

Zoom Star : a solution to complex statistical object representation

Monique Noirhomme-Fraiture, Manuel Rouard

Institute of Informatics - University of Namur (FUNDP)
Rue Grandgagnage, 21, B-5000 Namur
BELGIUM
mno@info.fundp.ac.be

ABSTRACT - In the statistical field, graphical representations are largely used in order to help users visualize large amounts of information. Symbolic Objects are a new type of statistical data that are characterized by their complexity. Therefore, it was necessary to design a corresponding representation that allows all the needed information to be visualized without overloading the graphic. The solution we propose, called Zoom Star, is described in this paper. We have created a prototype that displays on the screen the Zoom Star corresponding to data located in files. This prototype has been developed with a view to adding it to a more complete software. This software, designed as part of a European project, will handle Symbolic Objects.

KEY WORDS - Visualization, Statistical Data, Symbolic Objects, Multivariate Objects.

1. INTRODUCTION

Symbolic Objects are complex statistical data represented by a set of variables. Statisticians need a graphical representation that gives a synthetic image of the Symbolic Object and allows all available information to be displayed. Even if some variables can depend on others, a hierarchical representation, such as the cone trees (Robertson, 1991), is not relevant because few relations of this type actually exist. It is important that the representation gives a general image of the Symbolic Object in order to make easier the comparison of two objects. This is not the case for some representations even when all information is displayed (Turo, 1994).

2. THE SYMBOLIC OBJECTS

Symbolic Objects allow better statistical analyses to be performed in many application domains (biology, road statistics, Labor Force Survey, ...).

Symbolic Objects, studied by Diday (Diday, 1993), can be defined as a class of individuals described by a set of quantitative and/or categorical variables, that can be :

- *multivaluated*
- divided in *intervals*
- distributed according to *weighted values*
- *ordered* or not
- *dependent* on another variable
- organized in a *taxonomy*

3. ZOOM STAR

The graphical representation we propose, called Zoom Star, is based on the Kiviat Diagrams but each axis allows more complex data to be represented. We chose the following conventions :

- A quantitative variable is represented as is usual by a graduated axis, with a chosen unit.
- Categories of a categorical variable are represented by dots equally distributed on an axis.

