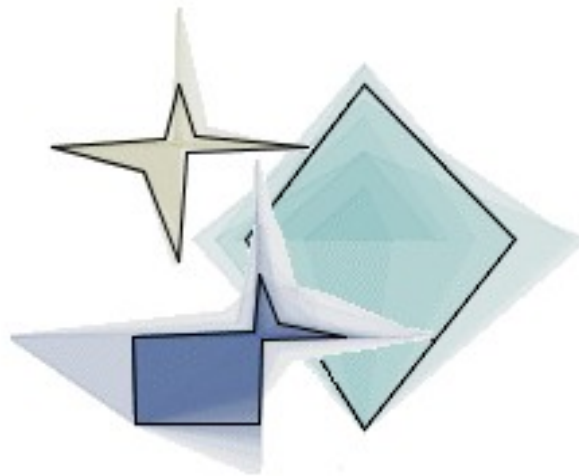


Gauguin

Interactive Glyph Analysis with R



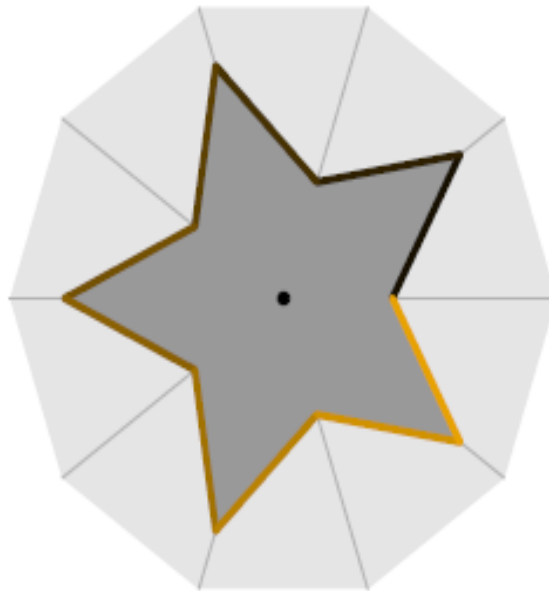
<http://stats.math.uni-augsburg.de/software/Gauguin/gauguin.html>

Glyphs

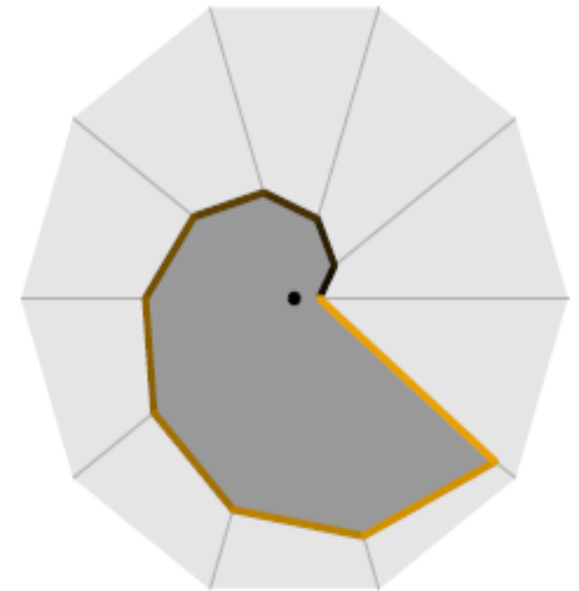
- geometric shapes scaled by the values of multivariate data.

-each glyph represents usually one high-dimensional data point (or average of data points).

4,8,4,8,4,8,4,8,4,8



1,2,3,4,5,6,7,8,9,10



Two simple examples for star glyphs. Each glyph represents ten numbers between 0 and 10 as shown in the titles.

Glyphs

Gauguin offers four different glyph shapes:

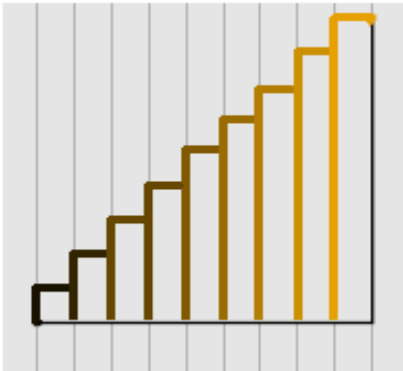
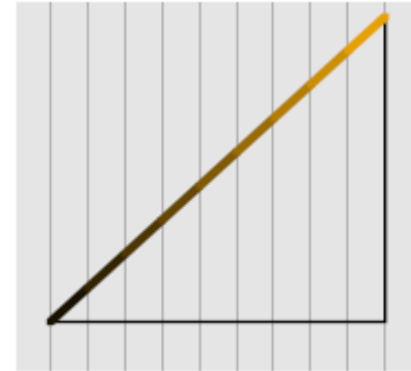
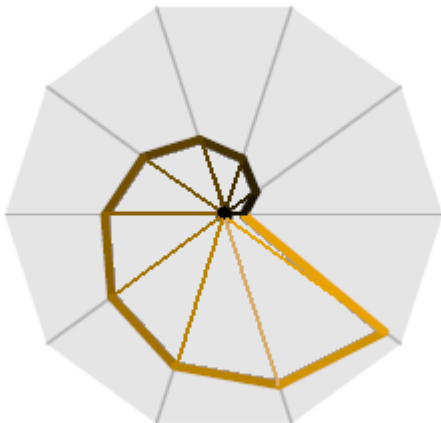


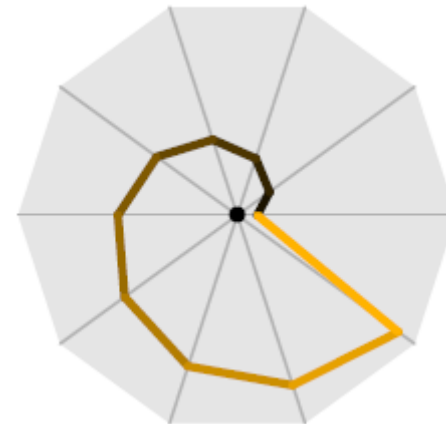
chart glyph



line glyph



filled star glyph



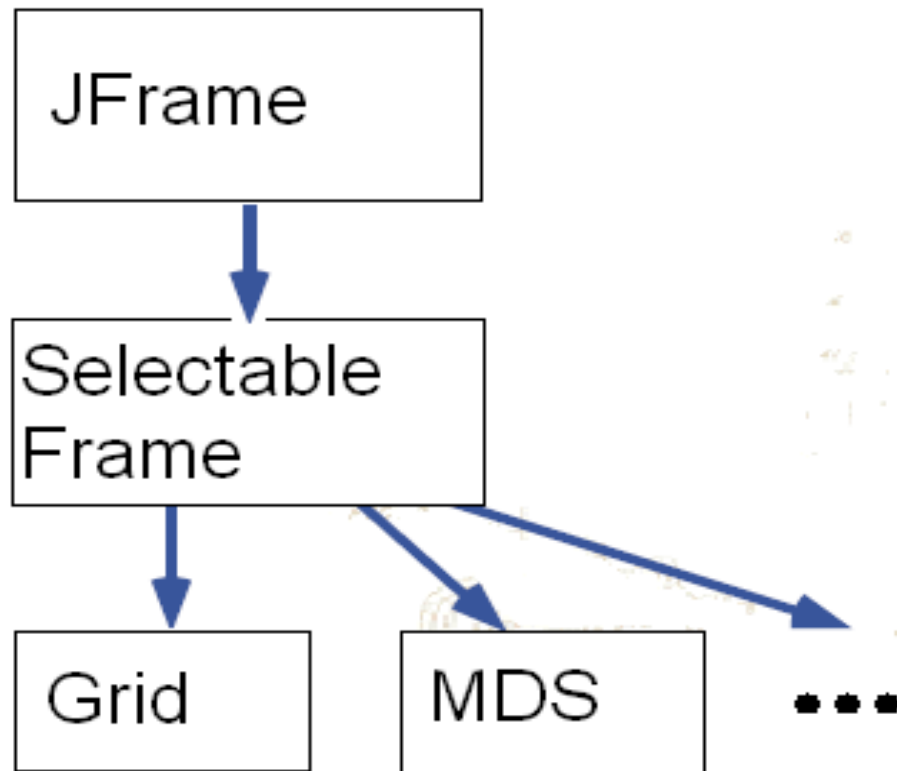
unfilled star glyph

What is Gauguin?

- Project for the interactive visual exploration of multivariate data sets
- Supports a variety of methods for displaying flat-form and hierarchically clustered data
- Developed in Java
- Multiplatform support (Windows, Linux, Mac)
- Connection to R via Rserve for calculations

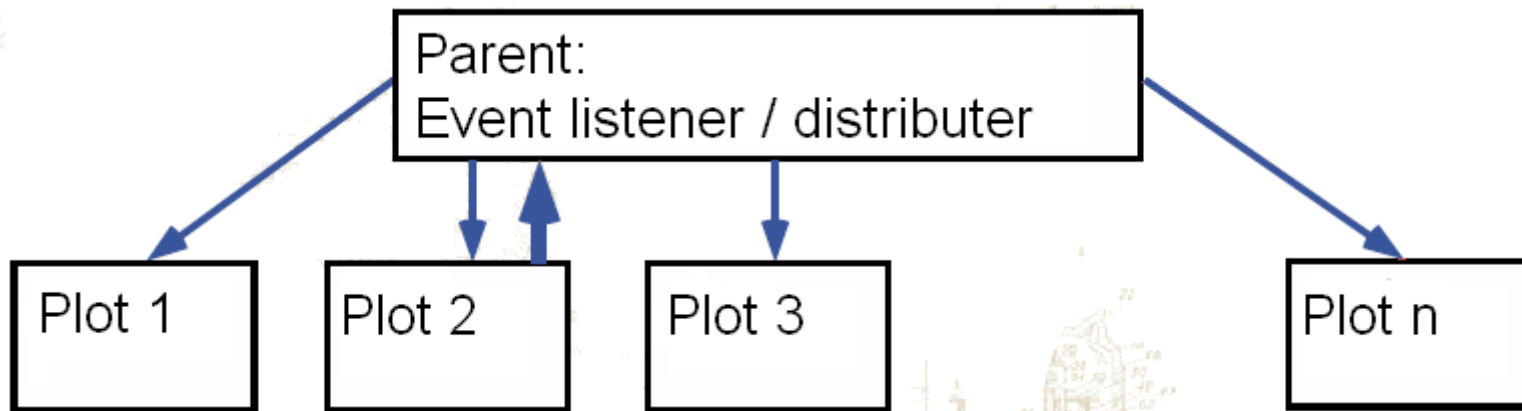
Design Choices

- Graphs



Event Handling

- Events in Gauguin:
 - Selection Event
 - DataChanged Event
- Example: Selection Event in Plot 2



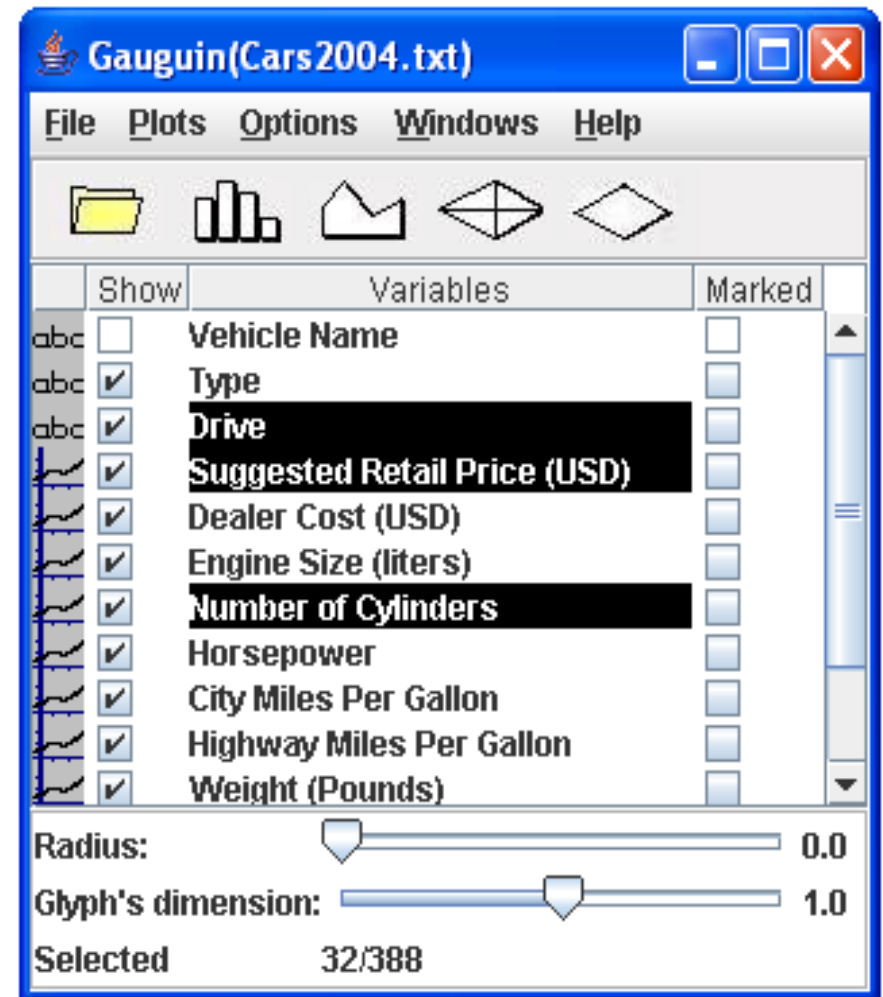
Main Window

Allows the user:

- change glyph mode
- enable,disable,mark or delete variables
- change the order of variables
- specify the glyph's size

Selection is relevant for plots and queries.

Radius allows to highlight the cases similar to an individual or to the group of selected glyphs.



Plots in Gauguin

All support:

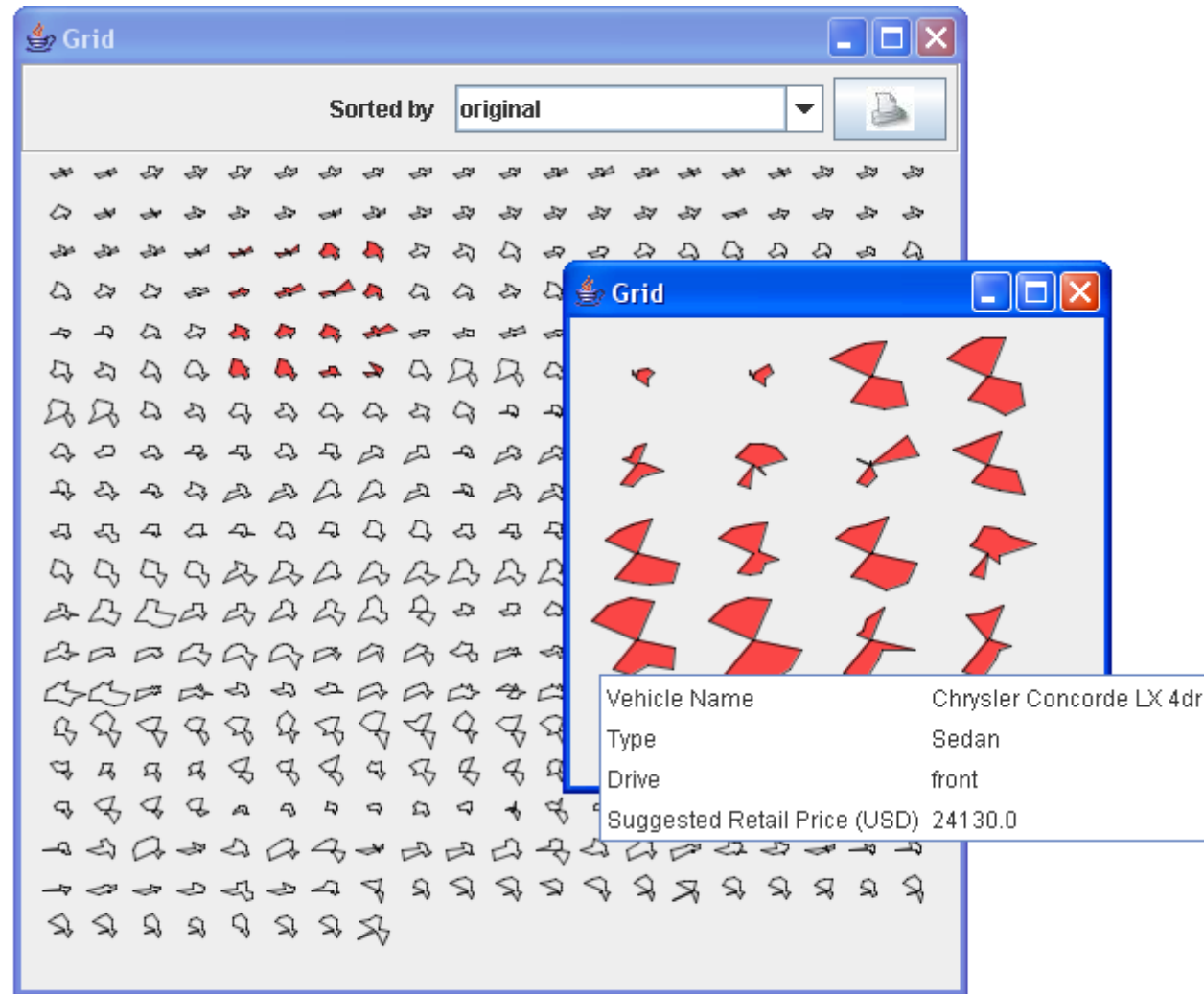
- selection and linked highlighting
- zooming, if there is a suitable coordinate system
- interrogation of objects

... all plots are aware of big datasets

Plots in Gauguin

- Grid

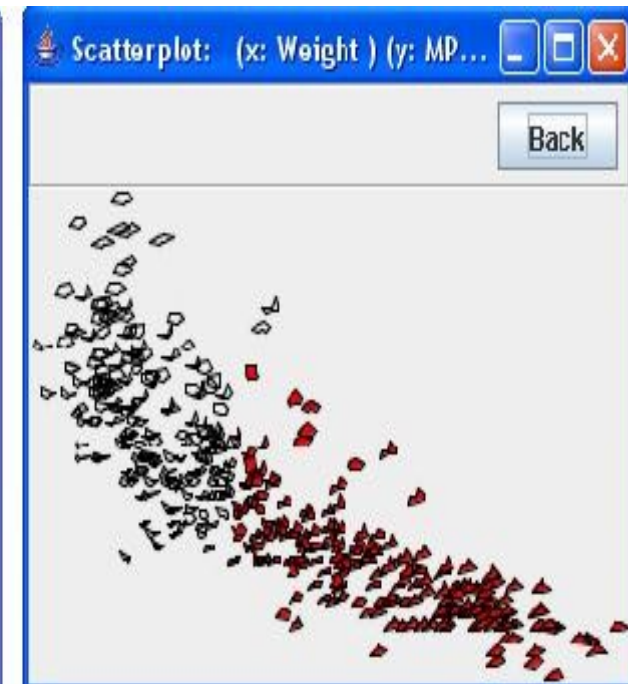
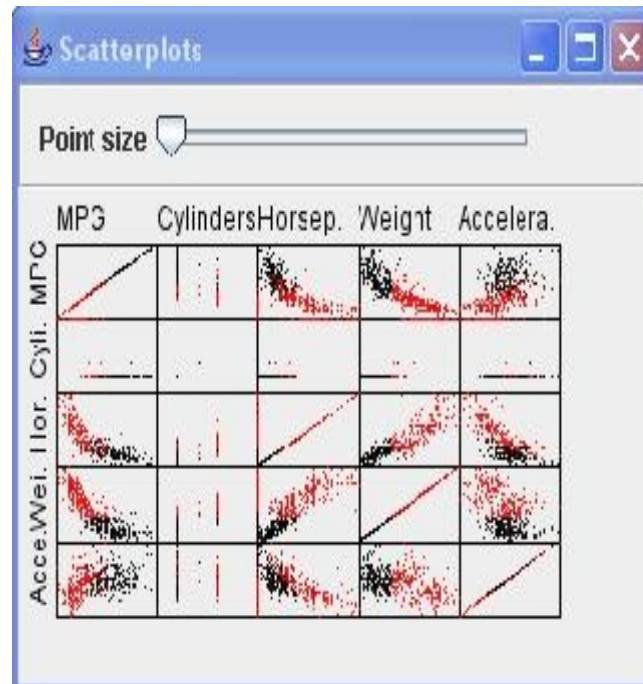
- overview over the data.
- sorting by categorical and continuous variables
- locally scaled zooming



Plots in Gauguin

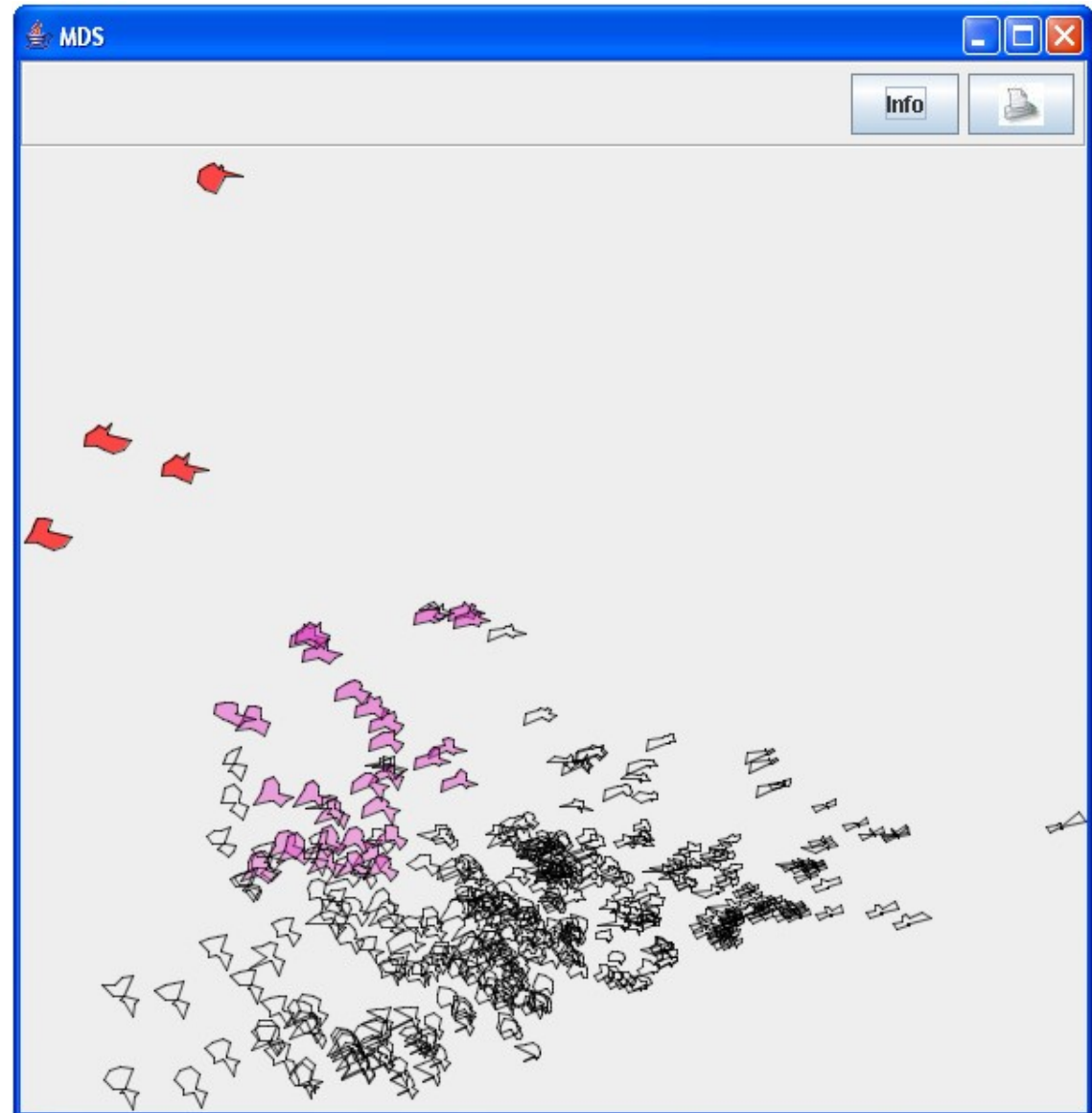
- Scatterplots

- all pairwise scatterplots of variables selected from the list in the main window
- zooming for detailed view
- tonal highlighting if points are plotted



Plots in Gauguin

- MDS
(Multidimensional scaling)
- offers different methods
 - isoMds
 - sammon
 - cmdscale
- central view

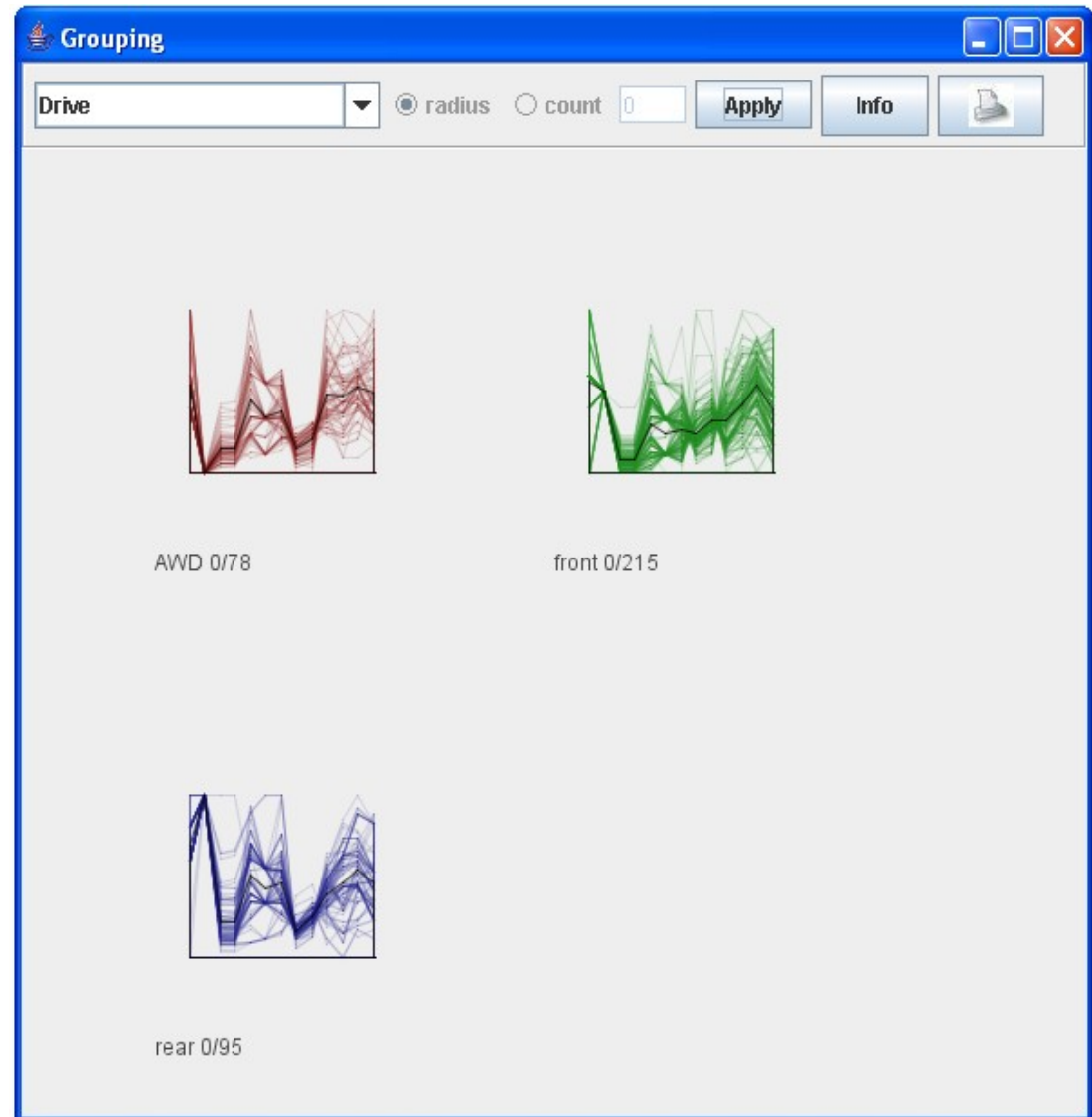


Plots in Gauguin

- Grouping

- represented as the average and the band of the glyphs in the cluster

- grouping by:
 - category
 - radius
 - count



Plots in Gauguin

- Clustering

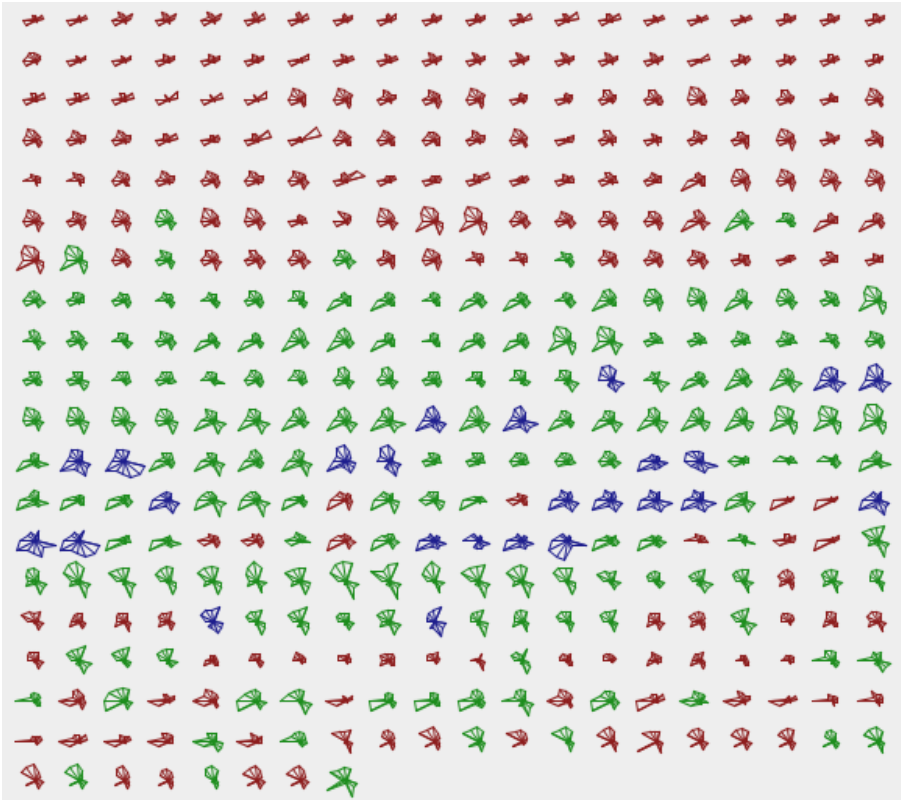
- the same representation as by grouping
- different methods:
 - kmeans
 - centroid
 - ward
 - ...



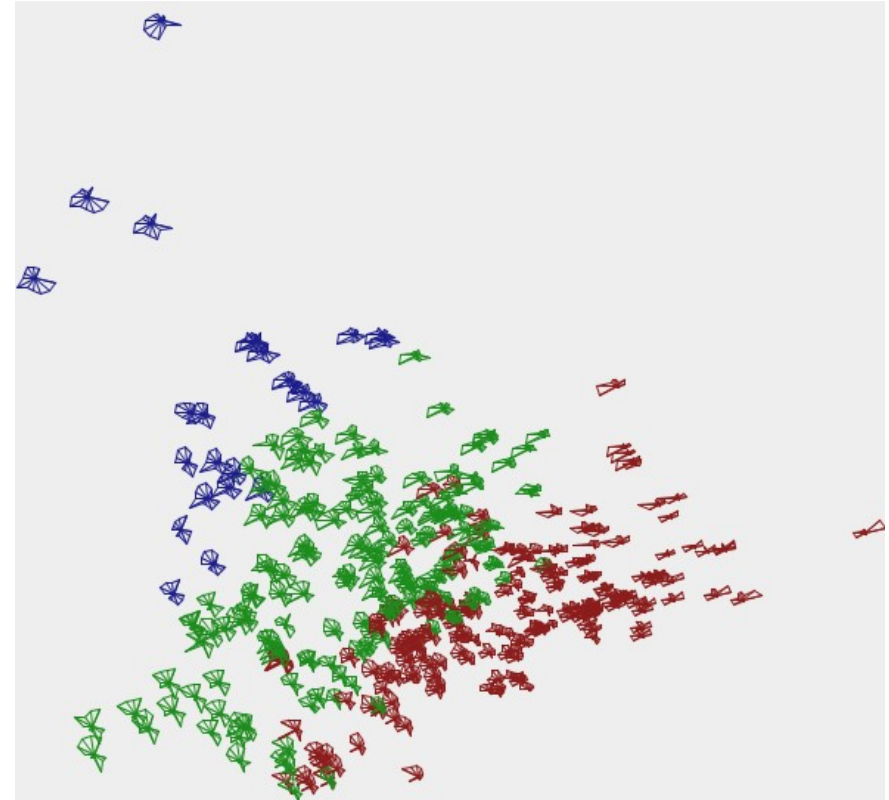
Plots in Gauguin

- Other plots by clustering and grouping

Grid



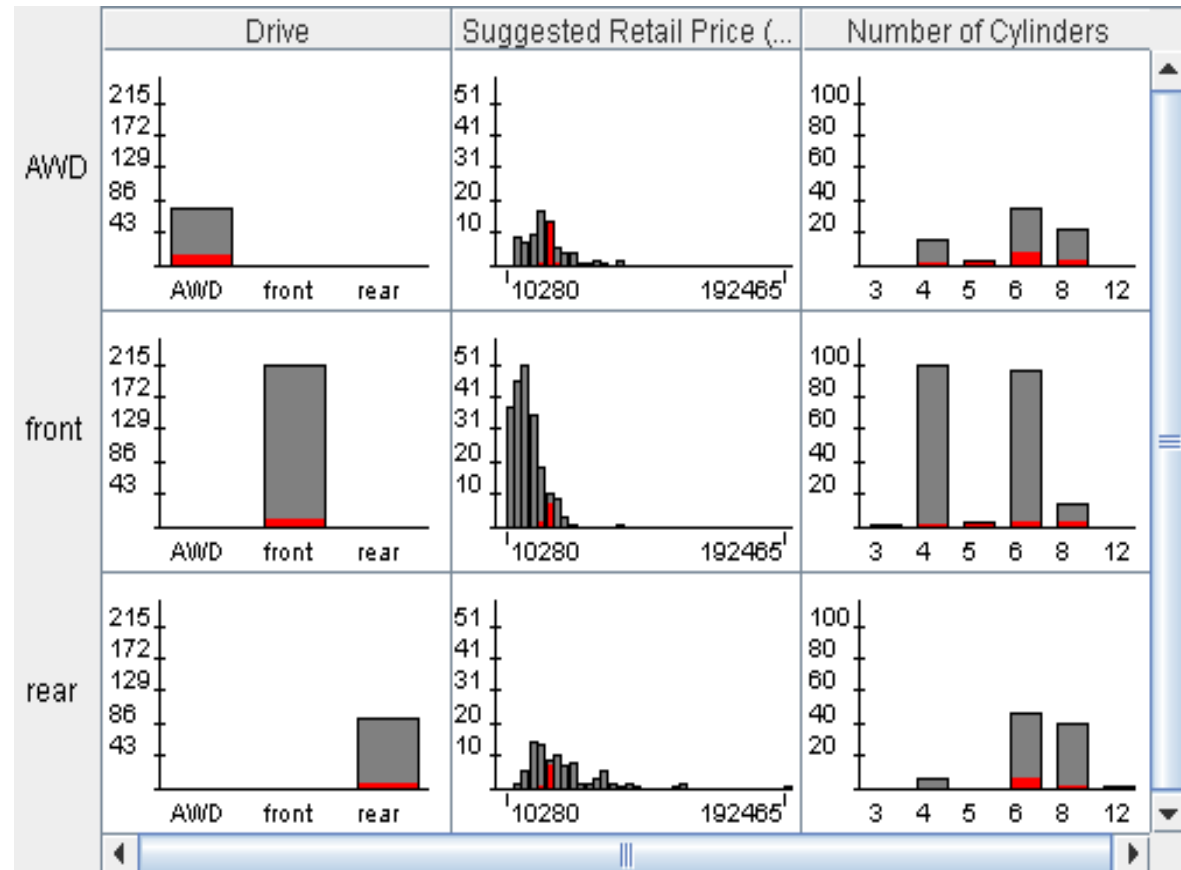
MDS



Plots in Gauguin

- **Groupsplot**

- All plots in the same column are common scaled.
- values for the start point and bin width can be individually set for each histogram column

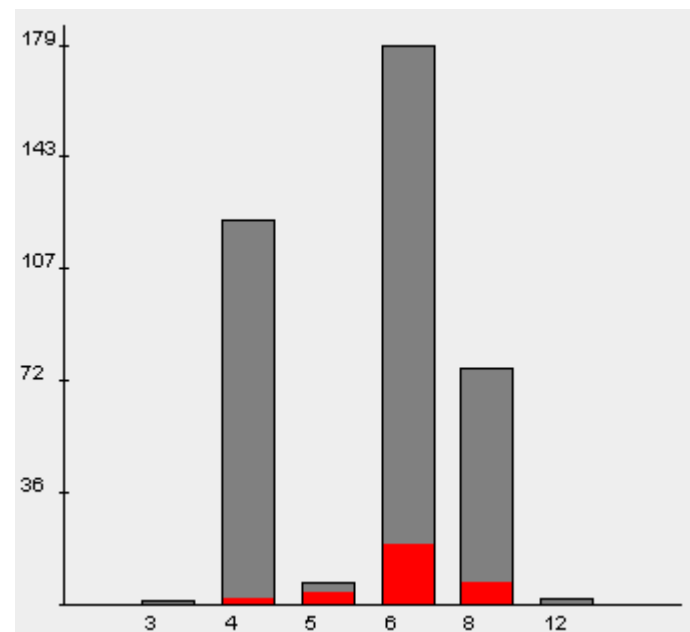
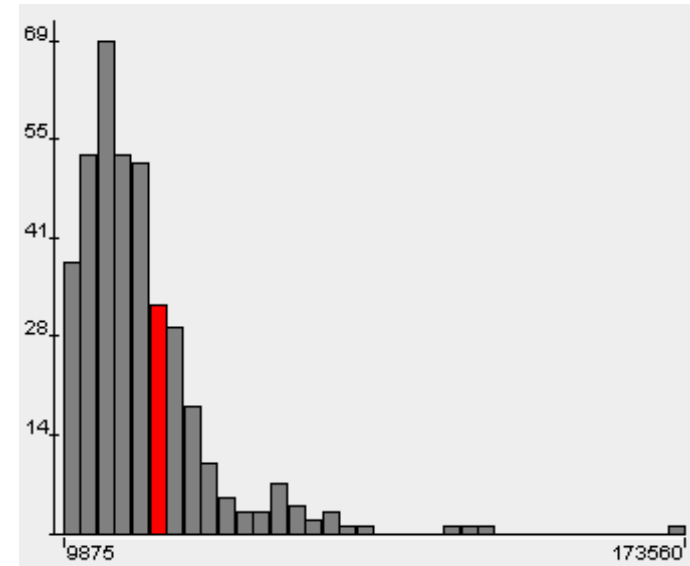


Plots in Gauguin

- Histogramms

- exact values for the start point and bin width can be set via slider
- bin width can be also easy changed by simple keyboard control

- Barcharts



Summary

- project for the interactive visual exploration of multivariate data sets
- cases and averages of groups and clusters are represented as glyphs
- connection to R via Rserve for calculations
- interactive and linked plots