



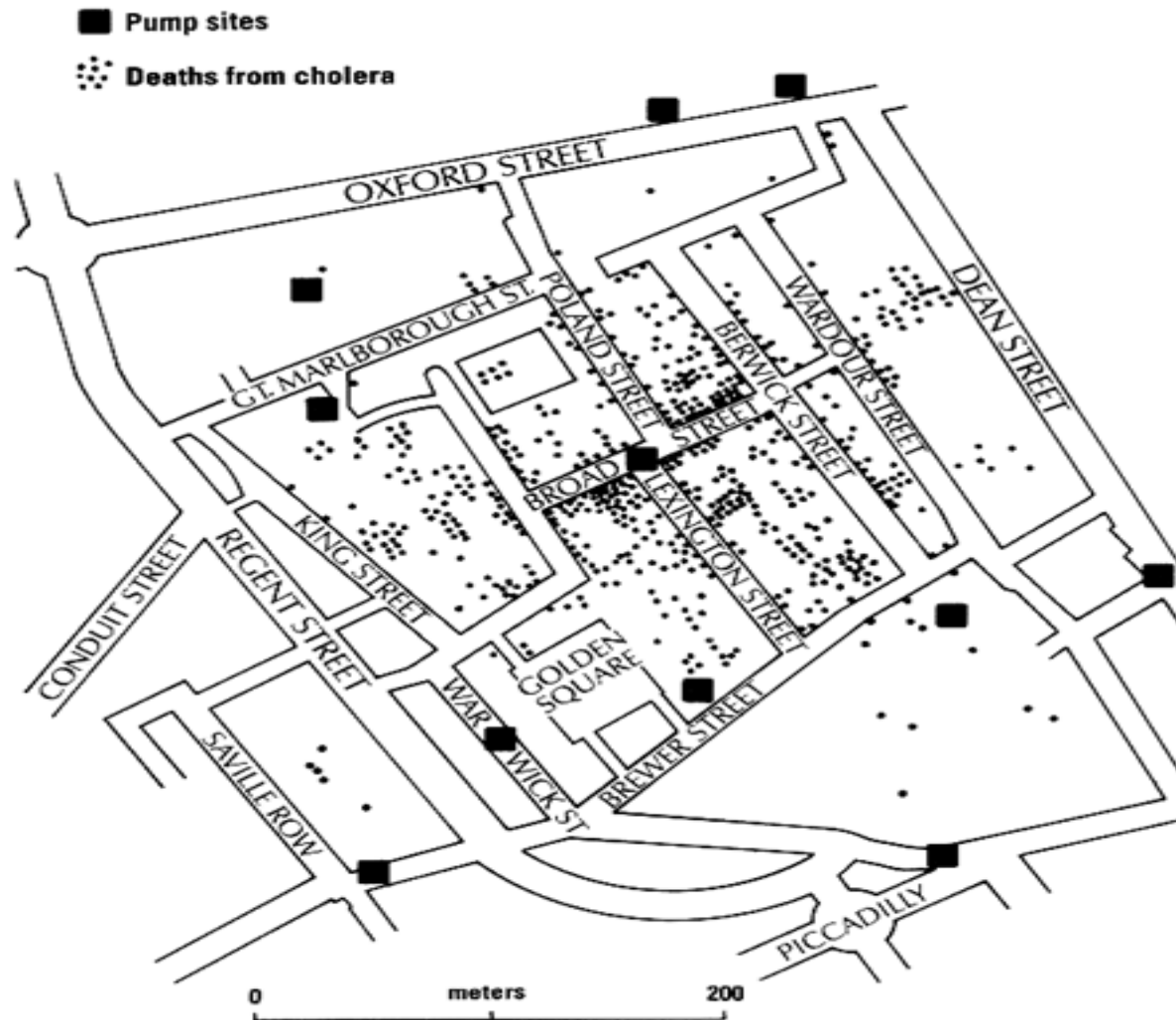
Vizualizace dat

Lenka Vysloužilová

Příklady

The screenshot displays the Fritz chess software interface. On the left is a chessboard with files A-H and ranks 1-8. The board shows a game in progress with various pieces on the board. On the right, the 'fritz' logo is visible. Below the logo are navigation buttons (left and right arrows) and a timer showing 00:02:22 and 00:02:21. Further down, the file size is 276 kB and the word 'Game' is displayed. At the bottom right, the move list shows:
7. ... ♖xf3
8. ♗xf3 ♜

Příklady



Role vizualizace

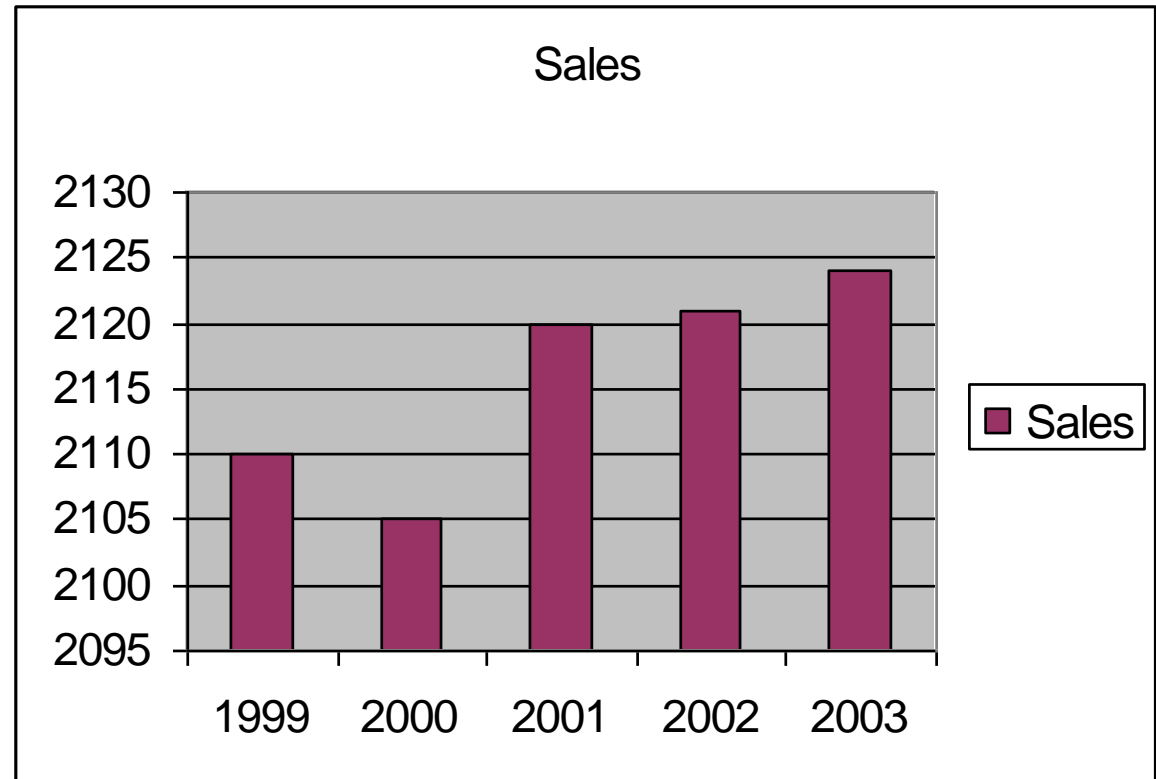
- Pomoc při prezentaci výsledků
- Pomoc při průzkumu velkého množství dat
- Možná interakce s uživatelem

- Potřeba lidského oka a jeho zkušeností
- Pozor: vizualizace může být zavádějící

Bad Visualization:

Spreadsheet with misleading Y-axis

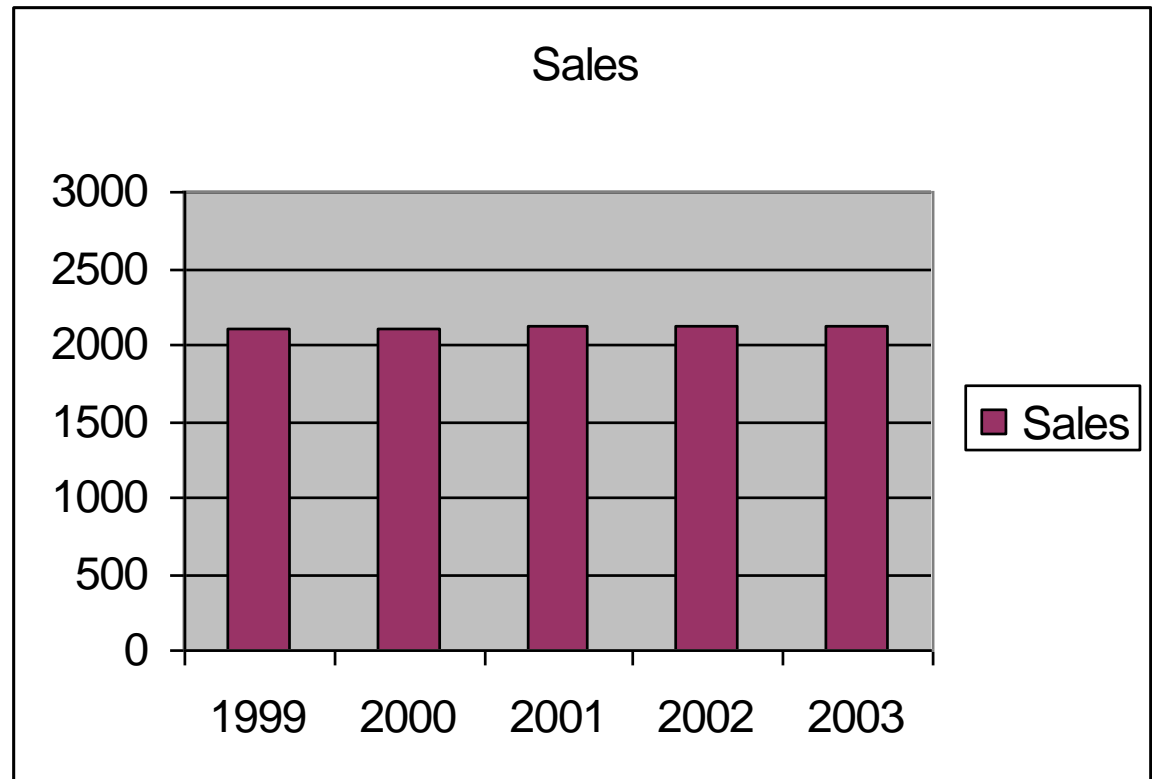
Year	Sales
1999	2110
2000	2105
2001	2120
2002	2121
2003	2124



Y-Axis scale gives **WRONG** impression of big change

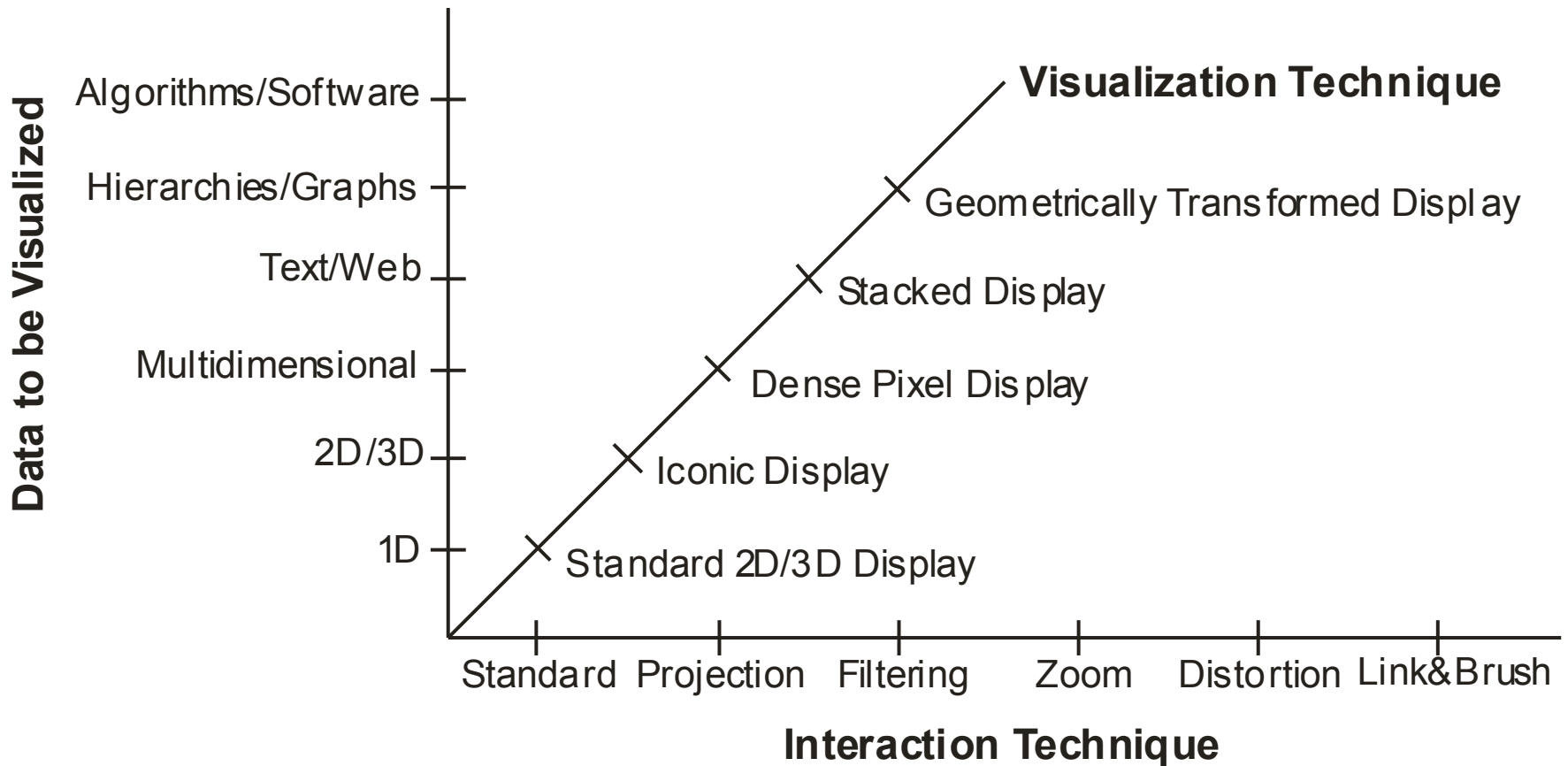
Better Visualization

Year	Sales
1999	2110
2000	2105
2001	2120
2002	2121
2003	2124



Axis from 0 to 2000 scale gives correct impression of small change

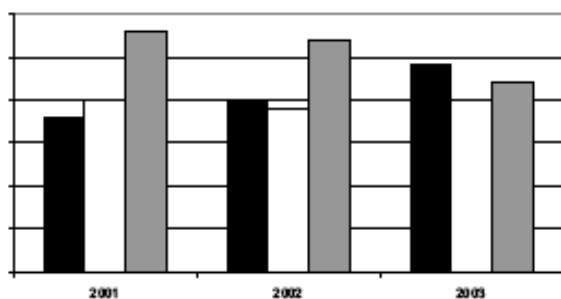
Visualization



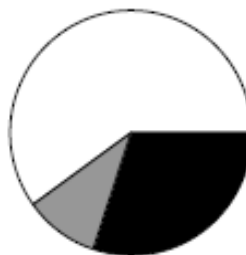
D.A. Keim. Information visualization and visual data mining. IEEE Transactions on Visualization and Computer Graphics, 8(1):1--8, 2002.

- sloupcové grafy
- koláčové grafy
- X-Y grafy

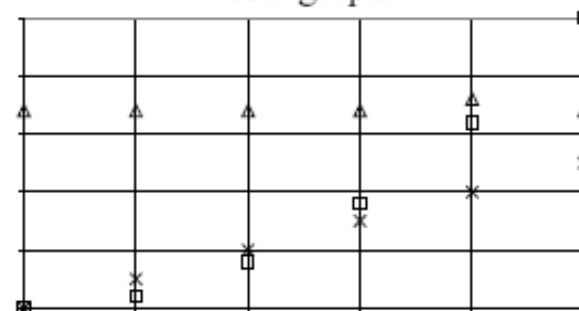
Bar graph

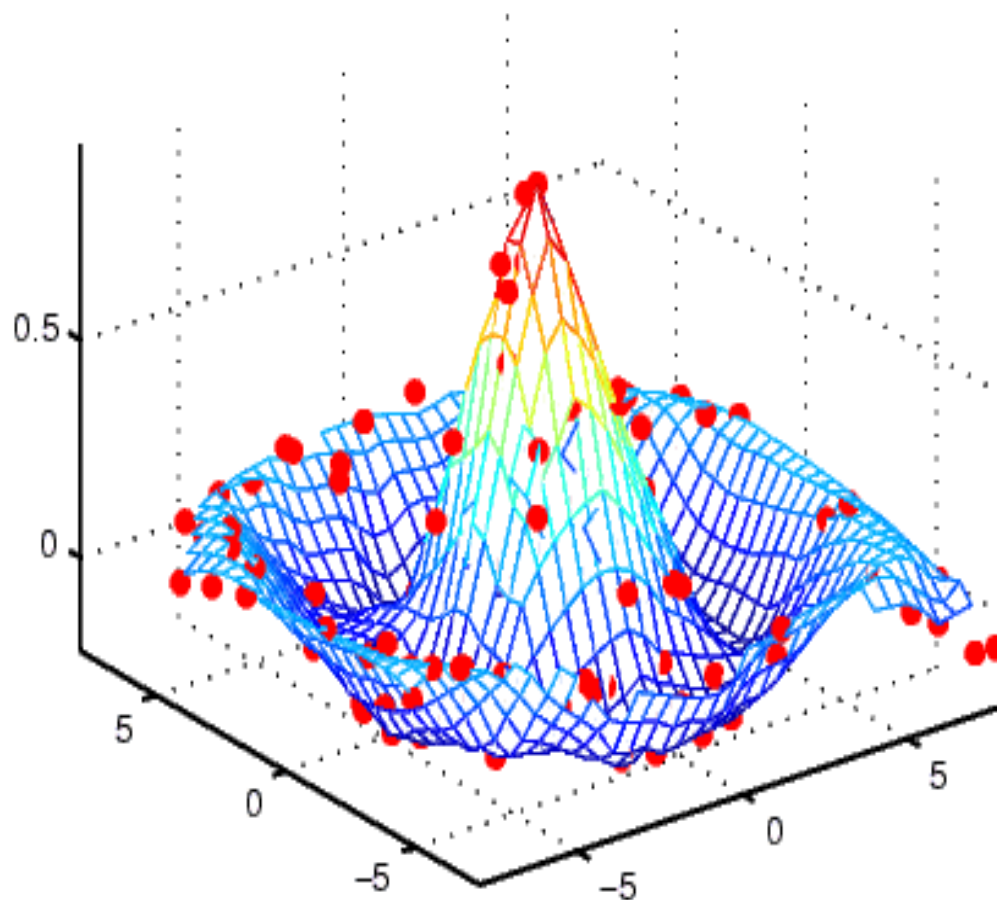


Pie graph



XY graph





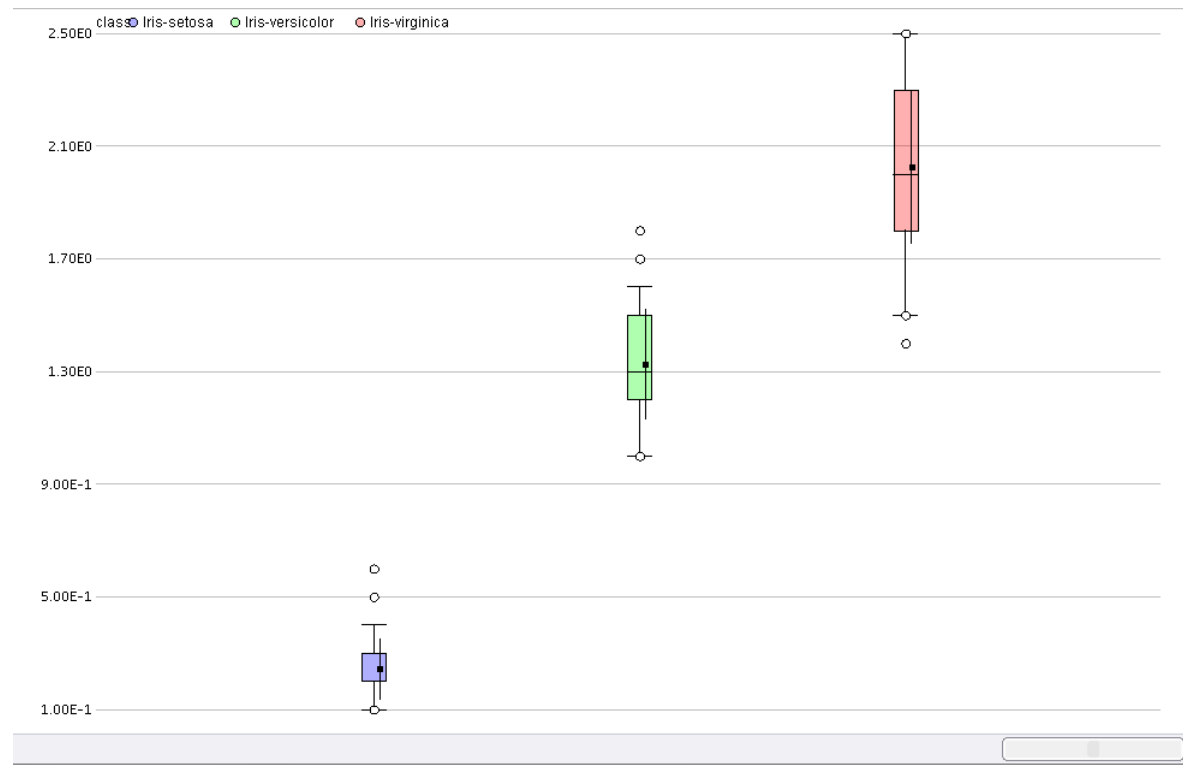
■ Box graf – Quartile Color

M – medián

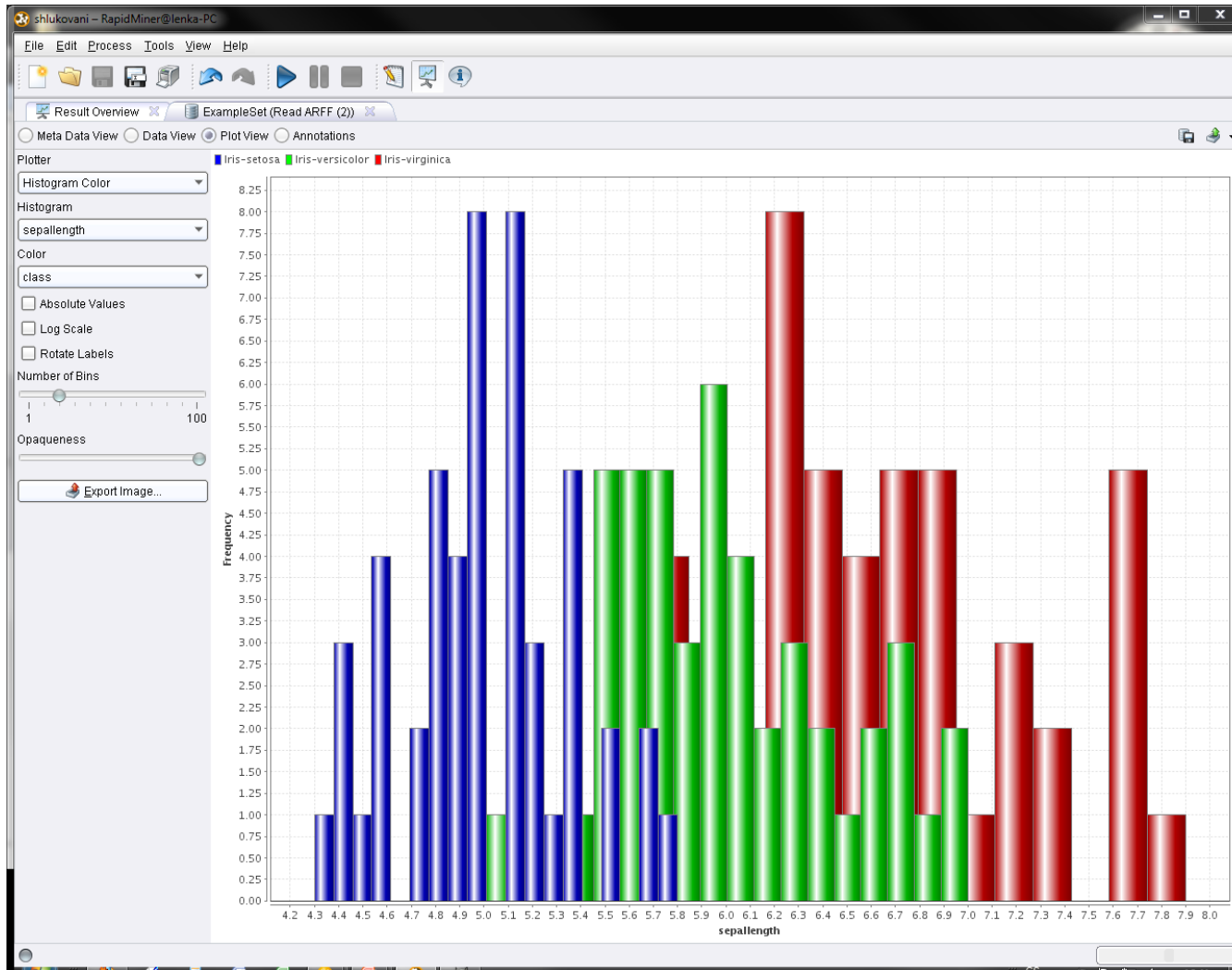
F – horní a dolní kvartil

$$R_F = F_H - F_D$$

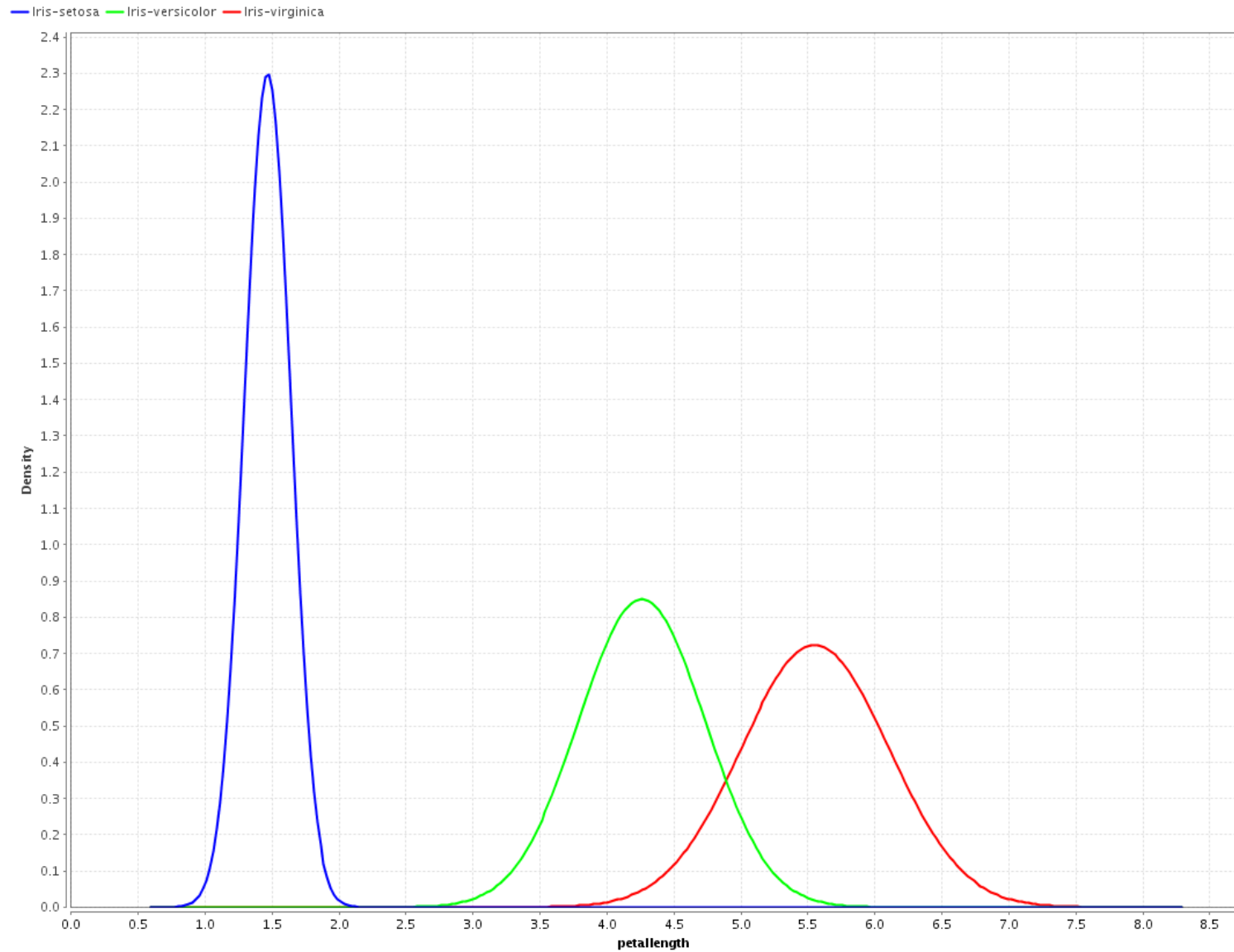
$$B_D = F_D - 1.5R_F$$



Histogram

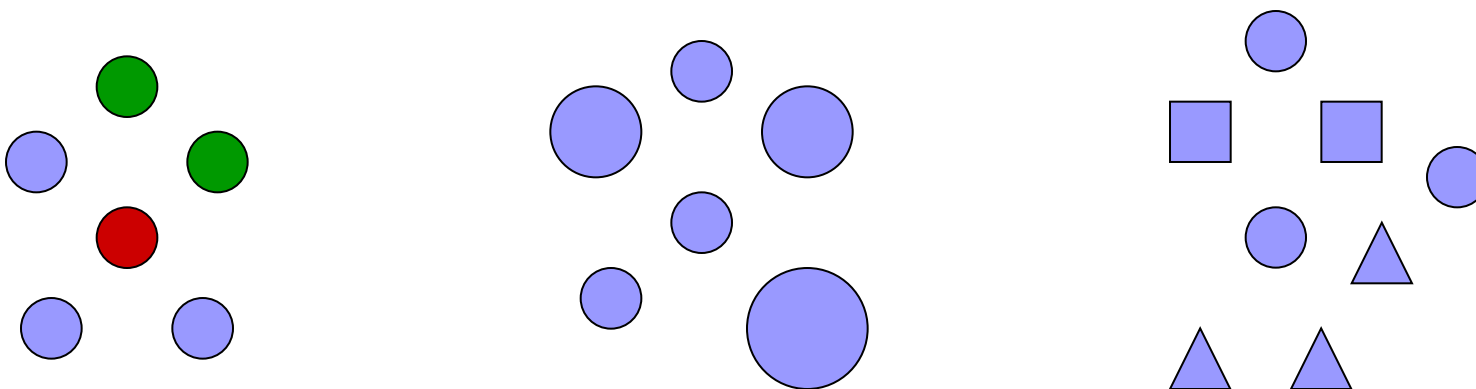


Distribution



Multidimensionální vizualizace dat

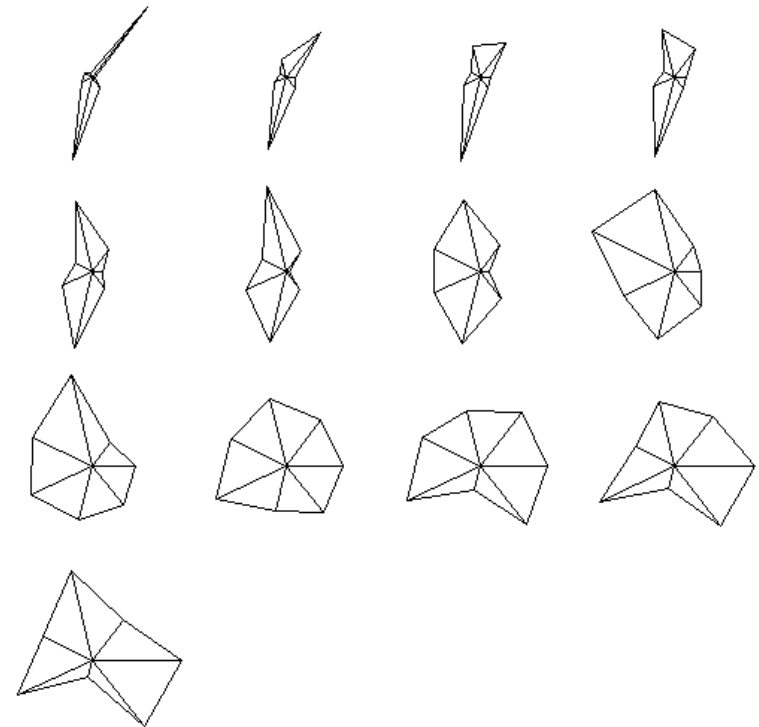
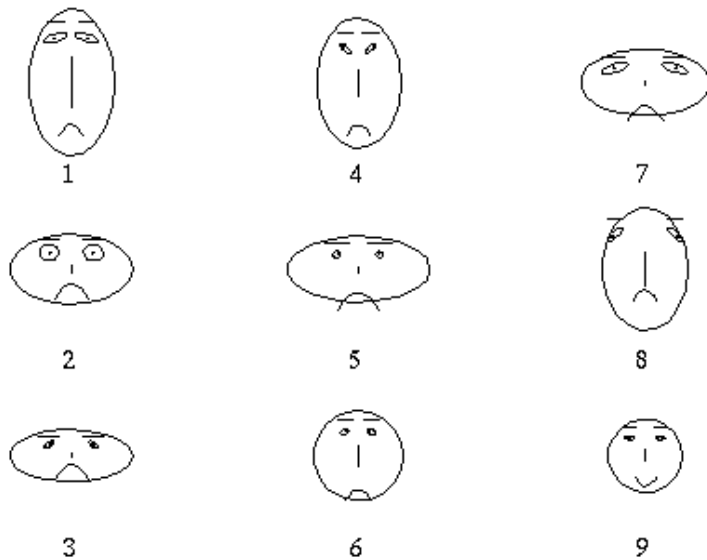
- člověk je omezen světem kolem sebe na 3D vnímání
- $nD \rightarrow 2D$ (3D)
- další dimenze nahrazujeme přidáním barev, velikostí objektů a tvarem objektů



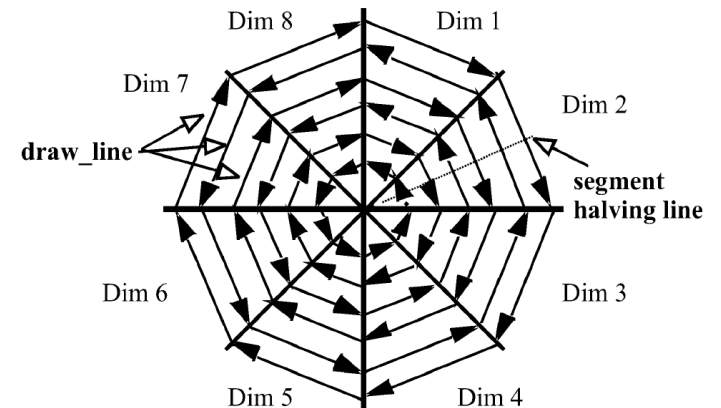
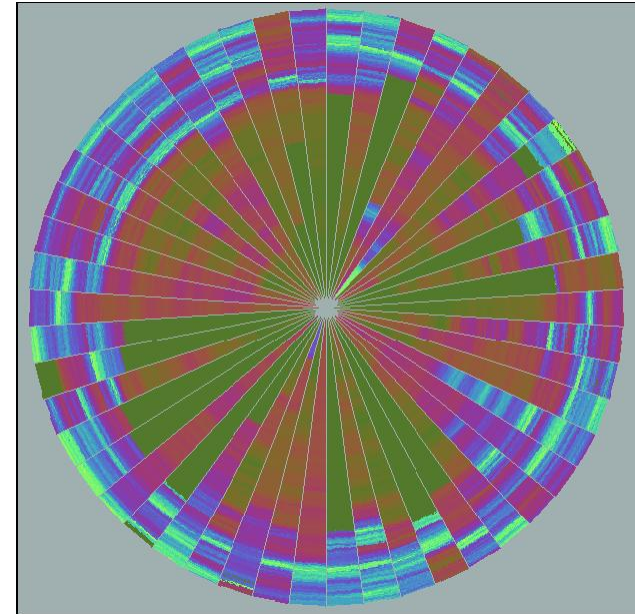
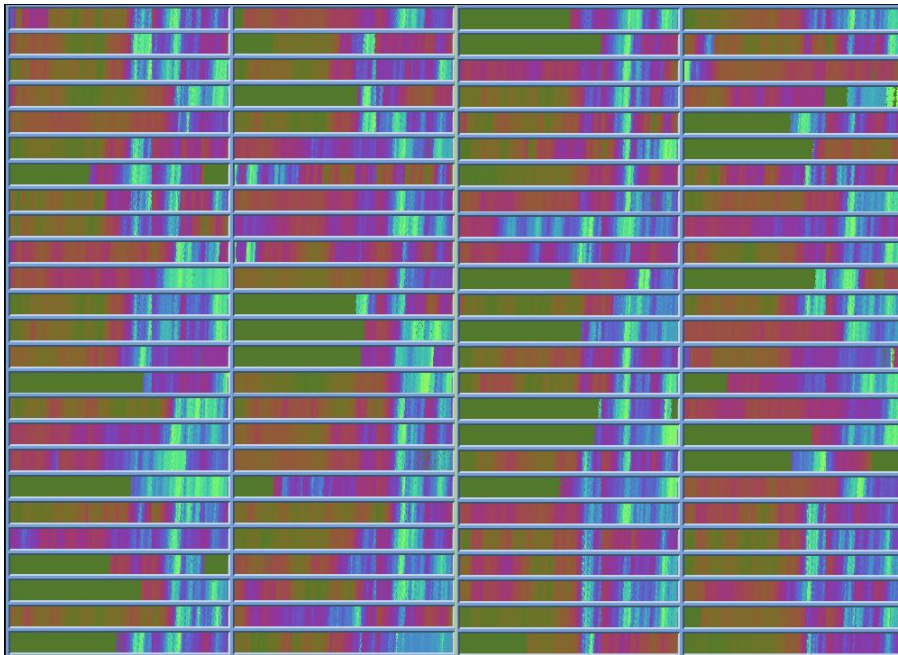
Iconic Displays

Chernoff faces

Star glyphs

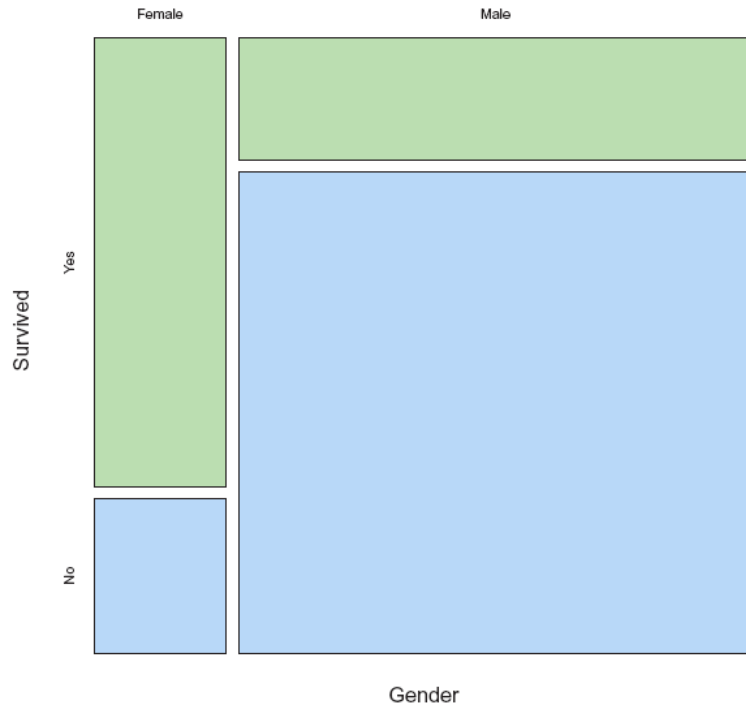


Dense Pixel Displays

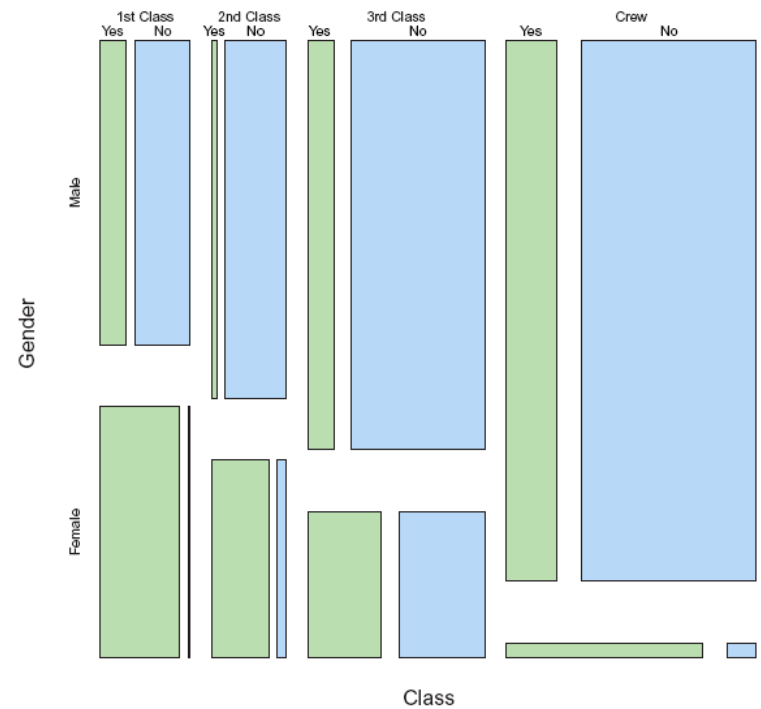


Mosaic Plots

Adult survival on the Titanic



Adult survival on the Titanic



Iris Data



Iris setosa

sepal length	sepal width	petal length	petal width
5.1	3.5	1.4	0.2
4.9	3	1.4	0.2
...
5.9	3	5.1	1.8

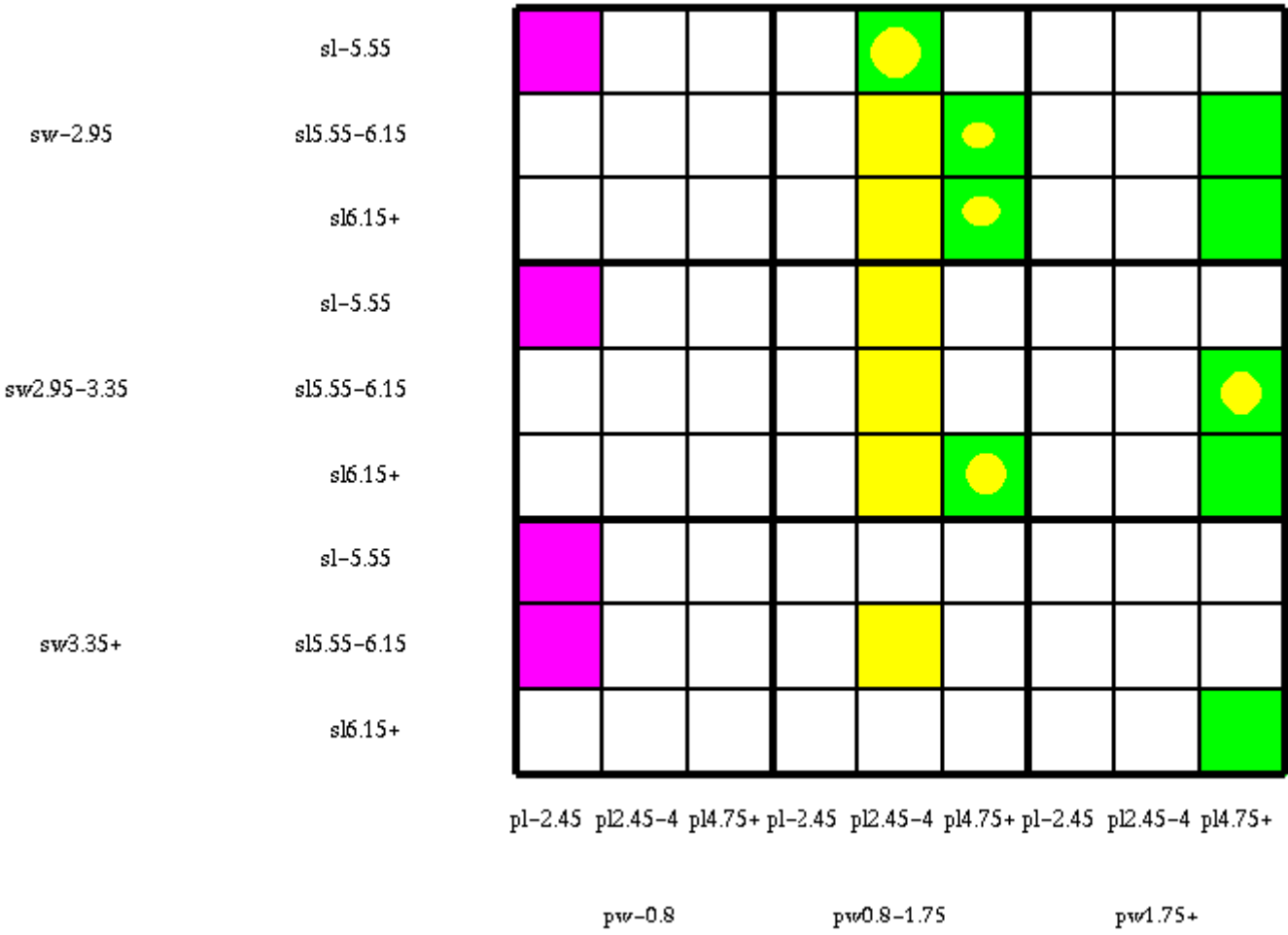


Iris versicolor



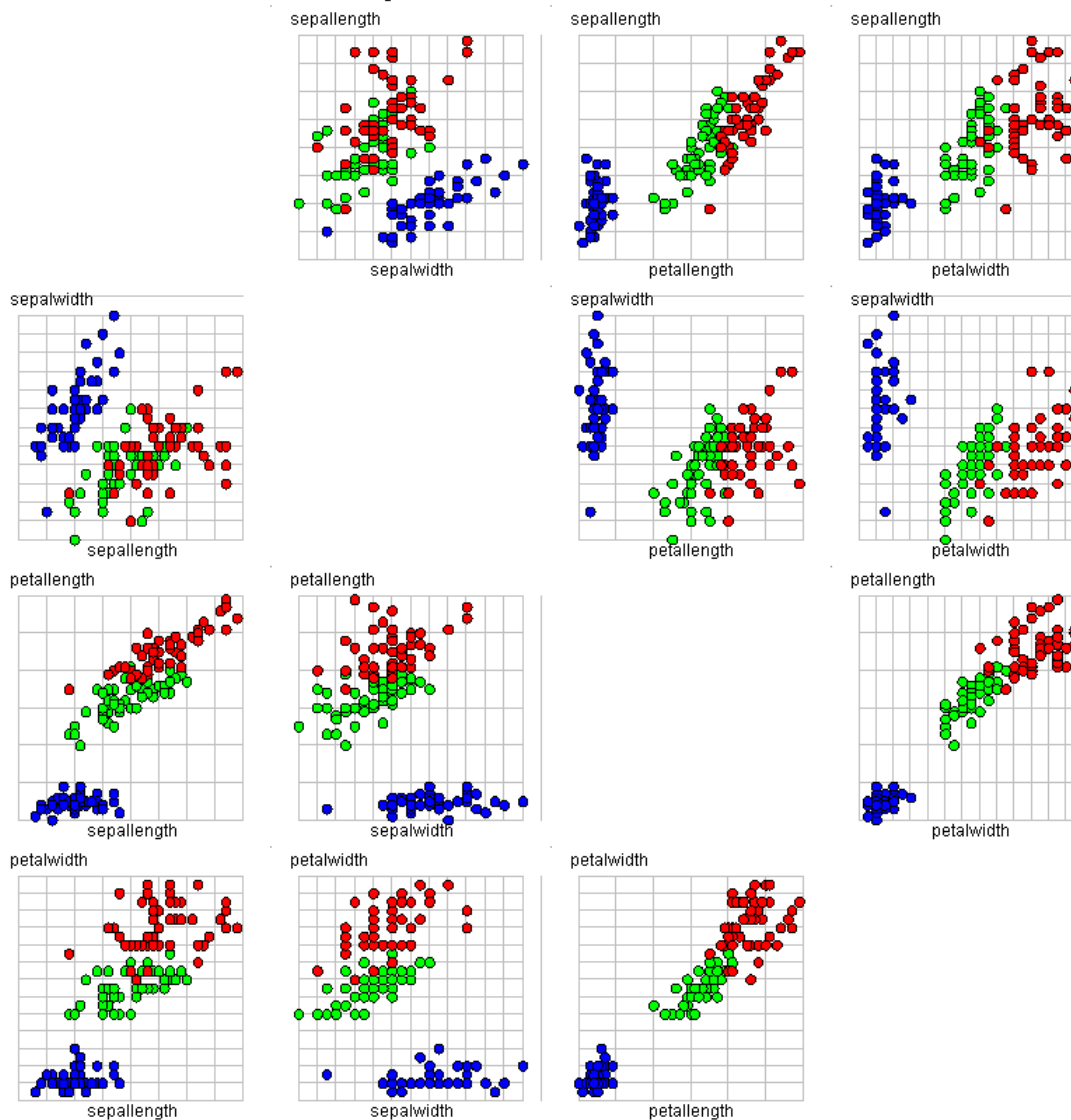
Iris virginica

Stacked Displays

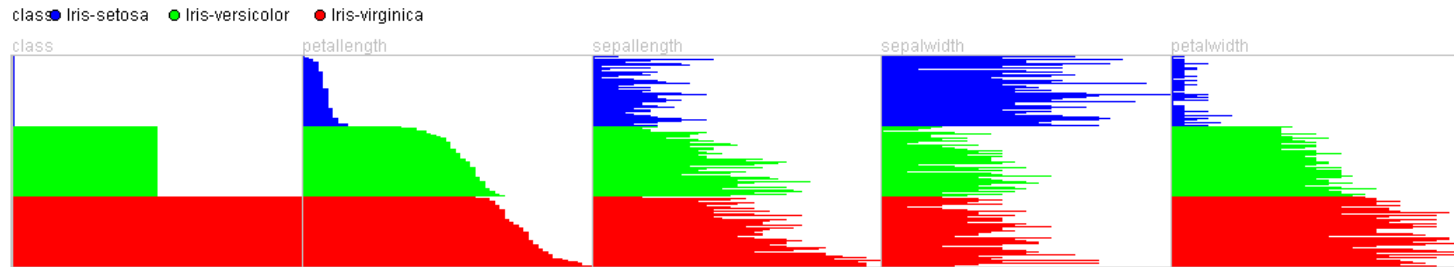


Scatter Plot matrix

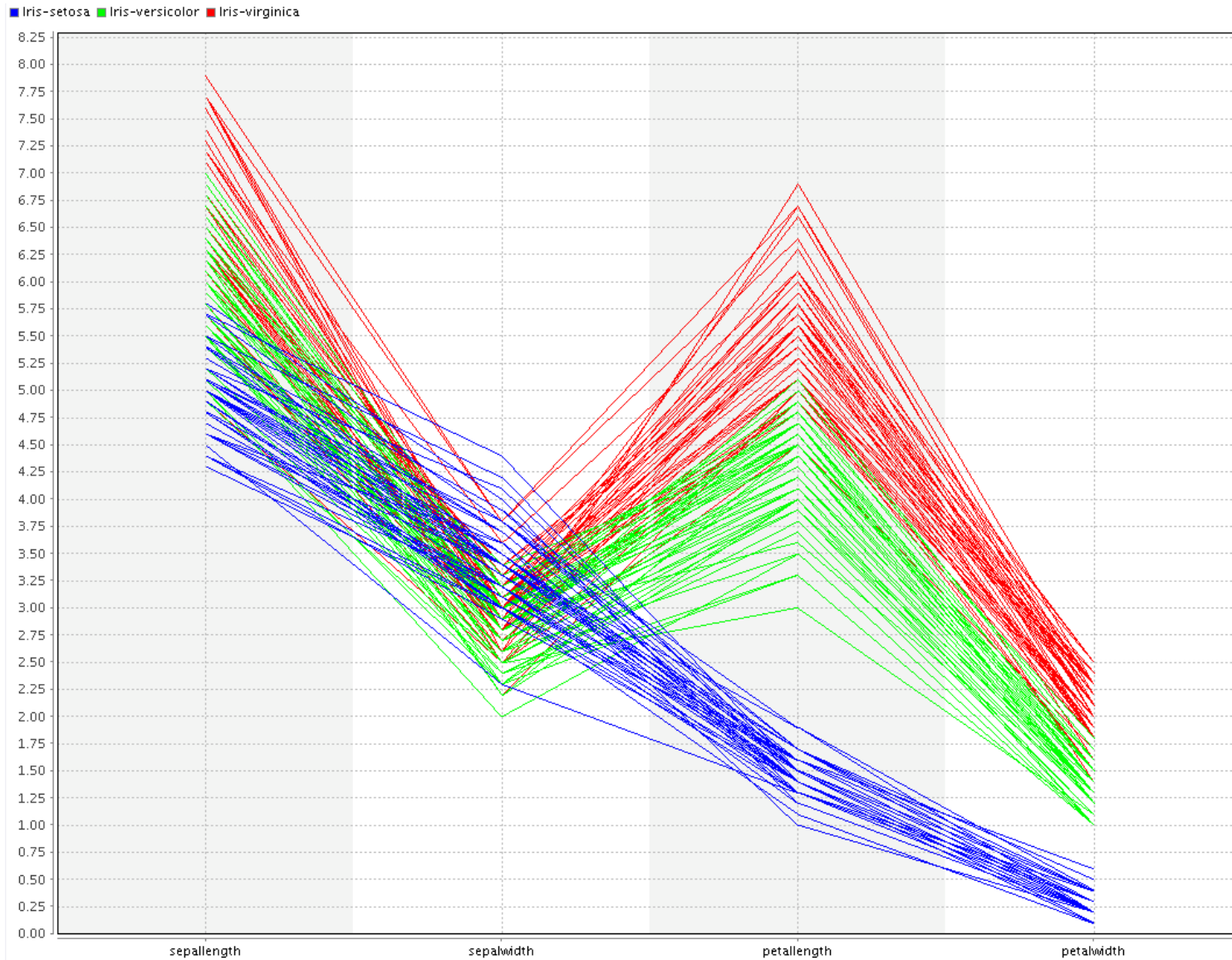
class: ● Iris-setosa ● Iris-versicolor ● Iris-virginica



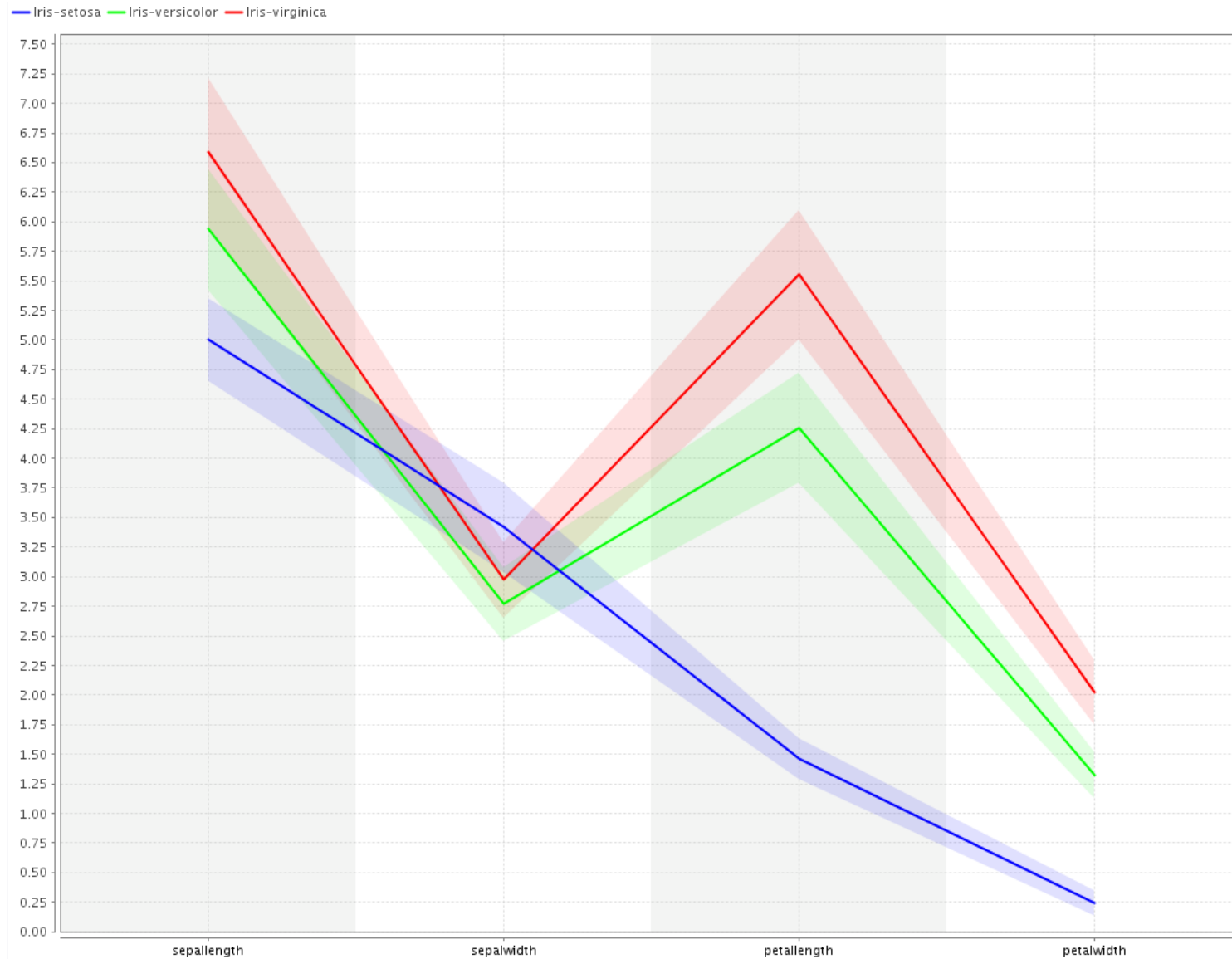
Survey graph



Parallel coordinates

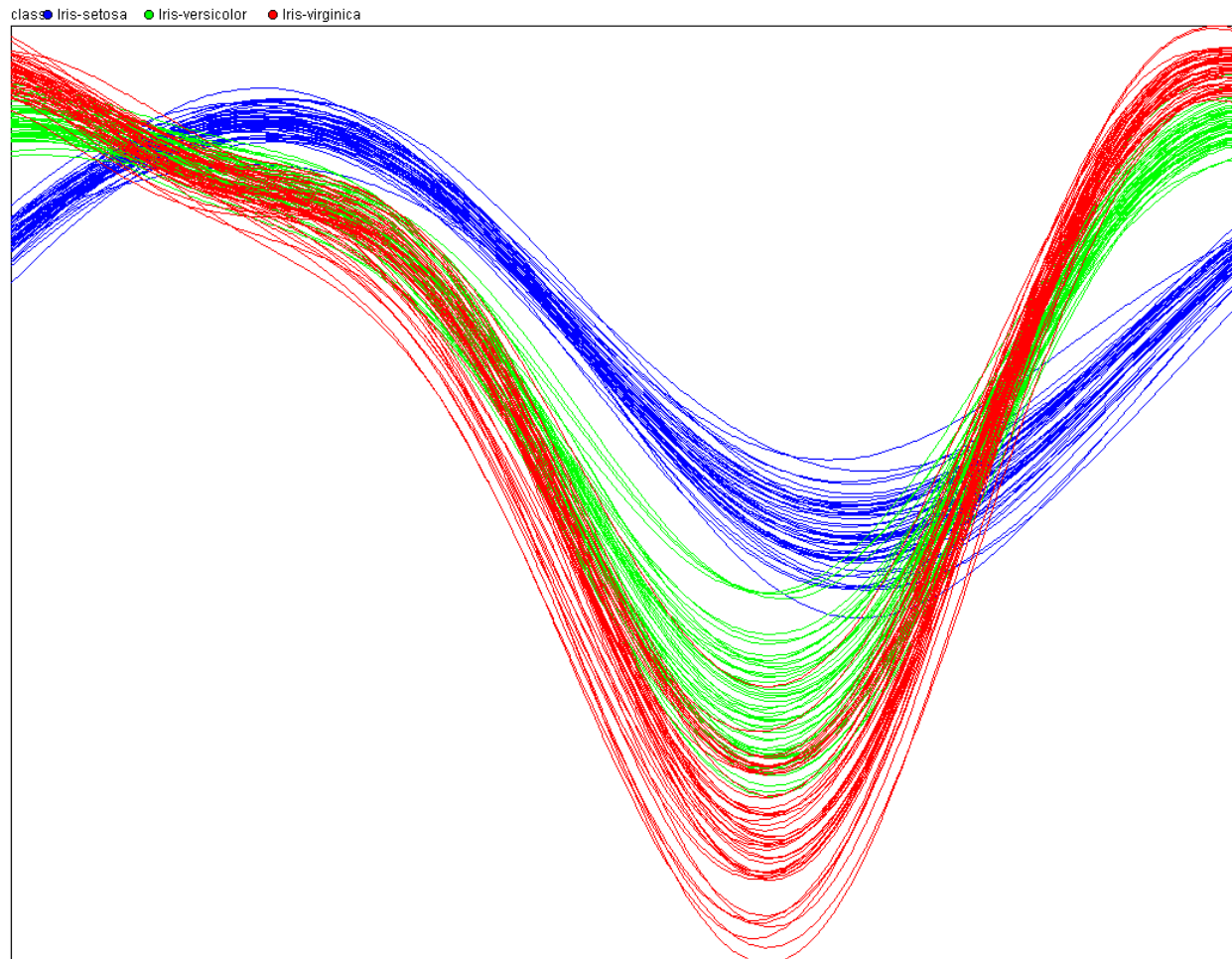


Deviation

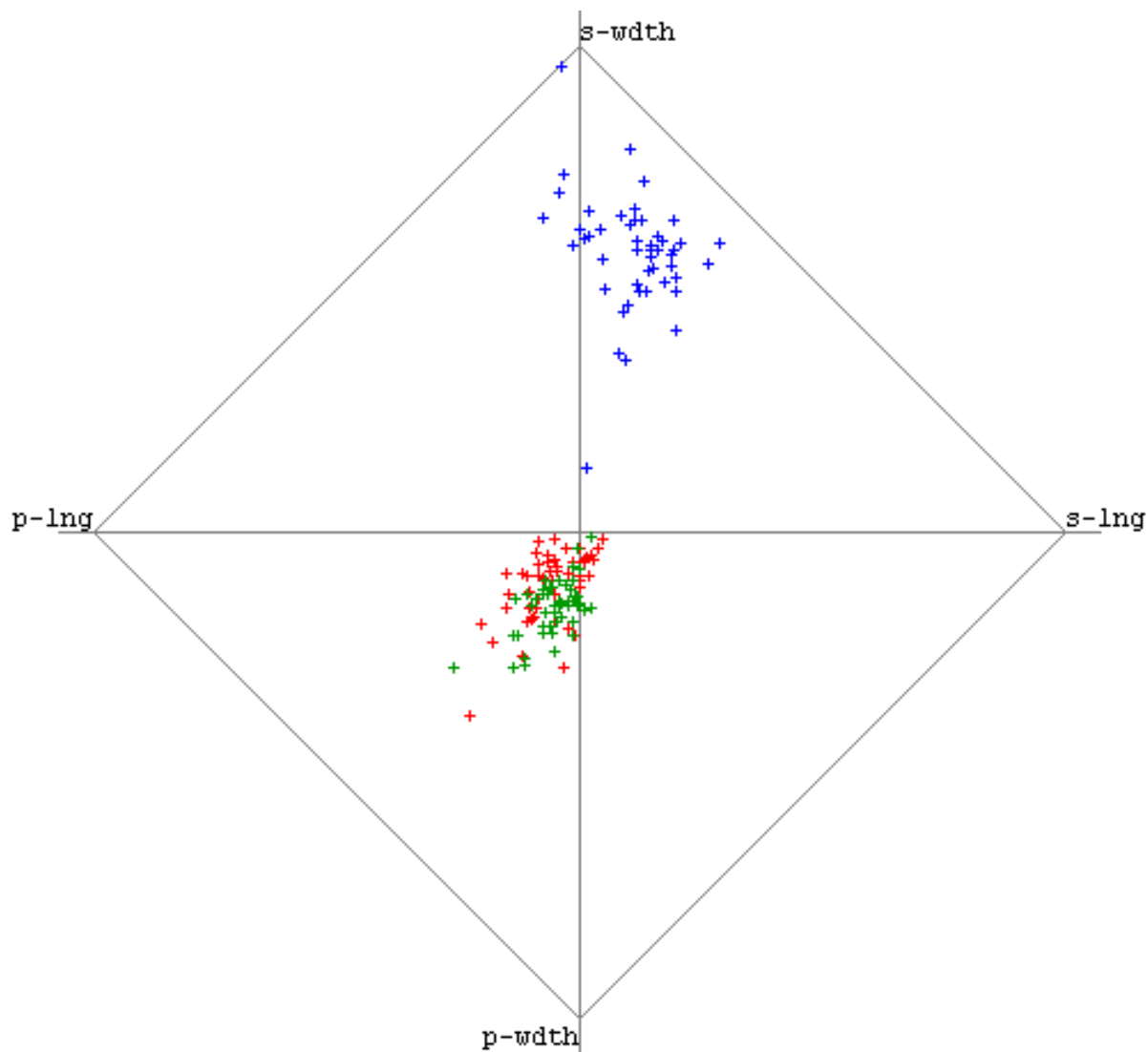


Andrews' Curves

$$f(t) = \frac{x_1}{\sqrt{2}} + x_2 \sin(t) + x_3 \cos(t) + x_4 \sin(2t) + x_5 \cos(2t) + \dots,$$



RadViz (1)



RadViz (2)

