EDA - Session 2

Exploring the Data II

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1. Exploring the data II
    - Continuous values
    - Correlation bi/multivariate
2. Feature selection
    - Methods
    - Alternative: PCA

3. Hands-On

From Exploring the data I

What should you do when encountering a new data set? In general:

- Answer the basic questions about, context, data set size, fields meaning
- Summary statistics
- Pairwise correlations
- Class breakdowns
- Plots of distributions

From Exploring the data I

What should you do when encountering a new data set? In general:

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Exploring the data II

Pairwise correlations measure relationships:

- Between independent variables
- Between independent variables and the outcome

Exploring the data II

Pairwise correlations are important for:

- Selection of relevant features
- Observing the predictive power of variables

Exploring the data II

Different measures of correlations (statistical framework) depends on the type of variables involved, for example:

- Pearson or spearman for continuous variables
- Phi's coefficient or Cramers' V for categorical variables
- Kendall's Tau for ordinal variables

Feature selection

At least two categories of selection can be described:

- Filter methods (Univariate)
  - f-test (ANOVA) Categorical output
  - chi2 categorical output
  - mutual information
  - Other (pearson, spearman, kendall's tau) Continuous input and continuous output

- Model based
  - Feature importance
  - Recursive Feature Elimination

Feature selection

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- PCA finds the directions of maximum variance in high-dimensional space and projects the data onto a new subspace with less or equal dimensions.

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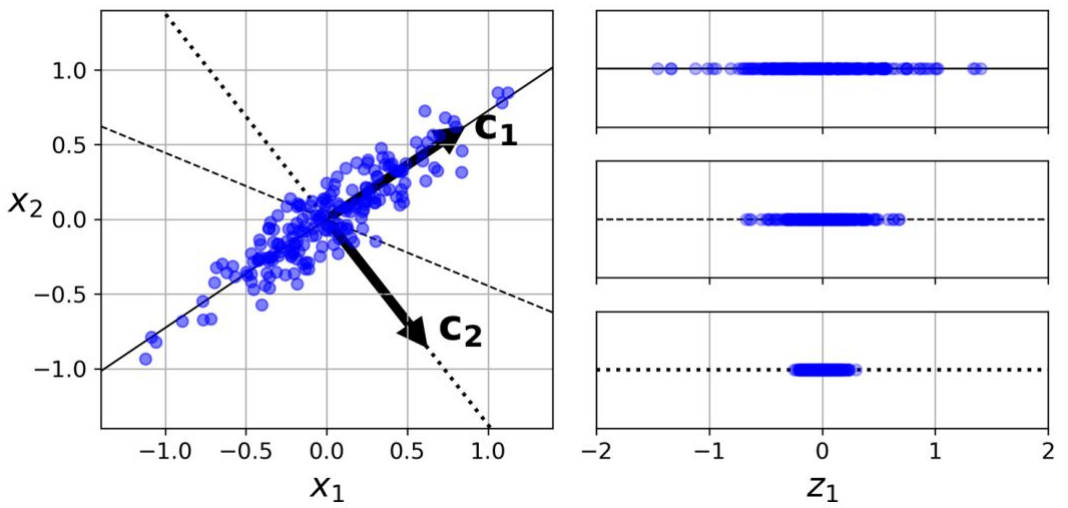
The PCA directions are highly sensitive to data scaling, and we need to standardize the features prior to PCA if the features have different scales.

Feature selection

PCA Illustration



Hands-On