VanGogh

Rene Keller [1]
Universitätsstr. 14, 86135 Augsburg, Germany
E-mail: Rene.Keller@student.Uni-Augsburg.de

Introduction

Lots of datasets come with network data. Many software solutions for visualizing networks are currently available, but they lack interactive features. As interactive features are an important aspect of exploratory data analysis, new methods must be tested for analysing networks. VanGogh (**V**isualizing **a** **n**etwork **G**raphics **o**verview **g**raphics **h**ighlighting) is an interactive software for visualizing networks. It provides multiple views of network data and allows to manipulate the resulting graphics in different ways. VanGogh can be downloaded at

www1.math.uni-augsburg.de/VanGogh

Datasets

VanGogh can handle a large variety of different datasets, such as traffic data, trade flows, sports data,....
A typical application for VanGogh is "Augsburg Traffic Data", a dataset provided by the city administration of Augsburg, Germany. Cars entering and leaving the city of Augsburg were observed to detect streets with high traffic density and to survey the results of a building operation. VanGogh allows a simple and intuitive analysis of this dataset, which is described in *Visualizing Augsburg Traffic Data with VanGogh.*

System Requirements

VanGogh is implemented in Java and provides an intuitive Graphical User interface implemented in Swing. It runs under every platform with `Java Runtime 1.4` (Macintosh: 1.3) installed. It was tested and developed under Windows platforms and best performance is achieved there.

---

[1]Computeroriented Statistics and Data Analysis, Augsburg University, Germany

VanGogh was developed under `Java 1.4 Standard Edition` with `Sun One Studio`. The classes needed for the `JavaHelp` are included in the release of VanGogh, no additional packages other than the standard `Java Runtime` are necessary.

Concepts

It is possible for the user to adapt the look of VanGogh to his needs and to arrange windows in different ways. VanGogh supports four virtual desktops to analyse different datasets at the same time. An integrated online help system gives information concerning usage and features of VanGogh.

Formats

Datafiles in VanGogh need to be ASCII text files, with columns separated by tabs.
VanGogh supports import of standard datafiles (with one flow per line, adjacency matrices must be converted into this format), polygon maps and image data files (jpg images) for background graphics. More information can be found in the online help.

Graphics

Different views of the data are necessary for exploratory data analysis. VanGogh includes the following graphical displays

- Flow Diagrams for visualizing networks including different views
- Barcharts/ Spineplots
- Fluctuation Diagrams/ Mosaicplots
- Histograms with changeable anchorpoint and binwidth
- Scatterplots/ Dotplots with Density Estimation capabilities
- SymmDiagrams for comparing opposite flow directions in networks
- Parallel Coordinates
- Map Diagrams for polygon maps

for this purpose. Each of them supports several interactive methods. Graphical displays can be copied into the system clipboard, printed out or saved as jpg images.
Weight variables that can be added to the graphical displays enhance the analysis possibilities and allow more detailed views of the data.
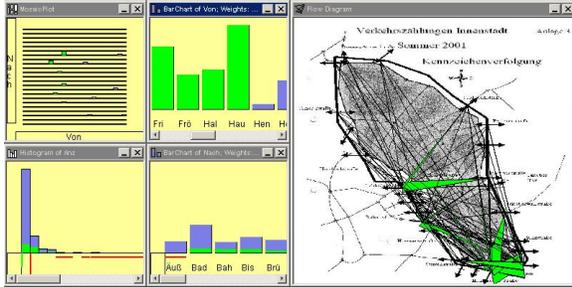
Interactive Features

Interactive features are an essential element of VanGogh, as they allow the user to manipulate graphical displays in real time. VanGogh supports the following interactive methods:

- undo- and redoable Selection with different Selection modes
- Sorting
- Linking of Selection and Sorting between graphical displays
- Zooming and Panning (including an "orientation view")
- Querying of visible objects
- Object and Censored Zooming for comparison of "small" objects
- Alpha Blending and Density Estimation possibilities

More detailed information about these methods can be found in the online help.
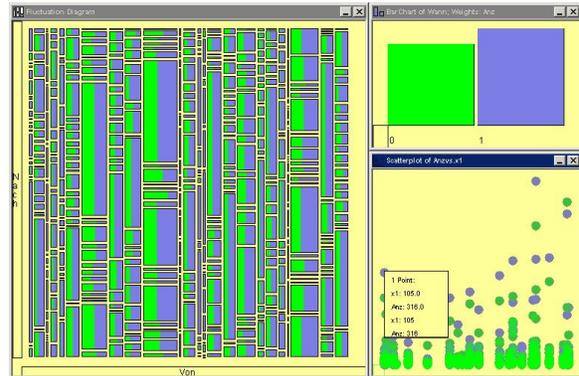
Conclusion

VanGogh implements various methods for an interactive visualization and analysis of networks. It is freely downloadable and platform independent. VanGogh closes the gap between interactivity and network visualization. As it is very flexible, various kinds of datasets can be applied to VanGogh and a lot of data has already been analysed with it.