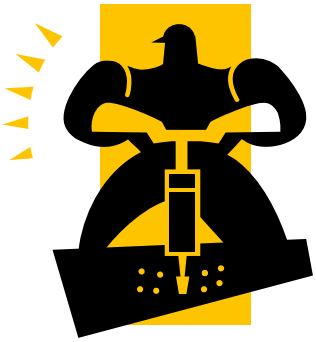

Data Mining -- Data Preparation

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Data Types

- Texts
  - Relational records, Transactions
  - Documents
  - Logs
- Sequences
  - Time series
  - Videos
  - Biomedical sequence
- Special structure
  - Web pages, forums
  - Graphs, social networks, interactions
  - Multimedia, images, videos
  - Spatial data, maps

Characteristics of Data

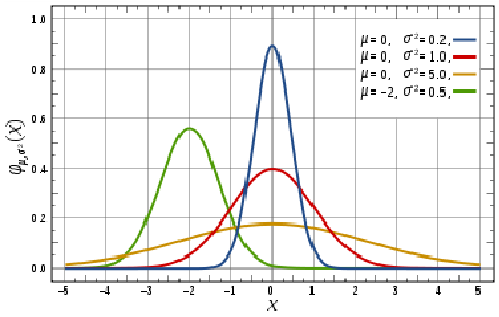
- Dimensionality
  - Curse of dimensionality
- Resolution
  - Patterns depend on the scale
- Distribution
  - Centrality and dispersion
- Similarity
  - Numerical or categorical data

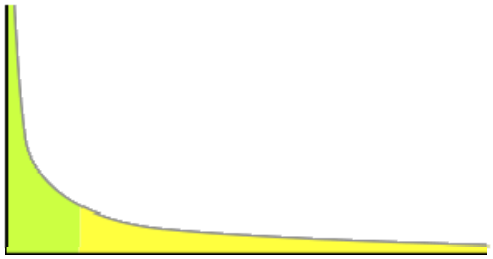
Measurements of Data

- Minimum, maximum
- Mean, median, mode
- Variance, standard deviation
- Quartiles
  - min, Q1, mean, Q3, max
  - IQR: inter-quartile range = Q3-Q1
- Skewness
  - http://en.wikipedia.org/wiki/Skewness
- Outliers
- Correlation coefficient
  - http://en.wikipedia.org/wiki/Correlation_coefficient

Data Distributions

- Normal distribution
  - http://en.wikipedia.org/wiki/Normal_distribution
- Power law distribution
  - http://en.wikipedia.org/wiki/Power_law





Preprocessing

- Data cleaning
  - Incomplete data cleaning
  - Noise/outliers reduction
- Data Integration
  - Entity resolution
- Data reduction
  - Sampling
  - Dimension reduction
  - Compression
- Data transformation
  - Domain transformation
  - Discretization

Data Warehousing

- "subject-oriented, integrated, time-variant, and nonvolatile collection of data in support of management's decision-making process."

  by W. H. Inmon

- Types:
  - Plain texts
  - Records
  - Vectors
  - Relations
  - Databases
  - Data cubes and OLAP(online analytical processing)

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