

Summary of "The Eyes have it: A Task by Data Type Taxonomy for Information Visualisations"

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1 SUMMARY

This paper written by Ben Shneiderman is considered to be one of the first research paper about data visualisation and it was published in 1996. In this article, it is evident that researchers during nineties were going through a novel and big revolution about how to think of data. In fact old terms like "information retrieval" have been pushed aside to make room for expressions like "information gathering, seeking, or visualisation and data mining". Topics which are quite novel still nowadays. From the paper emerges the need of change felt in that period and in particular the author points out and explain in details the basic principle that should be followed in data visualisation (although he never refers to it explicitly): "Overview first, zoom and filter, then details on-demand". This sentence summarise all the steps that a visualisation tool should have in order to be effective for the user. In particular, according to Shneiderman, the seven main tasks are as follows:

- Overview
- Zoom
- Filter
- Details-on-demand
- Relate
- History

- Extract

The detailed description of each of this task will follow because the first thing the author introduces is the description of the all kind of data that can be visualised. . In fact, the first thing that should be understood when people are visualising data is what kind of data we are dealing with. Each kind of data has its own properties, characteristic. It is also very important to consider what people want to look for when they are seeking them. That categories he point out are as follows:

- 1-dimensional data
- 2-dimensional data
- 3-dimensional data
- Temporal
- Multi-dimensional
- History
- Extract

As I said before, each kind of data has its own features and must be treated accordingly. However, there are some functionalities that a visualization tool should provide to the user independently from the data type. They are the ones listed before and here there is a more detailed description.

Overview. Overview is the first task that a visualisation tool should provide. This functionality should provide the user a general understanding of the entire dataset it is displaying. An interesting and popular technique to achieve this goal is to use a fisheye distortion. It magnifies one or more areas of the display, without losing the overview point of view.

Zoom. Letting the user zoom in and out is fundamental. In fact, once the user has an overview of the entire dataset, he usually is interested in specific subsets of the data. If there are more than one dimension, it would also be useful to have different sliders that controls the different dimensions.

Filter. Being able to filter out uninteresting data is a need for a visualisation tool. In fact, users want to select and visualise only part of the dataset and they want to do this operation very quickly.

Details-on-demand. Showing all the details of any single data is not effective, so details of each item must be showed only when the user makes an explicit request. using pop-up window could be an effective technique.

Relate. Another important feature for a visualisation tool is to show related data. Once an item is selected, the tool must show other items that are related to ones selected. Doing this way, the user exploration is easier.

History. Supporting the undo operation. Usually, data explorer don't find the right visualisation at the first hit, so being able to undo the selecting operations makes the visualization tool more effective when used.

Extract. The extract function should allow the user to extract the displayed set so that it can be ported and used in other tools as well as to share with other people in another format.

This article is not technology-oriented, in fact it explains first the more common kind of data, describing what users usually want to see and what are the peculiarities that characterise those kind of data. Then, it describes the basic functionality that a tool should have and should provide to the users in order to achieve a good "visualisation comfort".

REFERENCES

- [1] Robert Spence and Mark Apperley. Data base navigation: an office environment for the professional. *Behaviour & Information Technology*, 1(1):43–54, 1982.