



# Unsupervised Learning with K-means Clustering

Unsupervised learning and the k-means clustering algorithm

# Unsupervised Learning

- Trying to find hidden structure in unlabeled data
- No error or reward signal to evaluate a potential solution. **No need to pick a response class.**
- Common techniques: **k-means clustering**, hierarchical clustering, hidden Markov models, etc.
  - It has a long history, and used in almost every field, e.g., medicine, psychology, botany, sociology, biology, archeology, marketing, insurance, libraries, etc.

# Unsupervised Learning

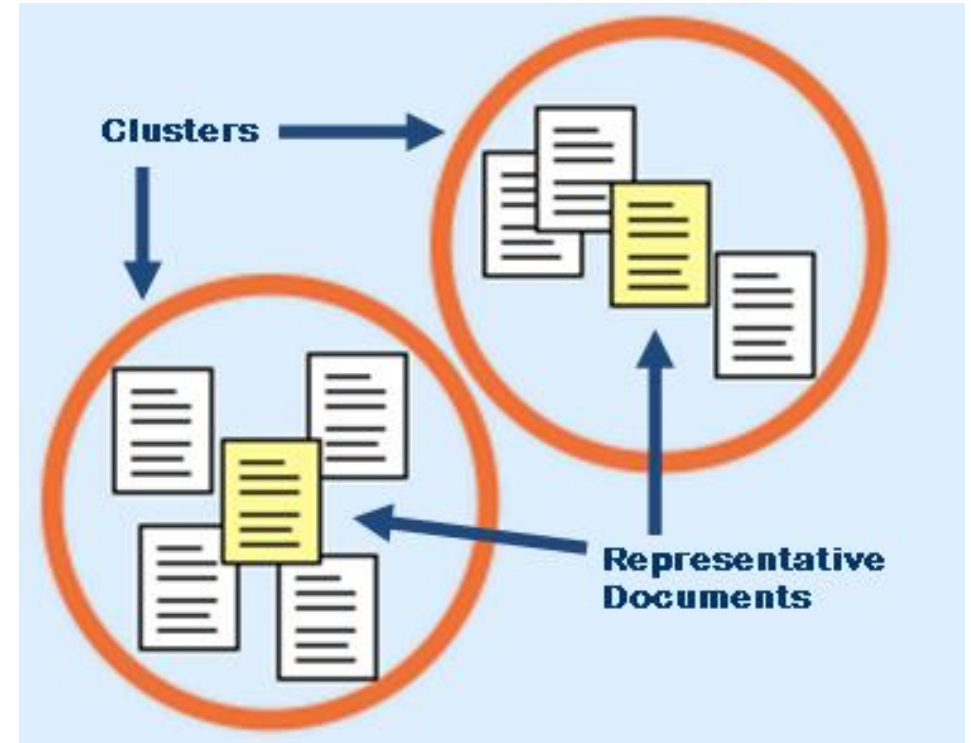
## Example: Clothing sizes

- Tailor-made for each person is too expensive
- One-size-fits-all does not work!
- Group together people of similar sizes – 'small', 'medium', and 'large' t-shirts

# Unsupervised Learning

## Example: Text document tags

- To find groups of documents that are similar to each other based on the important terms appearing in them



# Unsupervised Learning

## Example: Target marketing

- Subdivide market into distinct subsets of customers
- Where any subset may conceivably be selected as a segment to be reached with a particular offer

