

Deep Learning General Overview

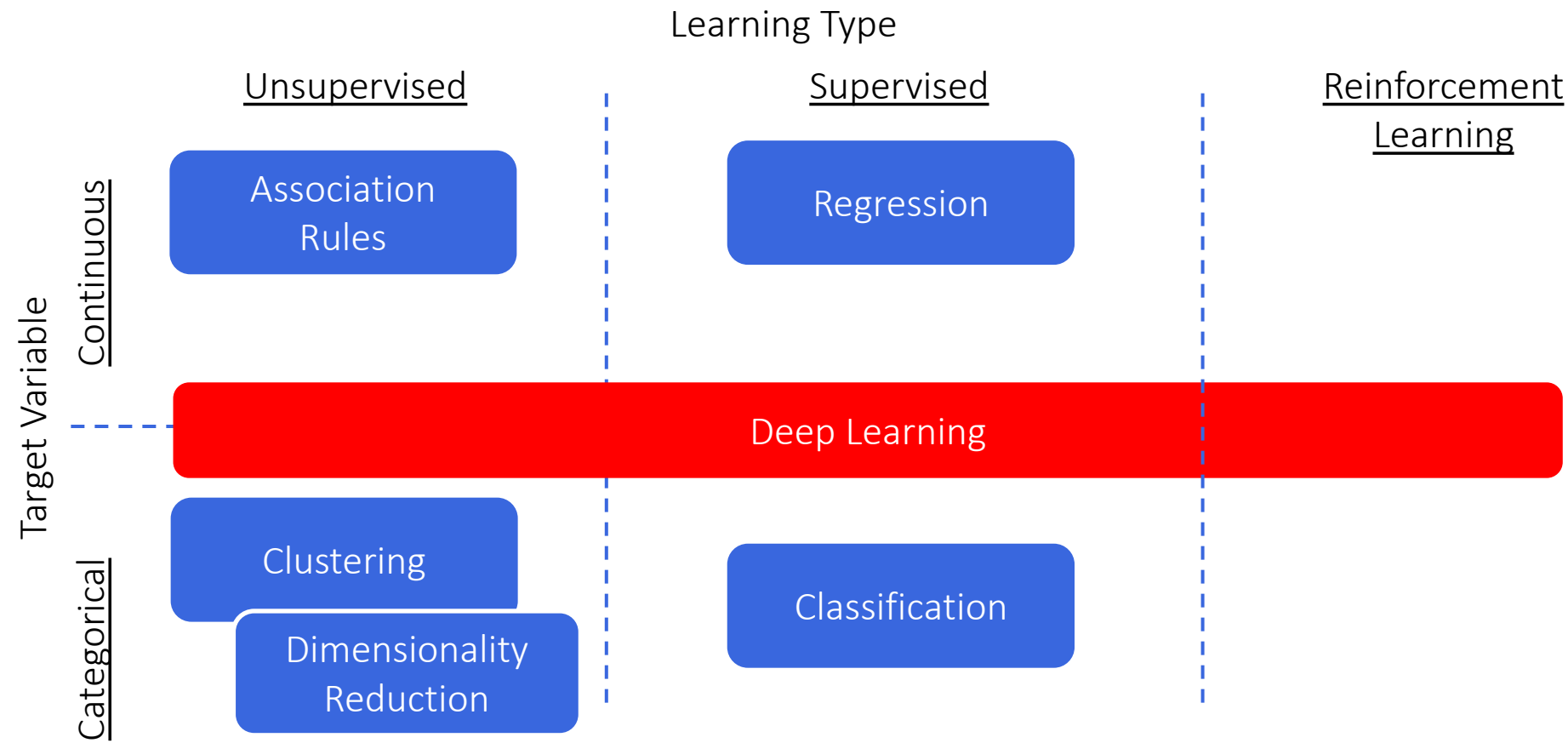
Deep Learning General Overview

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

Deep Learning General Overview

All Chapters



Deep Learning General Overview

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

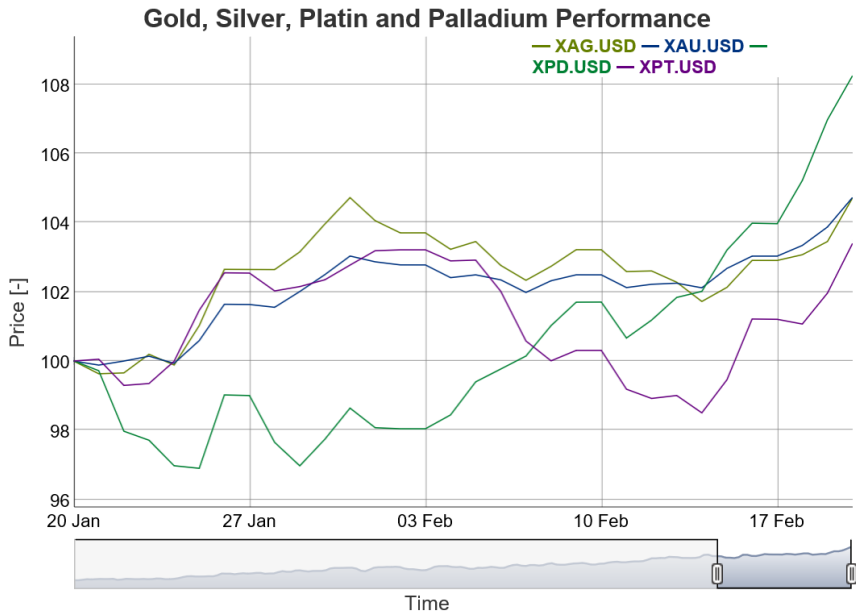


- recognizes pixelwise location of dog/cat

Deep Learning General Overview

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”