Unsupervised Machine Learning

Preparing Data & Deploying Analytic Models for Clustering & Association

- Common Unsupervised Learning Techniques
  - Two Main Types of Unsupervised
- What is Unsupervised?
  - Beware of Some Practice Data
  - Labeled and Unlabeled
  - Homogeneous Subsets
  - What If You Knew the Purpose?
  - What Might You Do with the Info?
  - Only Shapes and Sizes?
  - Be Careful Not to Confuse These Two
- What is Unsupervised Learning?
  - Example #1: Spaghetti Sauce
    - Lessons Learned
  - Example #2: Tasting Room
  - Example #3: Orley Ashenfelter
  - Example #4: 30 Second Wine Survey
- Data Preparation for Unsupervised Learning Techniques
  - Transactional Data: Association Rules
  - It's All About Distances
  - Standardizing Data
  - Data Format for Cluster Analysis
- Hierarchical Clustering
- K-Means Clustering
  - K-Means Clustering
  - Cluster Analysis: K=10
- Silhouette
- K-Nearest Neighbors (KNN)
- Using Clustering Algorithms for Market Segmentation: A Case Study
  - Clustering Case Study
- Report and "Deploying" the Clusters
  - Traffic Light
  - Line Plot

    - Clustered Bar Chart
    - Association Rules
    - Clustering Case Study
    - Association Rules
    - Data Formats
    - Common Terms
    - Example Rule
    - Filter
    - Build Model
- Putting Association Rules to Work
    - Group of Association Rule
- Application Examples and Case Studies
    - Self Organizing Maps
    - Neighborhoods
    - All inputs tied to all outputs
    - Kohonen “Animals” Demo
    - SOMs on YouTube
- Using Clustering Algorithms for Detecting Outliers and Anomalies
    - Cluster Analysis for Anomaly Detection
    - SOM for Anomaly Detection
    - Maintenance Cost Case Study
    - Don’t Go It Alone
    - Cost - Baseline
    - ‘Widget’ Maintenance
    - Kohonen Self-Organizing Map
    - Cost and the Widget Machines
- Wrap-Up

