



Deep Learning

FinTech
Lesson 14.2



Class Objectives

- Explain the difference between neural networks and deep neural networks.
- Build deep learning models using Keras.
- Save trained deep learning models built in Keras for further usage.
- Deploy models in the cloud using Google Colaboratory

Installation for Unit 15

Please install the following before the start of Unit 15 (Sept 15)

[CCXT](#)

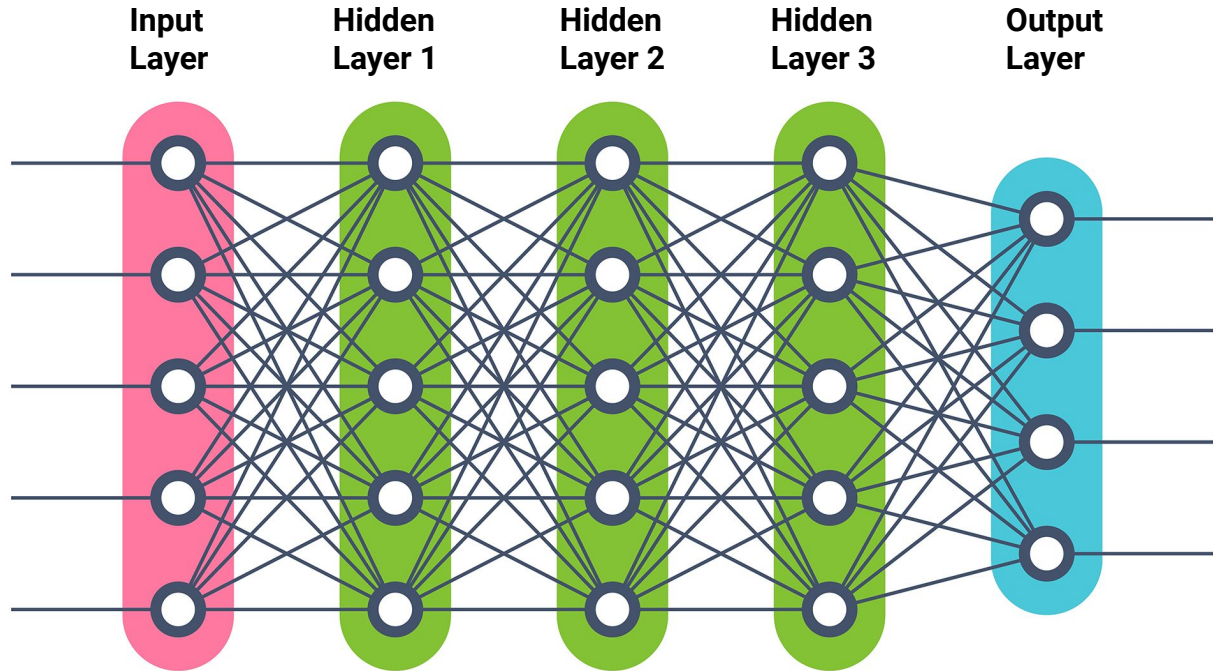
[Asyncio](#)



What is deep learning?

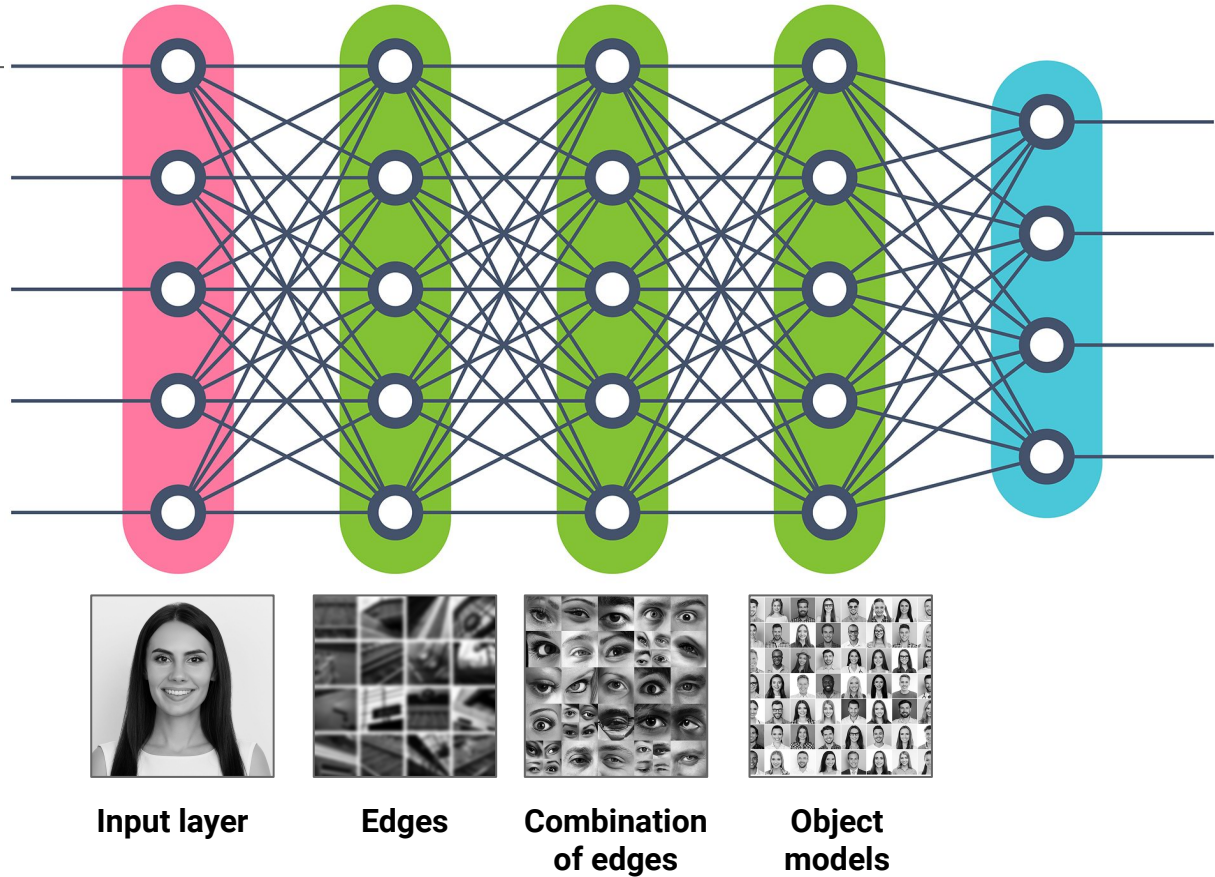
Deep Learning

Deep learning models are neural networks with more than one hidden layer.



Deep Learning

In image recognition, each layer is able to identify different features of an input image to decide what is it about.

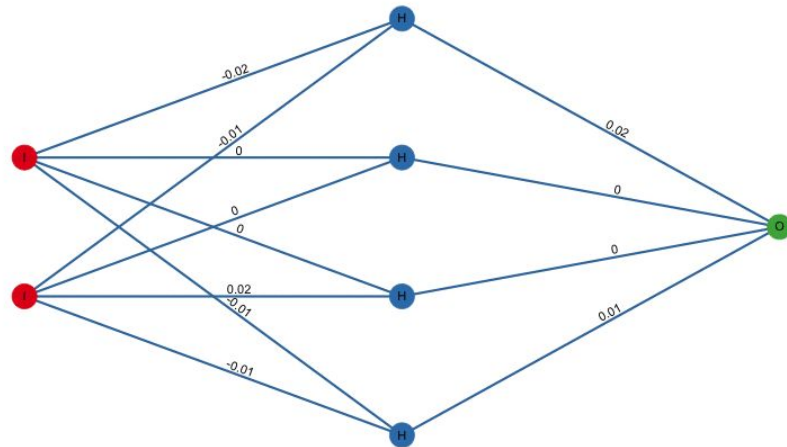


Understanding Deep Learning

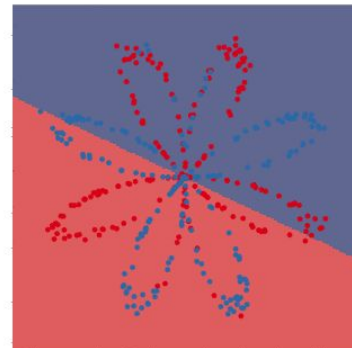
Understanding Deep Learning

Neural networks work by calculating the weights of various input data and passing them on to the next layer of neurons.

Training a neural net at iteration 0




0.7
0.6
0.5
0.4
0.3



Understanding Deep Learning

The number of layers included in a neural network model determine whether it is a “deep” learning model or not.

A large orange rectangle occupies the right half of the slide. To its left is a teal circle containing text.

Generally,
networks
with more than
one "hidden"
layer can be
classified as
"deep."



Activity:

Deep Learning with Keras

In this activity, we will build a deep learning model to predict the quality score of different wines.

Suggested Time:
15 minutes





Challenge: Sound of Music

In this challenge, you will build a deep learning model to predict the geographical origins of a musical composition.

Suggested Time:
20 minutes





Time's Up! Let's Review.



Instructor Demonstration

Model Persistence



Activity: After Training

In this activity, you will create a deep learning model from the music geographies data, save it, and load it to evaluate its performance on unseen data.

Suggested Time:
15 minutes





Time's Up! Let's Review.

A close-up, high-angle shot of a computer keyboard. The central focus is a large, white, rectangular key with rounded corners. On this key, there is a dark blue icon of a coffee cup with three wavy lines above it representing steam. Below the icon, the word "Break" is printed in a dark blue, serif font. The key is set against a light-colored, textured keyboard surface. Surrounding the main key are other keys, including one with a double quote symbol to the left and one with a dash/slash symbol to the right, all slightly out of focus.

Break

Google Collab

[Introductory Video](#)



Activity: Colaboratory, a Cloud-based Environment for Sharing ML Projects

In this activity, we will learn how to create and share Jupyter notebooks on Google Colaboratory, a cloud platform oriented toward machine learning.

Suggested Time:
20 minutes





Challenge:

Deep Learning on the Web

In this challenge, you will use the [text classification demo notebook](#) to understand and modify a deep learning classification model with Colab.

Suggested Time:
30 minutes





Time's Up! Let's Review.



Questions?

*The
End*