**Machine Learning**

*June 2, 2021*

**Supervised Learning (Classifying and prediction)**

* Classification – to predict categorical class labels (e.g., email spam detection)
* Regression – to predict continuous outcomes

**Unsupervised Learning (Discovering hidden structures and data compression)**

* Clustering – exploratory data analysis to organize a pile of information into meaningful groups with no prior knowledge of their group membership (e.g., discovering customer groups based on their interests to develop marketing strategies/programs).
* Dimensionality reduction (for data compression) – used in feature pre-processing to remove noise from data.

**Reinforcement Learning (Interactive) –** A system where an agent/system improves its performance based on interactions with the environment. Concerned with learning to take a series of actions that maximizes the total reward.

**Training a Perceptron to learn**

Perceptron

Learning rule – 3 steps

Bias unit

Learning rate

Linear separability

Epoch

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Adaline – Adaptive Linear Neuron Classifier

Batch Gradient Descent

Stochastic Gradient Descent