

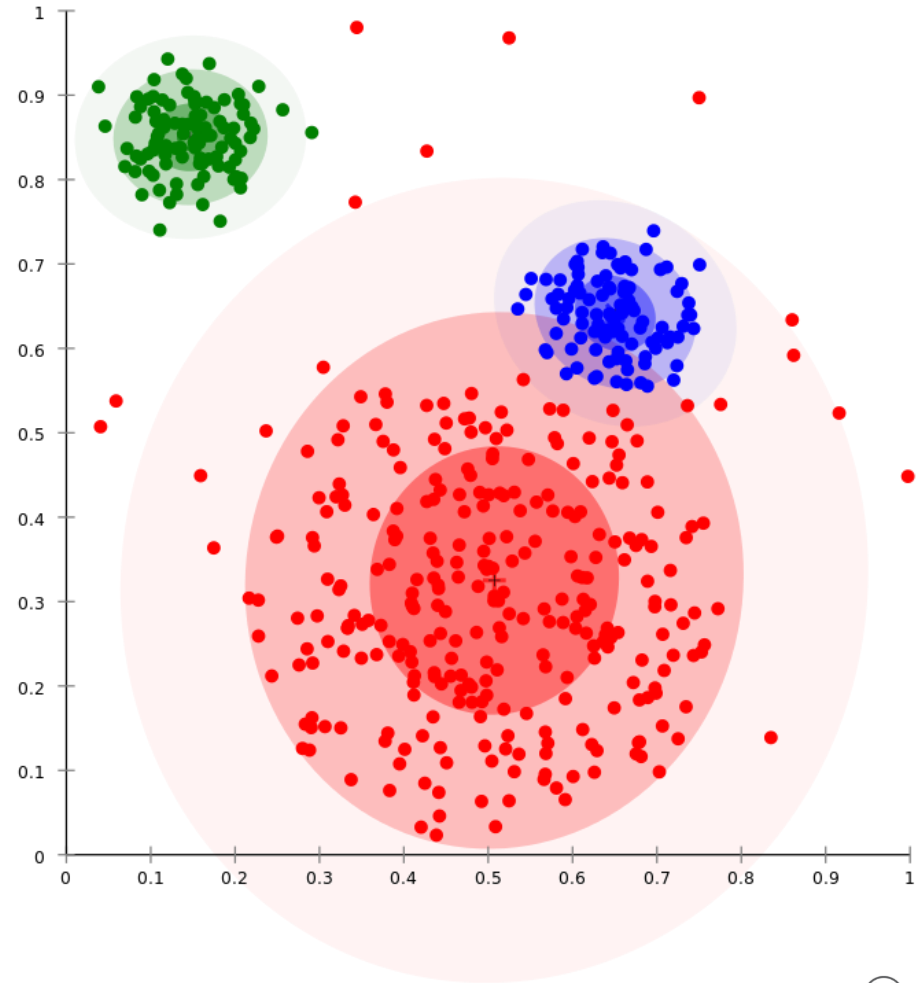
# DATA MINING TECHNIQUES: CLUSTERING CLASSIFICATION ASSOCIATIONS

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# Data Mining Techniques

## Clustering

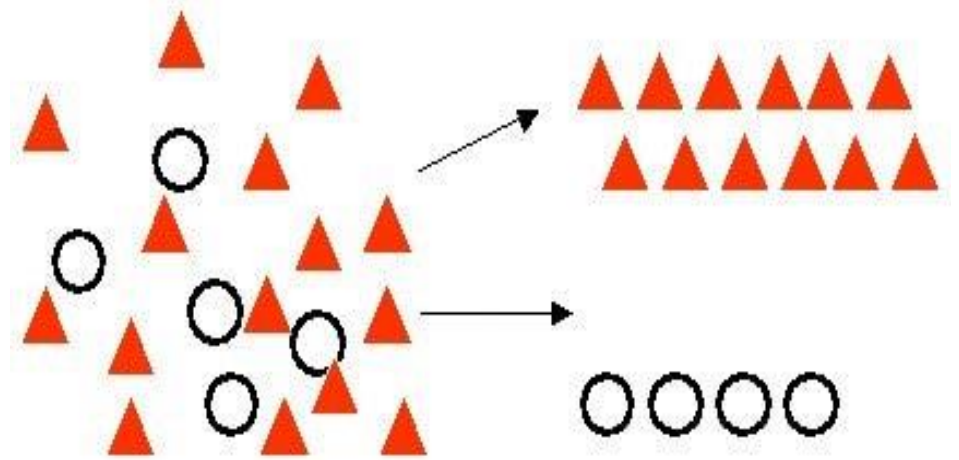
- ▶ Method for discovering similarity structures in (usually relatively large) data sets
- ▶ The groups of "similar" objects found in this way are called clusters, and the group assignment is called clustering
- ▶ Discipline of data mining, goal: Identify new groups in the data
- ▶ Applications: market research, pattern recognition, data analysis, image processing, marketers discover, categorize genes, identification of areas of similar land...



# Data Mining Techniques

## Classification

- ▶ Classification methods, are methods and criteria for the division (classification) of objects or situations into classes
- ▶ Many methods can be implemented as algorithms; this is also referred to as machine or automatic classification
- ▶ Methods: Decision Tree, K-Nearest Neighbours, Logistic Regression, Neuronal Network
- ▶ Applications: Pattern recognition, artificial intelligence, credit rating



# Data Mining Techniques

## Associations

- ▶ Searches for patterns and correlations in the data sets
- ▶ These resulting association rules describe correlations between co-occurring things
- ▶ Identify items that imply the occurrence of other items within a transaction
- ▶ Typical field of application is the interrelationships in purchasing, so-called market basket analysis

For example: In 80 percent of purchases where wine is purchased, bread is also purchased.  
Both products occur in 10 percent of purchases

- ▶ Other examples: Planning of sales rooms, planning of discount offers
- ▶ Advantage: finding enormous numbers of connections in large amounts of data

# Data Mining Techniques

## Associations – Example Market Basket Analysis (MBA)



# Sources

- ▶ [https://www.tutorialspoint.com/data\\_mining/dm\\_cluster\\_analysis.htm](https://www.tutorialspoint.com/data_mining/dm_cluster_analysis.htm)
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- ▶ <https://de.wikipedia.org/wiki/Klassifikationsverfahren>
- ▶ <https://de.wikipedia.org/wiki/Assoziationsanalyse>
- ▶ H. Voellinger, Lecture DWH at DHBW Stuttgart, DW09 - Advanced Analytics I: Data Mining - Introduction & First Methods, Slide 213