Unsupervised Learning

Course Outline

# Section 1: Course Material

Algorithms:

1. Hierarchical Clustering
2. Centroid-Based Clustering – K Means
3. Density/Grid – Based Clustering – DBScan
4. Distribution-Based: Gaussian Mixture Model
5. PCA

# Section 2: Course Structure

Section 1: Introduction

* Section 1.1: What is Unsupervised Learning
* Section 1.2: About this Course
* Section 1.3: Course Software Set Up

Section 2: Python Demos

* Section 2.1: Numpy Basics
* Section 2.2: Matplotlib Basics
* Section 2.3: Matplotlib Animation
* Section 2.4: Pandas

Section 3: Math Basics

* Section 3.1: What is Data?
* Section 3.2: Distance Measures
* Section 3.3: Singular Value Decomposition
* Section 3.4: Computational Complexity
* Section 3.5: Normal Distributions

Section 4: Hierarchical Clustering

* Section 4.1: Theory
* Section 4.2: Code Walkthrough

Section 5: K Means Algorithm

* Section 5.1: Theory
* Section 5.2: Code Walkthrough

Section 6: Density-Based Methods

* Section 6.1: Theory
* Section 6.2: Code Walkthrough

Section 7: Distribution-Based Methods

* Section 7.1: Gaussian Mixture Method - Theory
* Section 7.2: Code Walkthrough

Section 8: Principal Component Analysis

* Section 8.1: Theory
* Section 8.2: Code Walkthrough
* Section 8.3: Application to MNIST Dataset

Section 9: Applications

* Section 9.1: MNIST Fashion Dataset
* Section 9.2: Iris Dataset
* Section 9.3:

Section 10: Concluding Remarks and Thank You

* Section 10.1 Concluding Remarks and Thank You