practicum

building ai knowledge

Neural Network: Basics

Deep Learning Foundations

Transfer
Learning

Gradient
Descent

Neural Network
Advanced
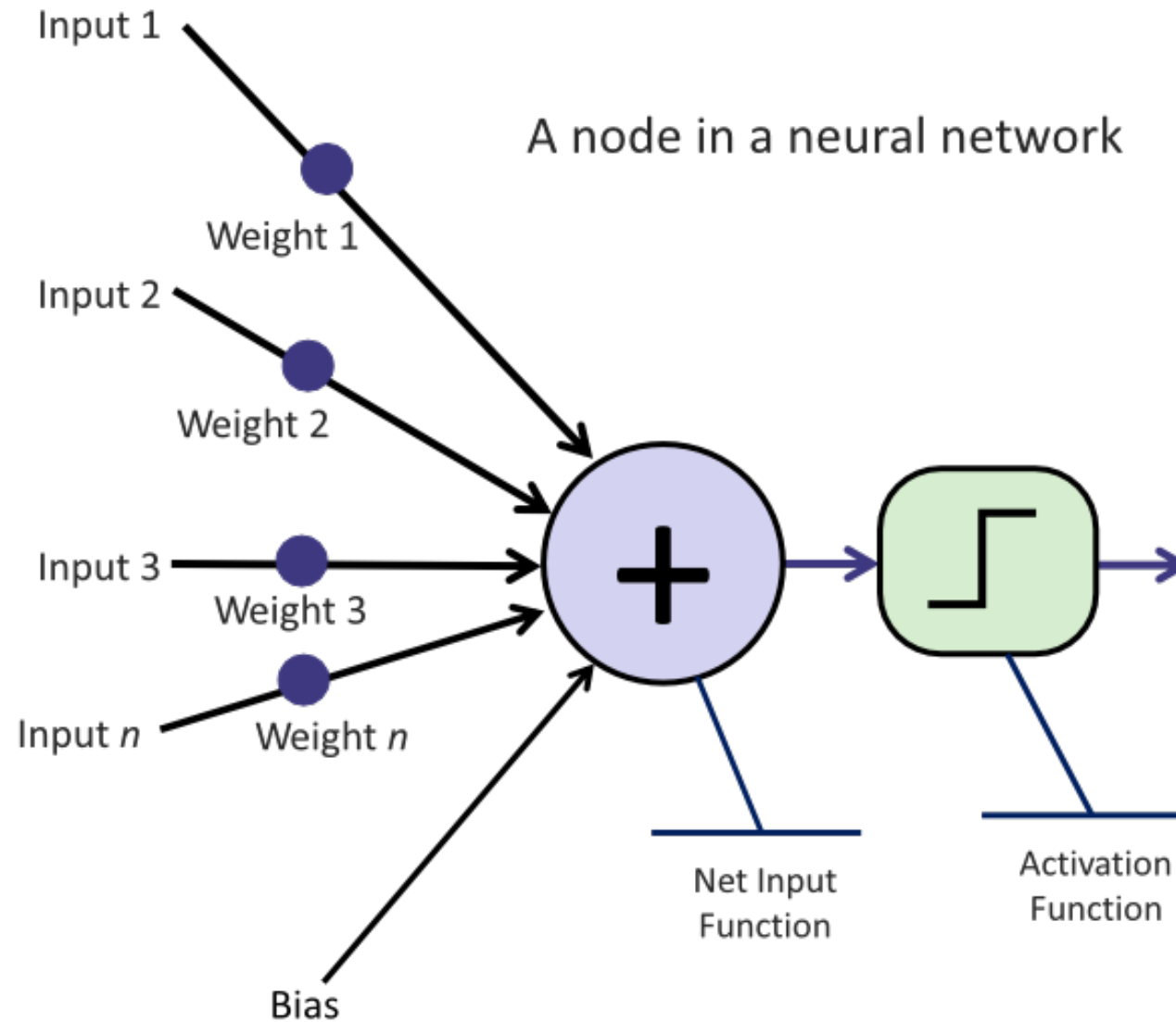
Neural Network Basics

Module 1 Objectives

1. Define a neural network.
2. Describe how a neural network works.
3. Discuss what can be done with neural networks.
4. Discuss deep networks.
5. Use a deep learning pre-trained model to classify an image.
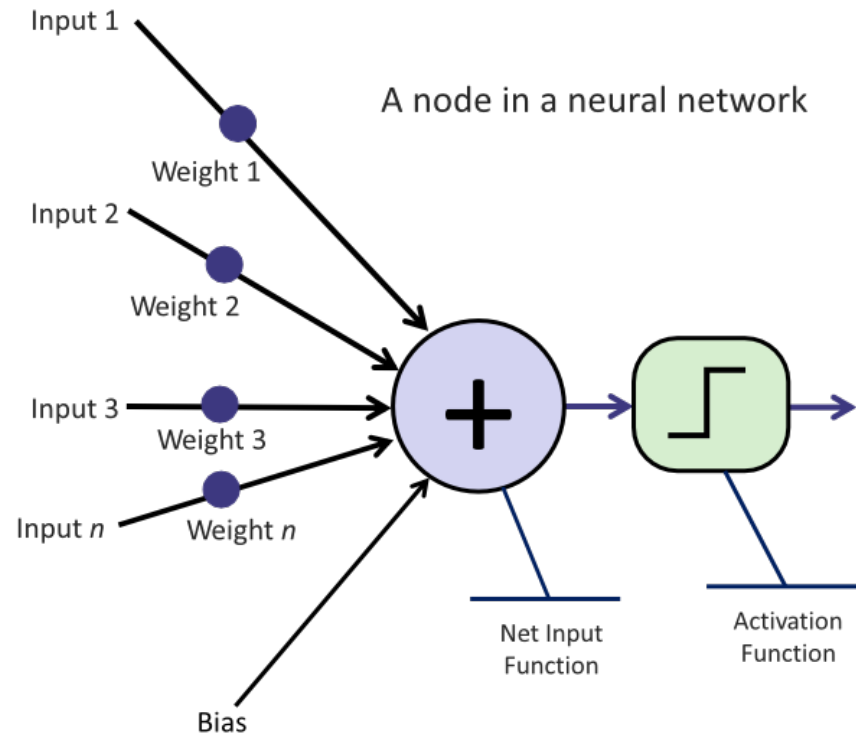6. Discuss Python AI Frameworks.

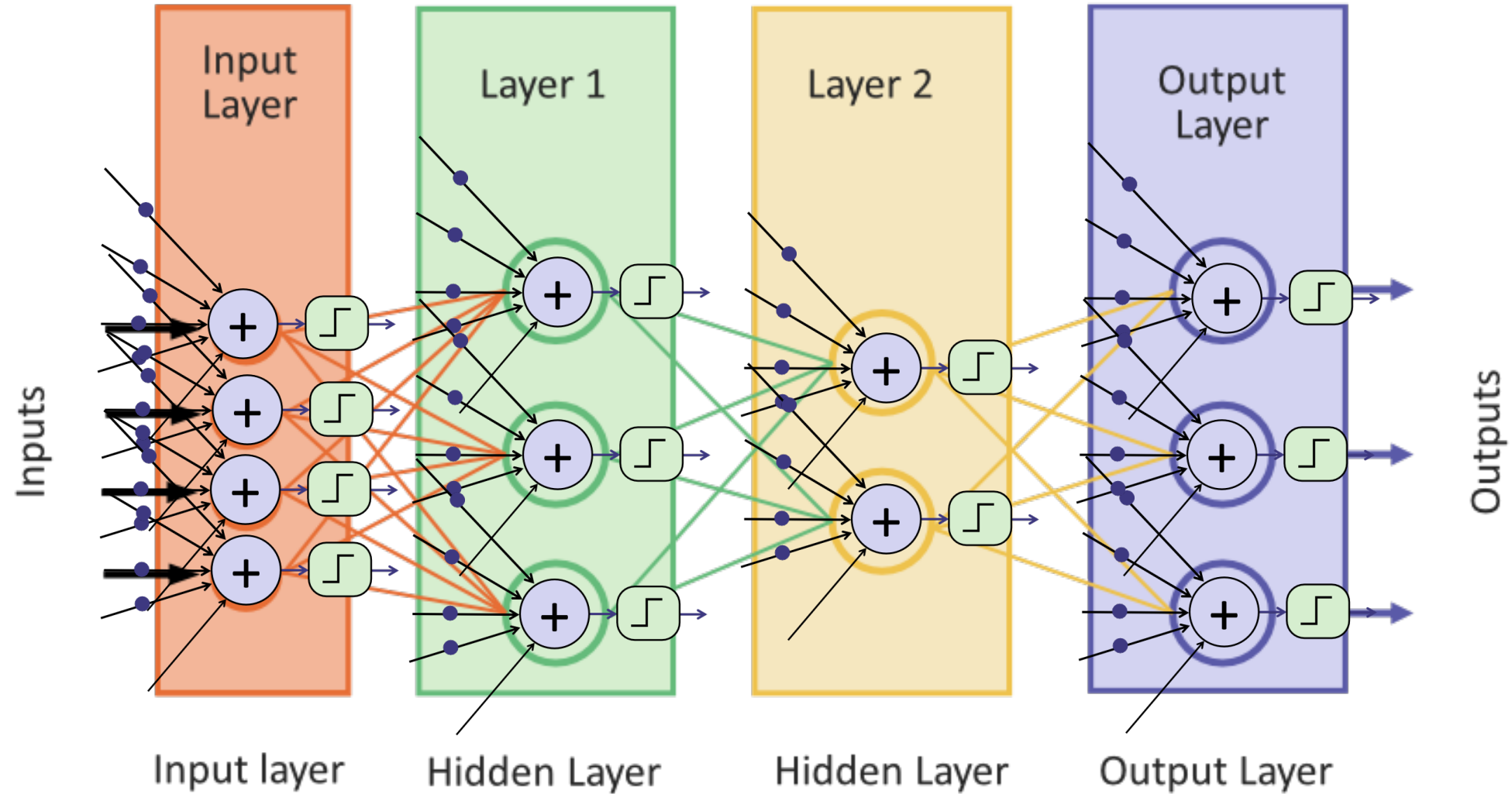# What Are Neural Networks?

Introducing, The Node

Input 1
Weight 1
Input 2
Weight 2
Input 3
Weight 3
Input n
Weight n
Bias

A node in a neural network

Net Input Function

Activation Function

Many Nodes Create a Network
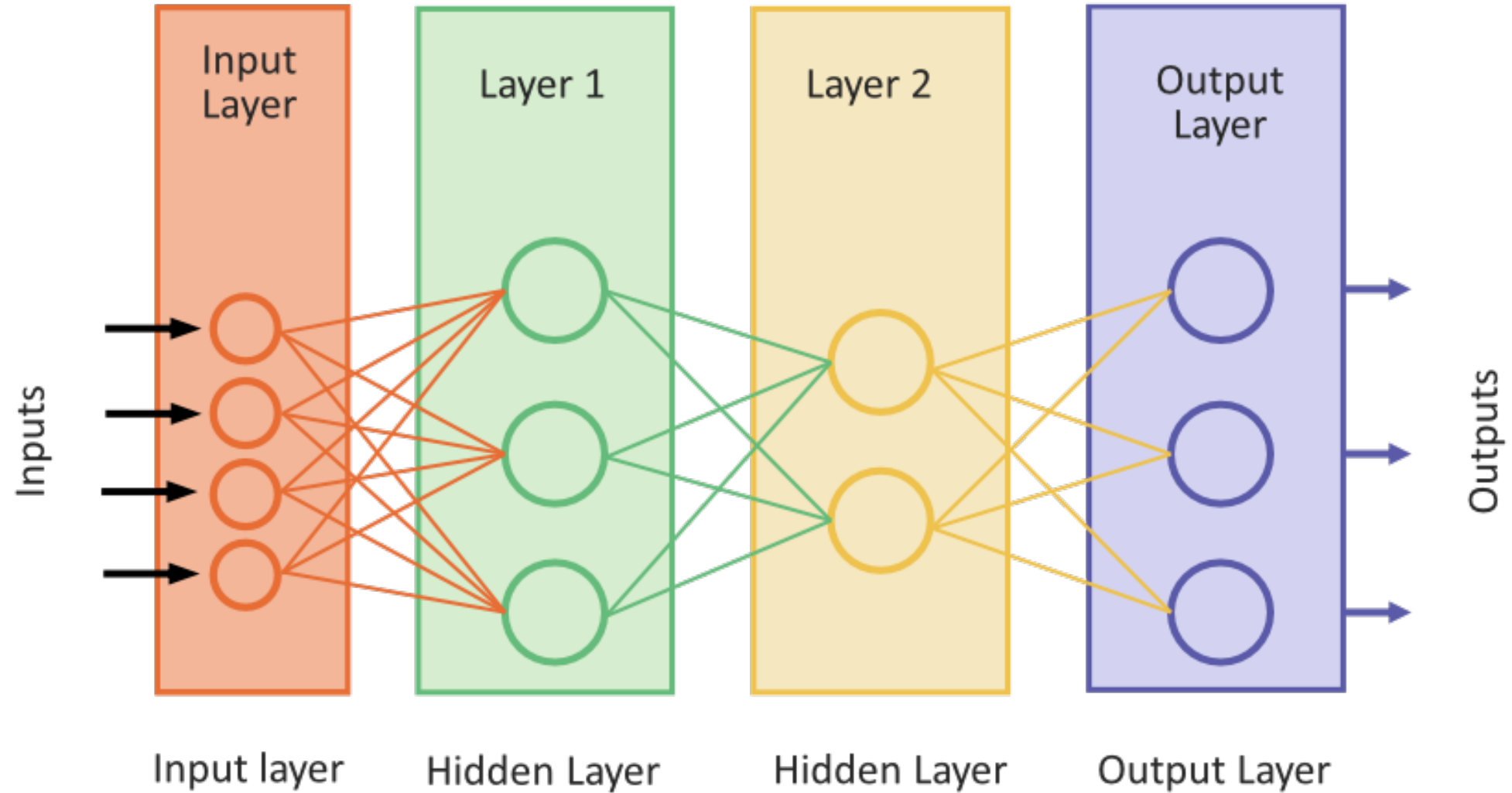

A node in a neural network

Many Nodes Create a Network

Many Nodes Create a Network
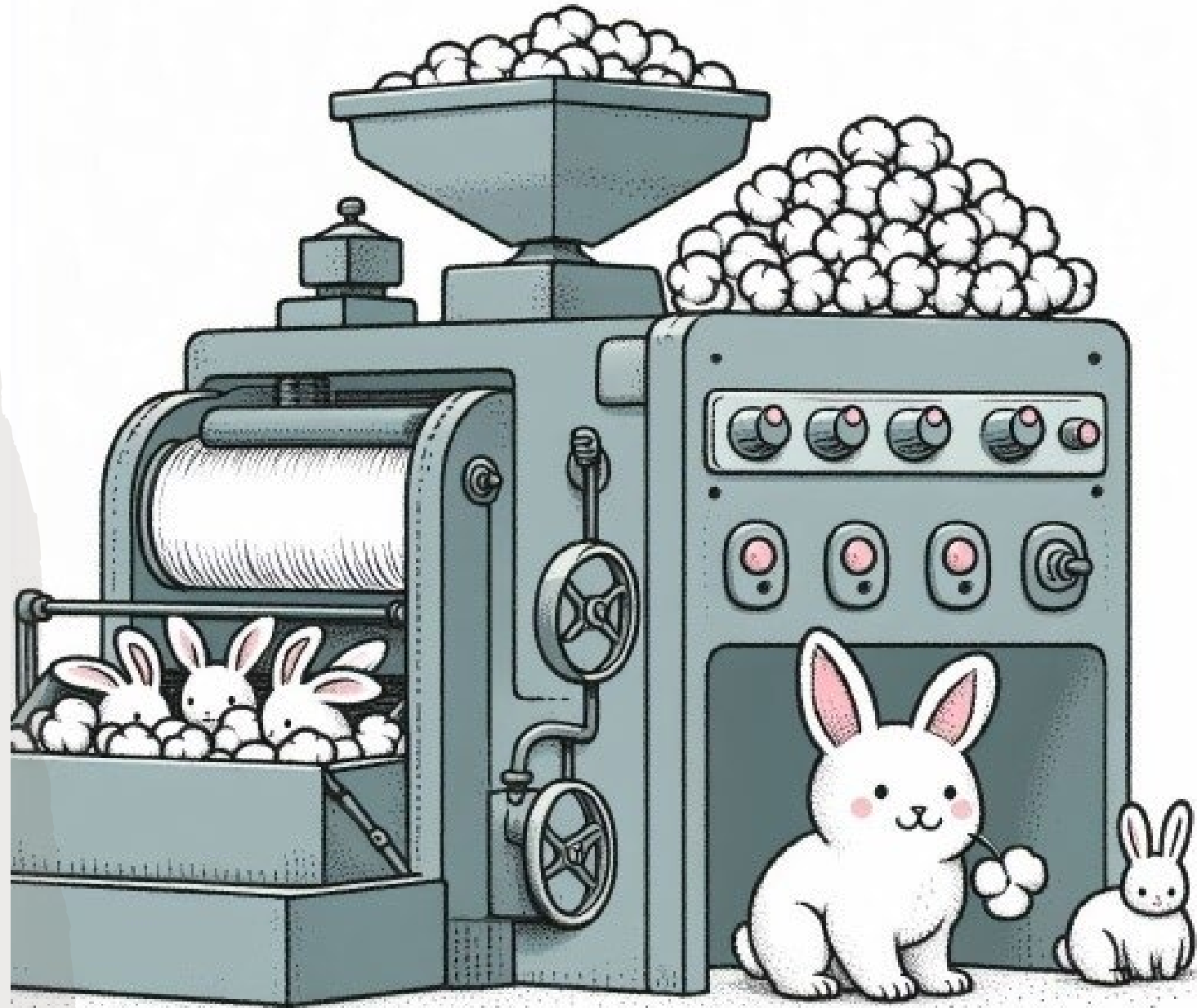
Gradual Improvement Over Time

Image generated using AI tools

What is Deep Learning?

Imagine You're Making a Cake...

Input(s) ⇒ ⇒ Output

Hidden Layers

What Can I Do with Neural Networks?
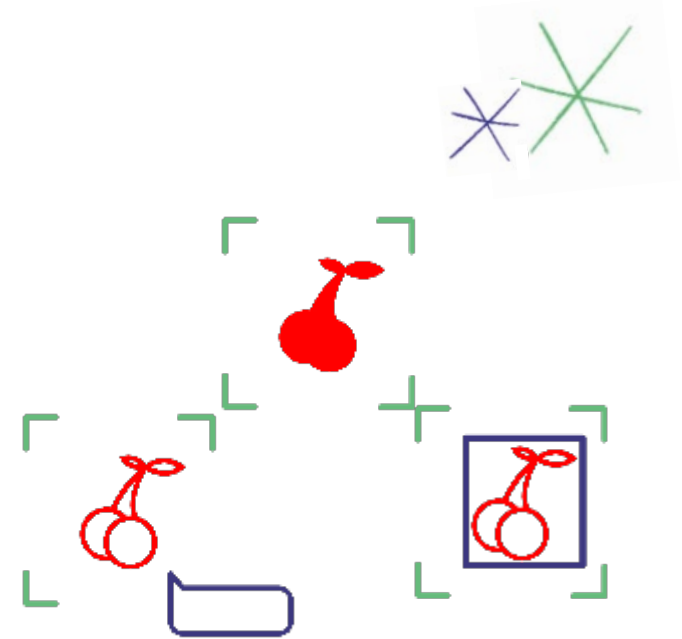
Example Neural Network Applications
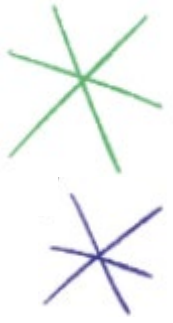
Natural Language Processing

Generative Methods

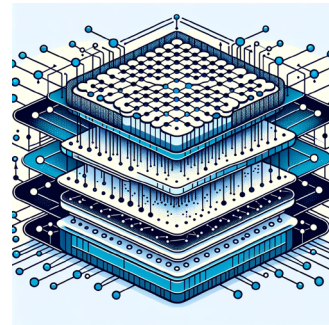Computer Vision
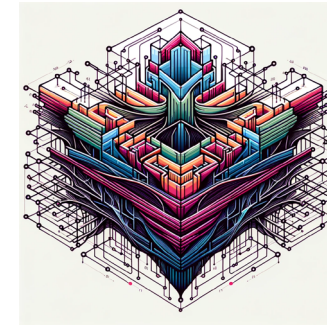
Time Series Analysis

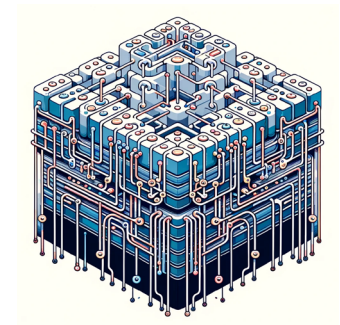# Types of Networks
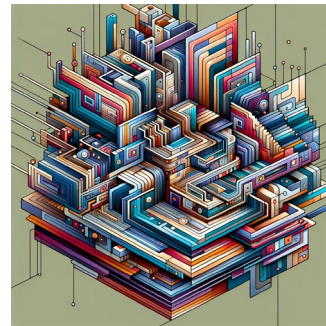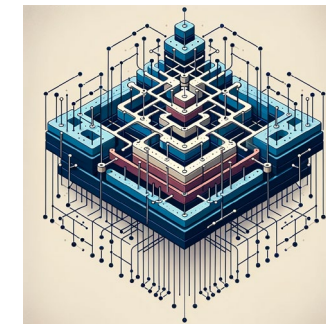
Example Network Architectures

Stable Diffusion

CNN

GAN

LSTM
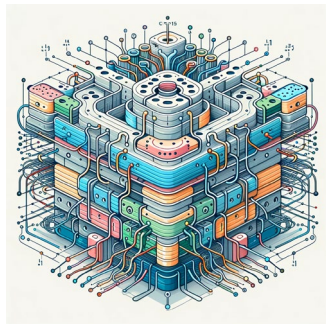
cGAN

Transformer

RNN

All images on this slide were generated using AI tools

A Word on Model Zoos

TensorFlow

NVIDIA. NGC | CATALOG

PyTorch

Model Zoo
Discover open source deep learning code and pretrained models.
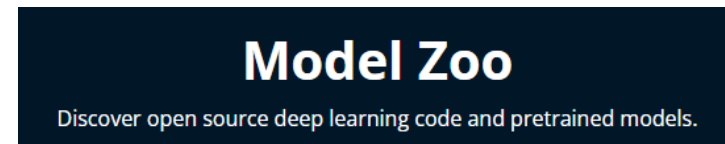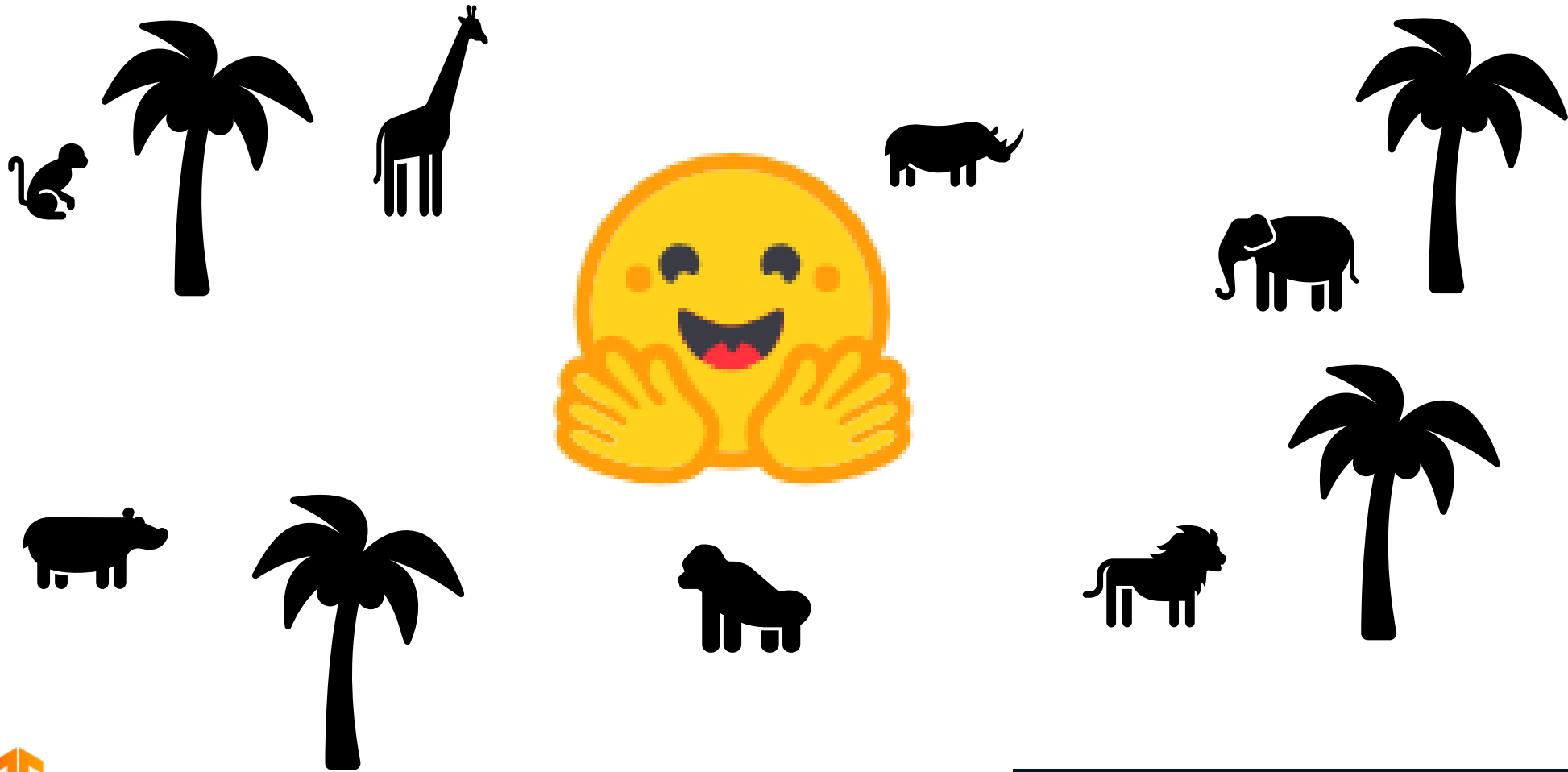
Python AI Frameworks

Which Framework to Use?
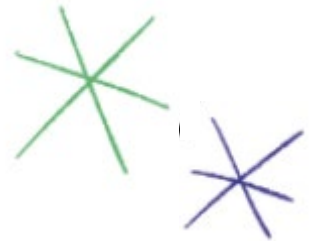
A Vision Quest

01_deep_learning_tour.ipynb

This notebook will walk you through instantiating a pre-trained vision model and testing it against new images!

Questions?

(QR CODE FOR SURVEY!)