Software Engineering Project
Visualization of high-dimensional data

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Content

Document history

Version	Authors	Description
1.0.0	All	Basic project concept.
1.0.1	BR	Correction in project description + dictionary
1.0.2	AZ, BR	Extension of project description

1. Project description

The project is an application to visualize high-dimensional data. Such data can be visualized using: radar plot, parallel coordinates plot. The data consists of parameter's names and numerical values of the features of certain observations.

Application will have a simple GUI consisting of: buttons for input data, result of visualization and way for user to export the visualization. Visualized data can be exported as an image file.

When the data will be inconsistent or in case of lacking parts of data, there will be a pop up window which will let the user choose how to deal with the problem. For example to skip the missing fields or not include the object with missing values in solution at all. Program will also be able to tell the user which parts of data were lacking.

The program should support multiple input formats or databases, for example: '.txt', '.xls', '.xlsm', '.csv'.

2. Dictionary

Feature - also referred to as "variables" or "attributes", represents a measurable piece of data that can be used for analysis

High-dimensional data - data where number of features or covariates can be larger than the number of independent samples.

Observation - also referred as "object", one occurrence of something you're measuring

Parallel coordinates[1] - way of visualizing high-dimensional datasets. Plot consists of a vertical bar representing a variable. Values are plotted as a series of lines connected across each axis.

Radar chart[2] - also known as "spider plot", a chart that consists of a sequence of equi-angular spokes, called radii, with each spoke representing one of the variables.

3. References

[1] https://en.wikipedia.org/wiki/Parallel_coordinates
[2] https://en.wikipedia.org/wiki/Radar_chart