

# **Computer Vision with Deep Learning**

## **Section Overview**

# The Deep Learning Section of the Course

## Theoretical Concepts

Convolutional  
Neural Network

Dense Neural  
Network

Single Neuron

DL Concepts

## Technical Skills

Training and Prediction

Tensor Arithmetic  
(e.g. Matrix Multiplication)

Tensorflow and PyTorch  
Introduction

## Applications

Computer Vision

See Following Slides

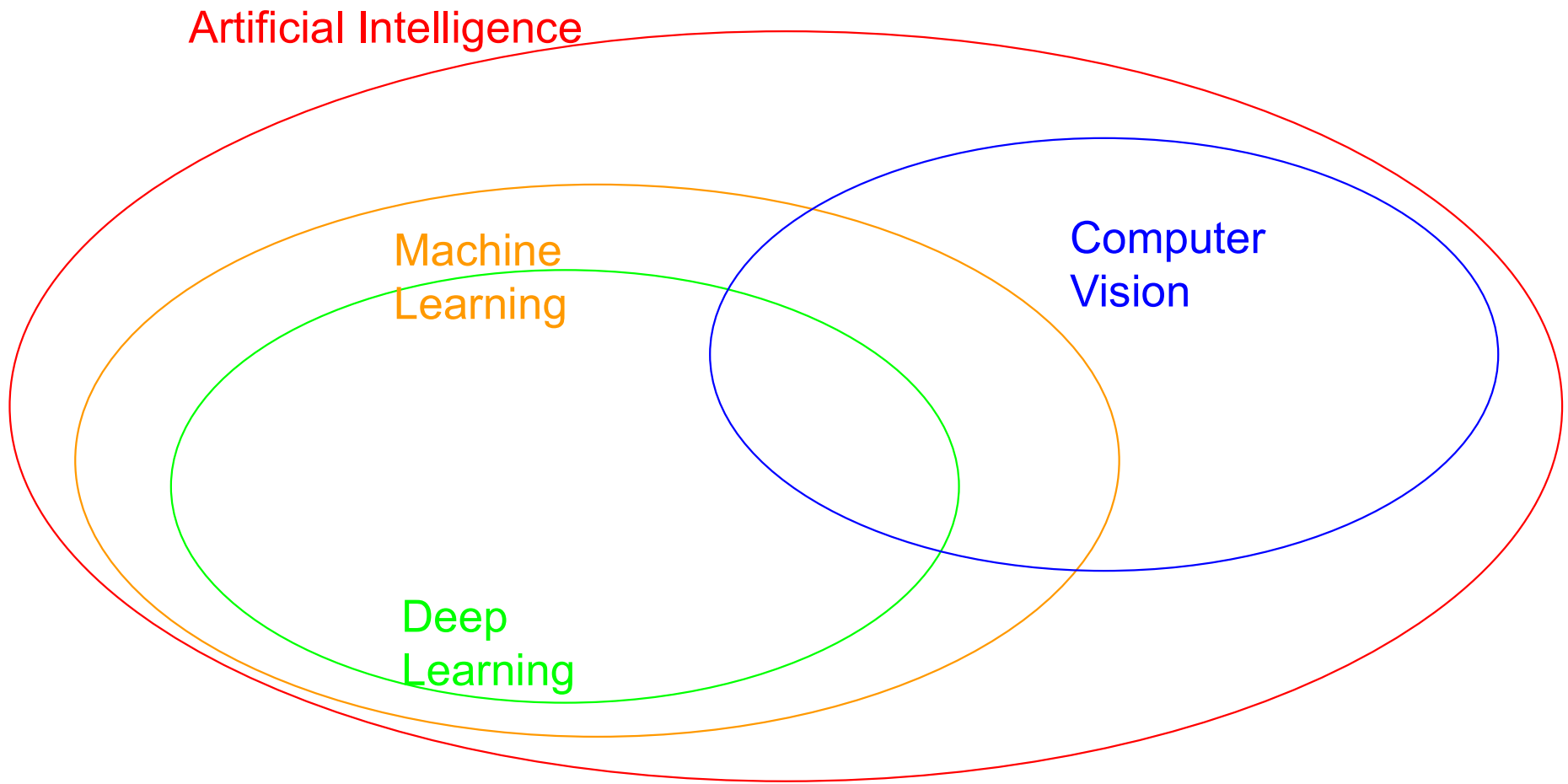
Artificial Intelligence



A Venn diagram illustrating the relationship between Artificial Intelligence, Machine Learning, and Deep Learning. It consists of three nested ellipses. The outermost ellipse is red and labeled 'Artificial Intelligence'. Inside it is an orange ellipse labeled 'Machine Learning'. Inside the orange ellipse is a green ellipse labeled 'Deep Learning'. The labels are positioned near the top-left of their respective ellipses.

Machine  
Learning

Deep  
Learning



Artificial Intelligence

Machine  
Learning

Computer  
Vision

Deep  
Learning

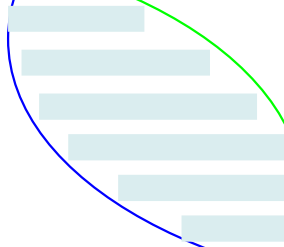
Artificial Intelligence

Machine  
Learning

Computer  
Vision

Deep  
Learning

*This Section*



# Computer Vision

- 🔗 Image Classification (Object Recognition)
- 🔗 Image Retrieval
- 🔗 Object Detection
- 🔗 Image Segmentation
- 🔗 Video Classification
- 🔗 Activity Recognition
- 🔗 Pose Estimation
- 🔗 Playing Video (e.g. Atari) Games
- 🔗 Image Captioning
- 🔗 Generative Models: Variational-Autoencoders, GANs, Diffusion Models

To the Student: Search for some of these tasks in Google Image Search.

See Also: <https://huggingface.co/models>