

Statistical Graphics in the Internet Age

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1. Introduction

Owing to spread of the personal computer and the Internet, lots of statistical information has been familiar and various statistical services have been available on the Internet. The appearance of the new computational language such as Java and tools, representation methods on the Web have been diversify in recent years. In this report, we introduce the graphical representation with VRML that is one of the tools like that.

2. VRML Statistical Graphics

VRML (Virtual Reality Modeling Language) is a modeling language that realizes the virtual space with a VRML browser or a VRML Plug-in for the Web browser. It is possible for users to walk inside of the virtual space and to turn the objects. By expressing the statistical graphics with facilities of VRML, it becomes possible to materialize the method of the new graphical application that does not rely on a platform. To make VRML statistical graphics, we have provided some prototype and to disclose them to our home page. We have also provided Web application to make VRML statistical graphics.

The basic objects of VRML are Box, Cone, Cylinder and Sphere, so the VRML world is build with these objects. Though each object is possible to designate the attribute such as size and color in detail, if it was omitted the default value of the attribute is assigned. Also it used to attaching the link to particular URL and as well possible to describe its explanation. Even a correspondence to a movement and sound are carried out and an animation and even the zip compression to a big file has been supported in VRML2.0 (for detail, see Rick and Bell (1997)).

Because of a source file of VRML is a text file (Visible), a user can edit it. We have been disclosed several templates on our homepage. The templates are 3D scatter plot and 3D bar chart and so on. Moreover you can make 3D scatter plot by web application on the web site. It is also possible to compose statistical maps by VRML. A user can walk inside the of the realized map, and can pay attention to the part that has an interest.

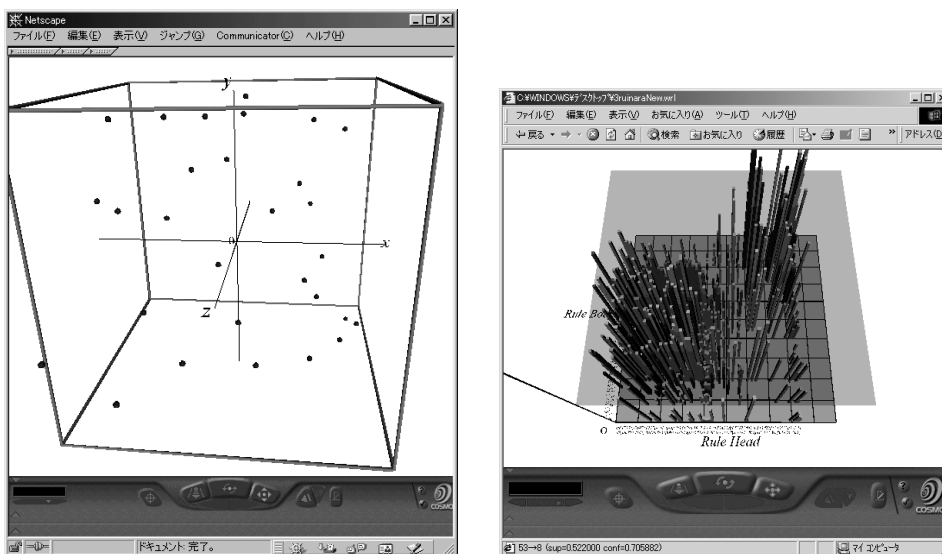


Figure 1: Two examples of VRML statistical graphics

3. Possibility of graphical representation

Because it is possible to use transparency as a characteristic of VRML, new representation methods are easily possible. A representation method for Association rule, which is one of market basket analysis methods is shown the right size of figure 1. “Support” degree and “confidence” degree are being displayed with the color and the height of each bar. The semi-transparent plane is arranged corresponding to a particular support degree. When a mouse point to a bar, the corresponding rule can be displayed.

The link with a data corresponding to a graphic is possible by the characteristic of the anchor. The facility of Java Script and animation is also good for new graphical representation. For example, 3D density plot for a function is easy to create.

In addition to VRML, there are several 3D modeling language and environment (Alise <http://www.alice.org/>, Pov-ray <http://www.povray.org/>). We can use these tools similar to VRML. The multimedia expression method on Web such as Flash will become a more functional from now on. We can There is the possibility that the new graph expression, is able to offer easily, by utilizing them effectively. We are able to materialize a new graphical representation easily by those environments.

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