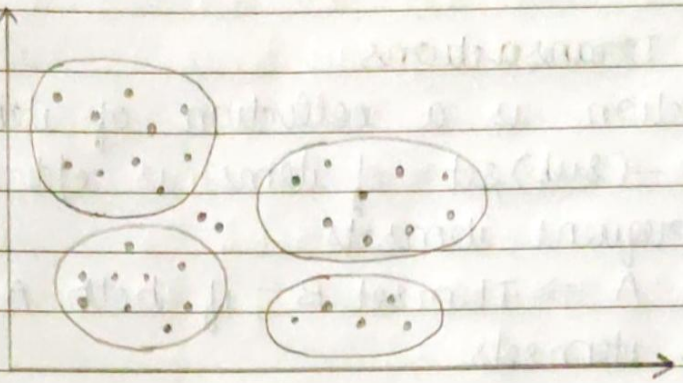
WEEK 1 - LECTURE 3

Unsupervised Learning

CLUSTERING

In clustering the goal is to find groups of cohesive data points.



In the above data set, we have found 4 clusters. Here the bias is the shape of cluster. Here the shape is ellipse.
All the points need not be the part of clusters.

Applications

- Customer Data (Discover classes of customers)
- Image pixels (Discover regions)
- Words (Synonyms)
- Documents (Topics)

ASSOCIATION RULE MINING

- Mining frequent patterns and rules
- Association rules: conditional dependencies
- Two stages ⇒

1. Find frequent patterns
2. Derive associations ($A \rightarrow B$) from frequent patterns

- Find patterns in
  - Sequences (time series data, fault analysis)
  - Transactions (market basket data)
  - Graphs (social network analysis)

Mining Transactions

- Transaction is a collection of items bought together
  - A (sub) set of items is c/d an itemset
- Find frequent itemsets
- Itemset A $\Rightarrow$ Itemset B, if both A and AUB are frequent itemsets.

Applications

- Predicting co-occurrence
- Market Basket Analysis
- Time Series Analysis (Trigger Events)