Deep Learning General Overview

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Deep Learning General Overview

Introduction

- type of machine learning
- Covers all learning types (supervised/unsupervised/reinforcement learning)
- Different architectures for different purposes
  - Fully-connected neural networks
  - Convolutional neural networks
  - Recurrent neural networks
  - …
- Inspired by the structure and functioning of human brain
- Use multiple layers for feature extraction
- Each layer uses data from previous layer
- Learn different levels of abstraction

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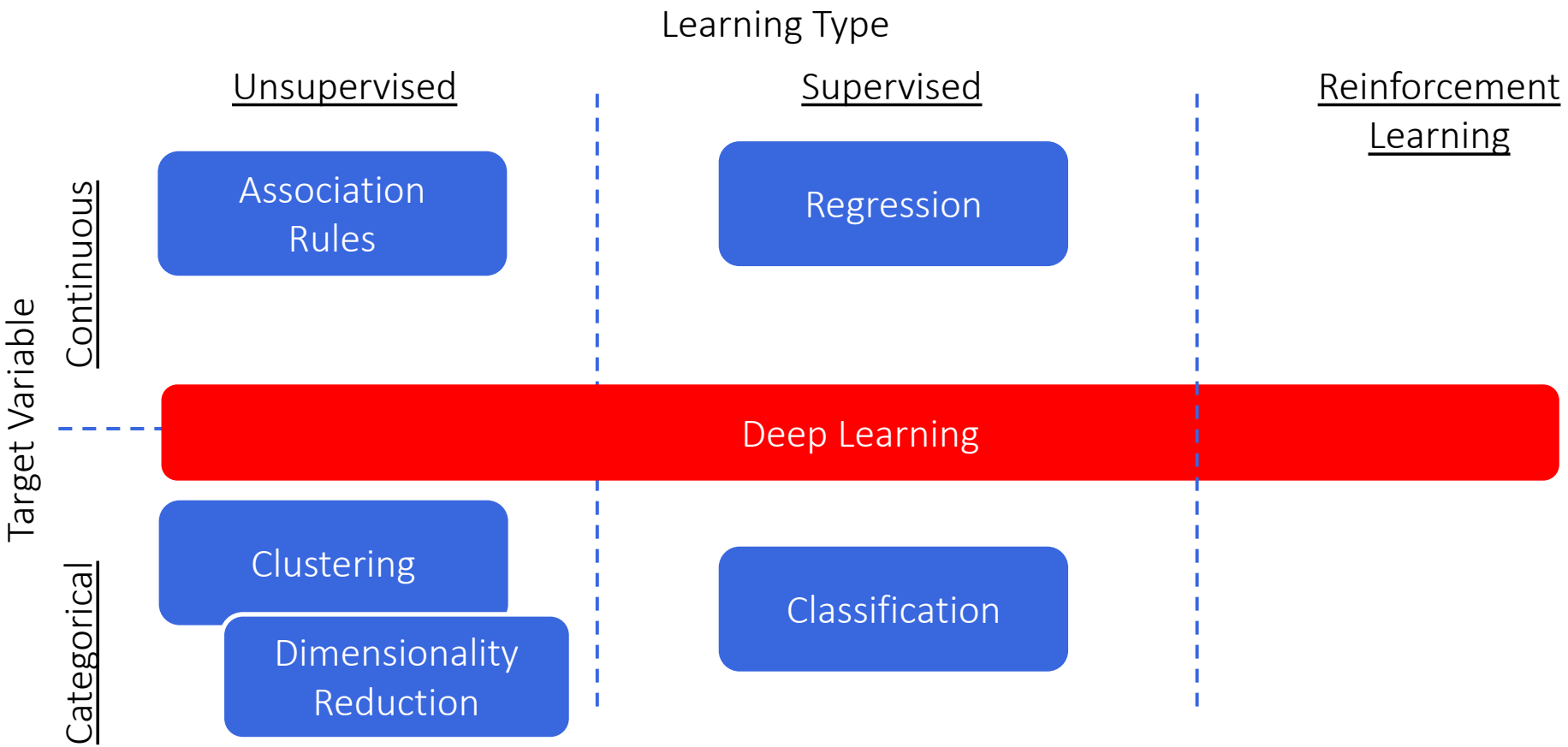
All Chapters



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Computer Vision Tasks

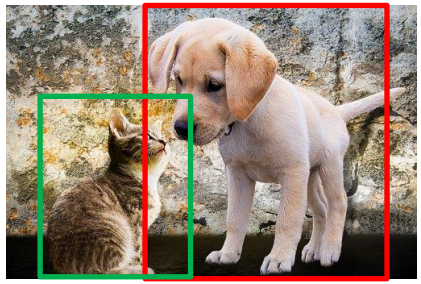
Classification

- Algorithm recognizes a dog in the image

Classification and Object Detection

- Algorithm recognizes a dog in the image
- Algorithm detects rectangular location of dog

Object Detection



- recognizes a dog and cat in the image
- Algorithm detects rectangular location of dog/cat

Semantic Segmentation

- recognizes pixelwise location of dog/cat

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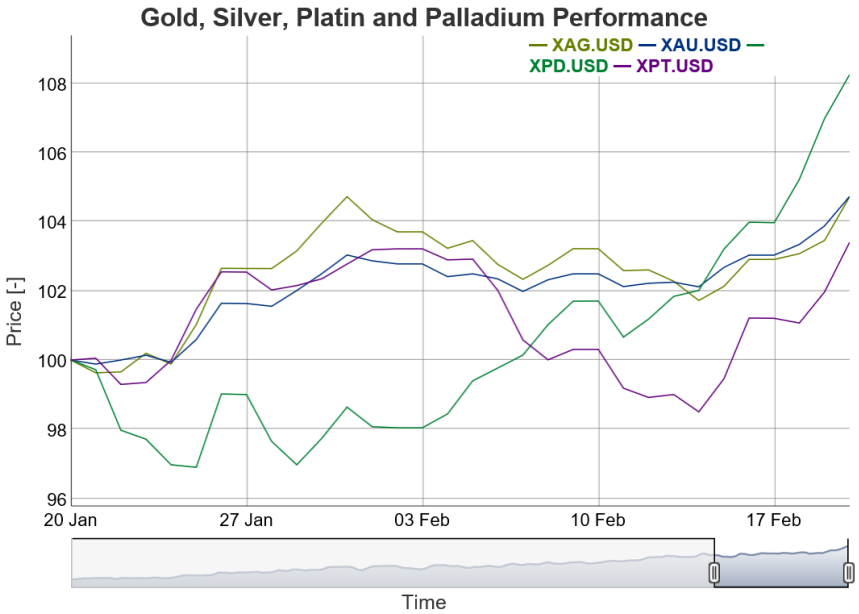
Recurrent Neural Networks

Time Series Prediction
Forecasting



Text Generation
Machine Translation

Deep Learning General Overview

GANs and Style Transfer

Style Transfer

Generative Adversarial Networks

Sources:

[1] https://ndres.me/post/machine-learning-with-gifs-style-transfer/

[1] Karras „PROGRESSIVE GROWING OF GANS FOR IMPROVED QUALITY, STABILITY, AND VARIATION”