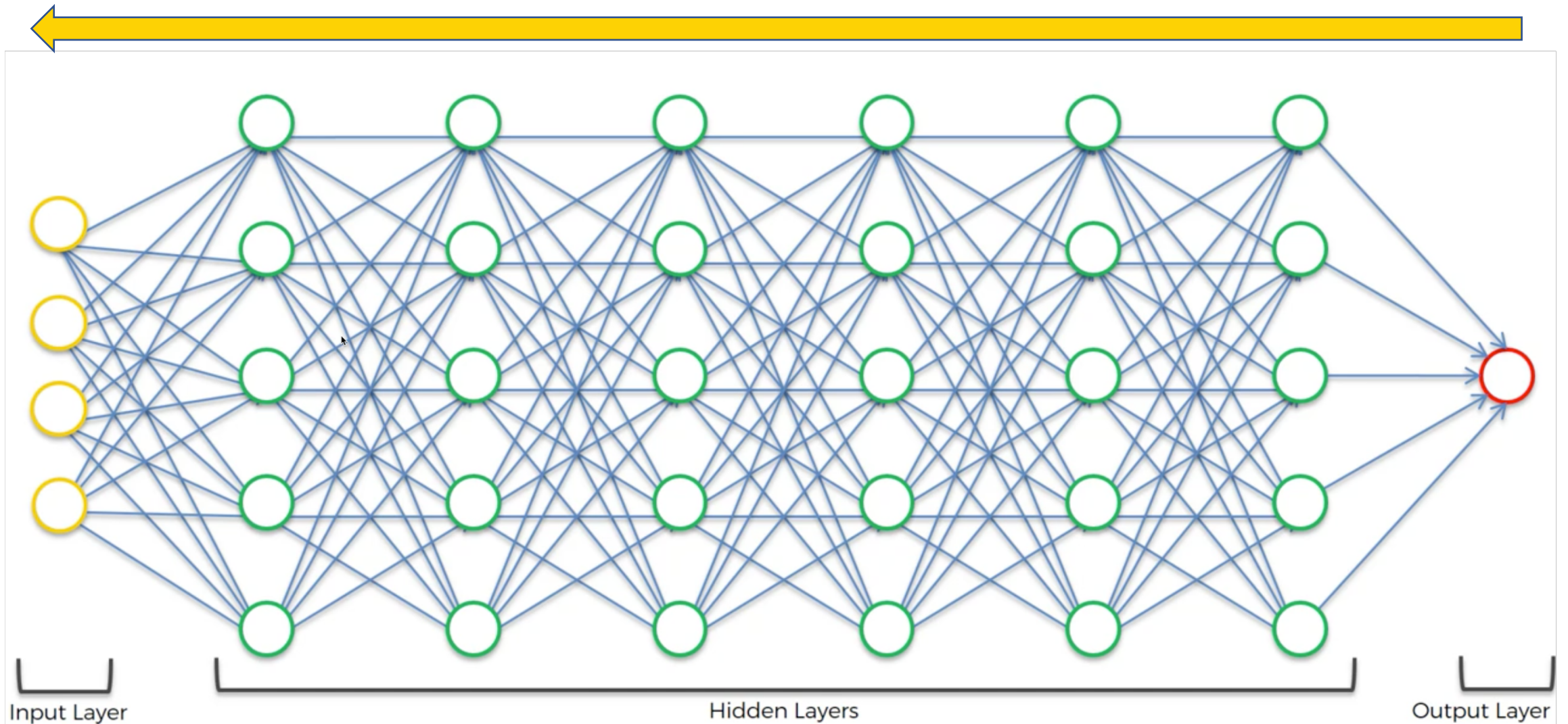
Lifecycle of an ML model



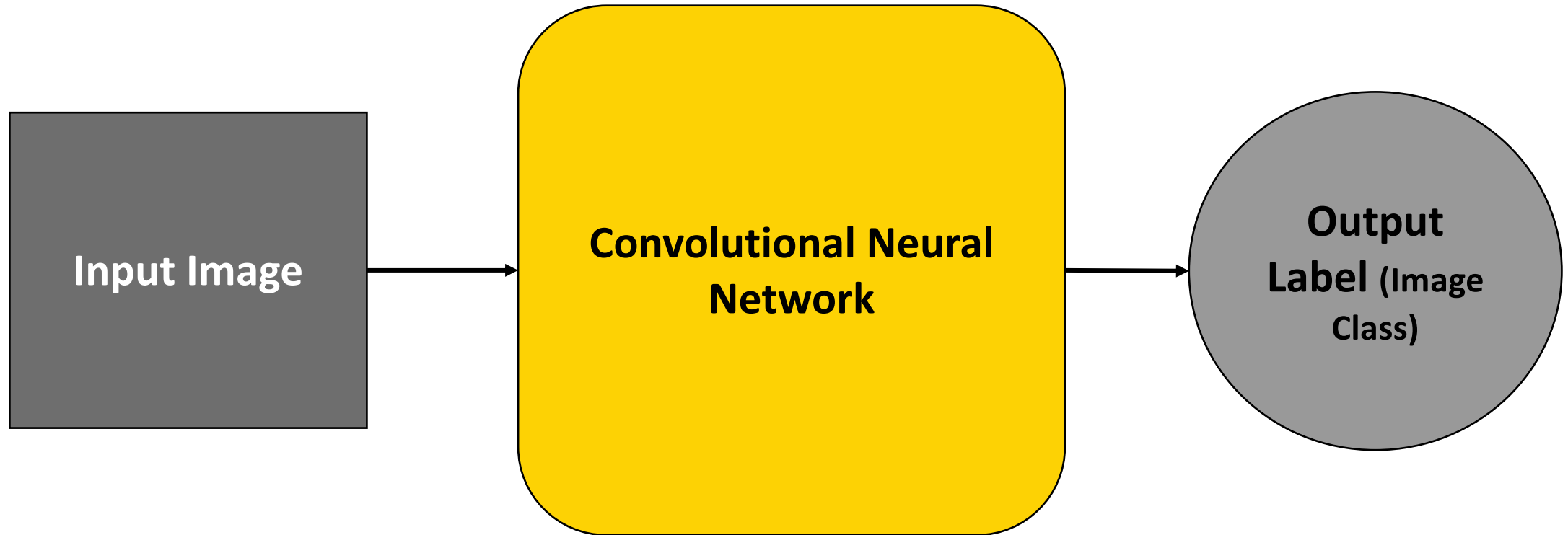
Forward Propagation



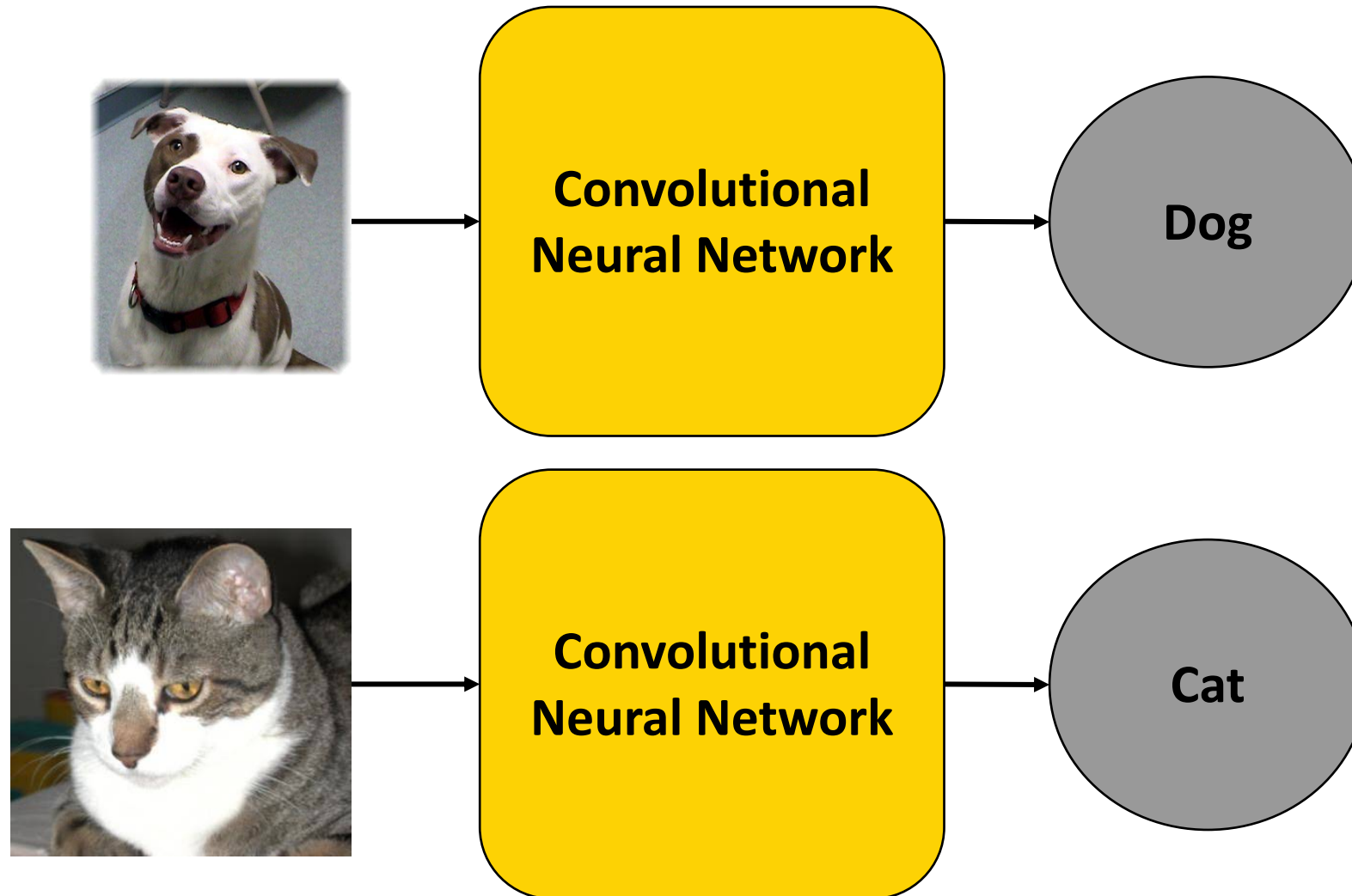
Back Propagation



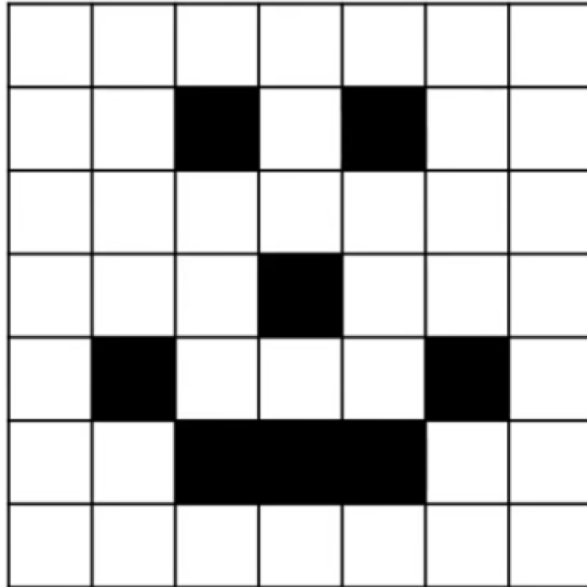
What are Convolutional Neural Networks?



What are Convolutional Neural Networks?

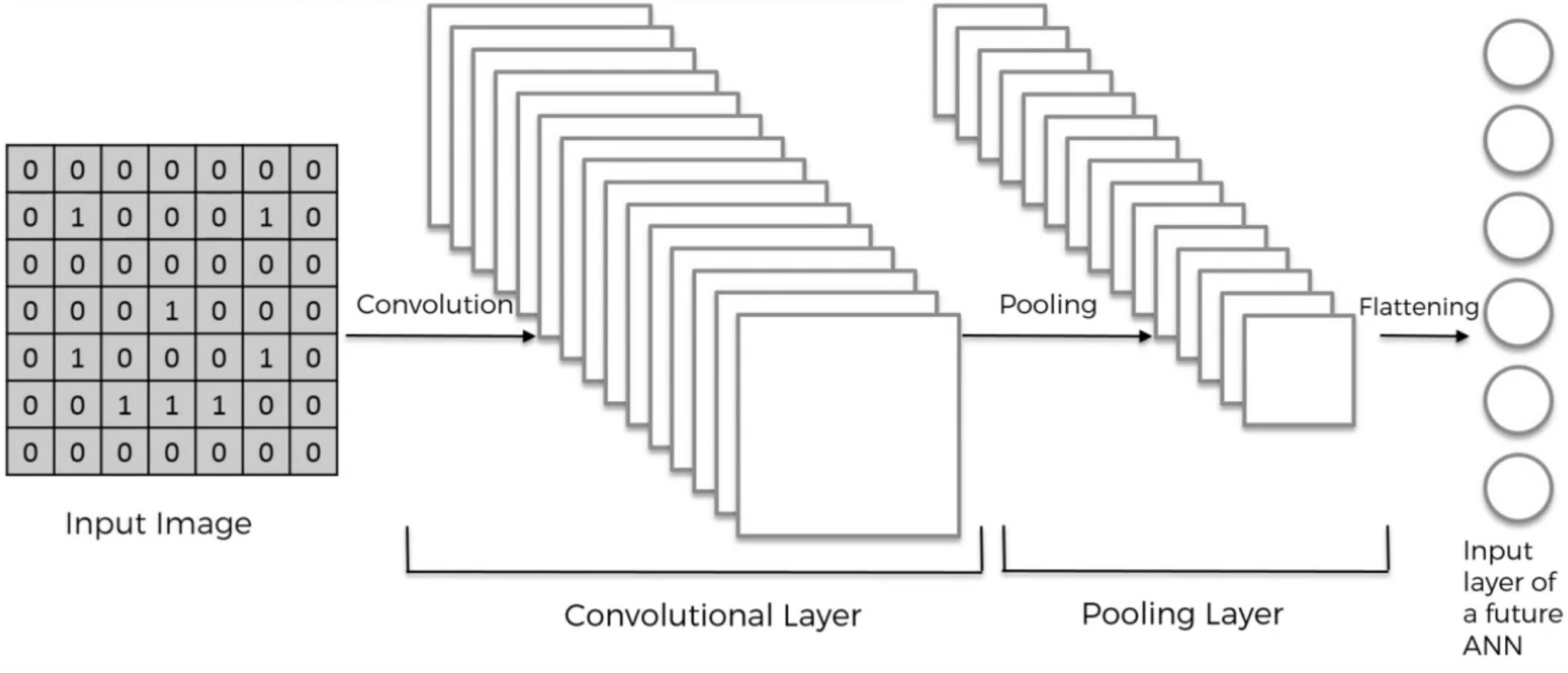


How Computers See Images?

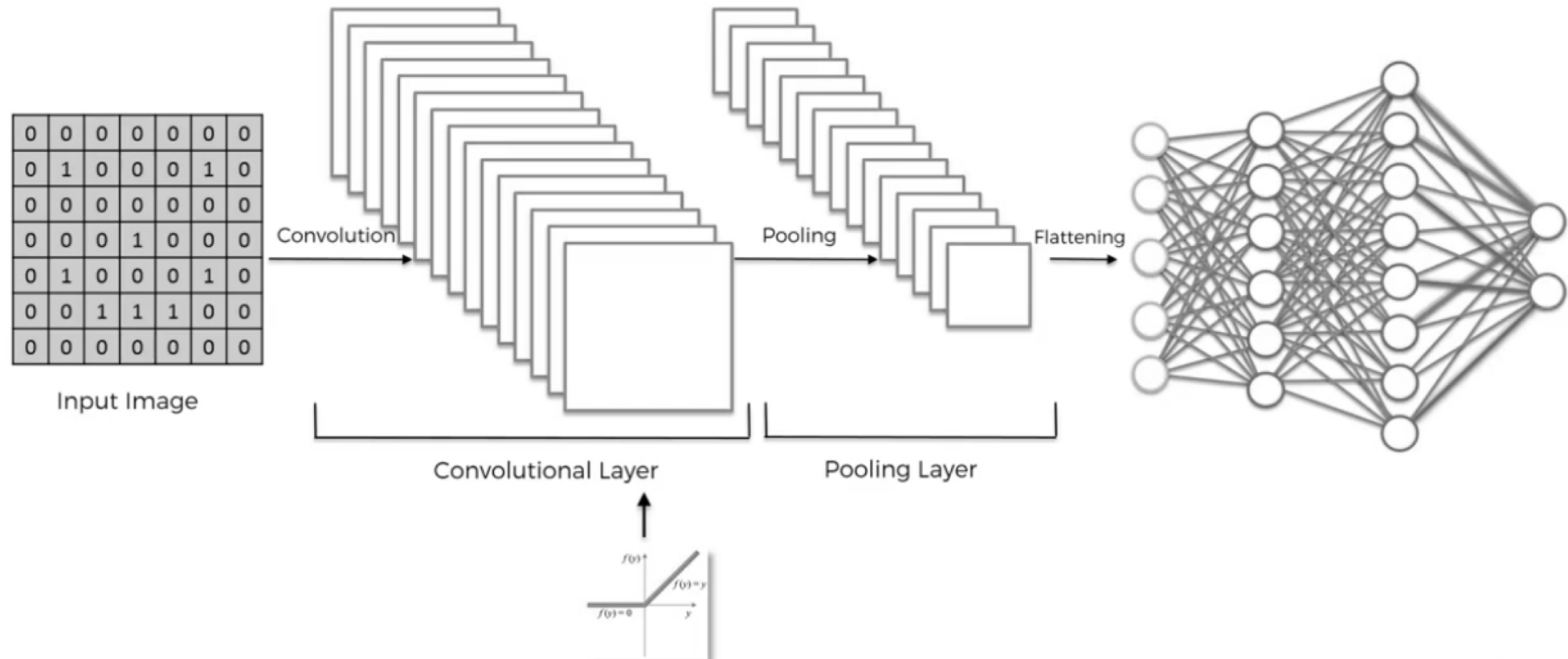


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0	0	0	0	0	0	0
0	0	0	1	0	0	0
0	1	0	0	0	1	0
0	0	1	1	1	0	0
0	0	0	0	0	0	0

The Big Picture of CNN



Full Connection



Overview of NVIDIA DIGITS

- Deep Learning GPU Training System™ (DIGITS)
- Wrapper for Caffe, Torch , and TensorFlow frameworks
- Provides a wizard-style graphical web interface
- Can rapidly train highly accurate neural networks
- Highly customizable and configurables

What are we Building?

- A CNN model trained through NVIDIA DIGITS
- Model trained with images of dogs and cats
- Installing NVIDIA Docker runtime on a GPU-based VM
- Running NVIDIA DIGITS as a Docker container
- Downloading the trained model for inference
- Using Caffe CPU Docker image for inference

DEMO

Training a CNN Model with NVIDIA DIGITS

<https://github.com/janakiramm/digits-tutorial>



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Building Convolutional Neural Networks with NVIDIA DIGITS

NVIDIA DIGITS is a wizard-style framework to build convolutional neural networks. Attend this session to learn how to setup and configure NVIDIA DIGITS for building deep neural networks based on popular frameworks such as Caffe and TensorFlow. In this webinar, I will walk you through everything from data preparation to hyperparameter tuning to model serving.

Thursday, February 7th, 2019
9:00 AM PST / 10:30 PM IST

Register at <http://mi2.live>