Problems in working with databases

Databases most often have verbal interfaces, forcing users to know the names of attribute dimensions and values. In matters of taste or experience, e.g., chosing a paint color or in 'just browsing' for inspiration, people often cannot or do not want to verbalize the differences.

- rigid presentation suggests the set is finished, complete
- verbalized attributes require user to know jargon

enter style: retro-70s
number of items: 12
second choice:

menu
style
finish
rounded
price

sequential depiction of samples often prevents the user from getting an overview

Stappers & Pasman (submitted, CHI99)

TUDelft

MDS-Interactive is a visual interface dialogue for querying a database with 'vague', subjective, or intuitive questions.

Queries are posed by manipulating a small set of sample objects spatially ordered on similarity (using Multi-Dimensional Scaling).

Samples are removed by dragging them from the screen. Samples are added by specifying the desired location relative to the other samples.

MDS-I prototypes have been tested for sets of colours, (roller) skates, whiskies, and financial funds. Tests are planned for data visualisation for marketing, and 'taste' choosers in supermarkets.

for more information:
P.J.Stappers@io.tudelft.nl

www.io.tudelft.nl/research/IDEATE/

Mixed visual-verbal database dialogue

The MDS-Interactive database dialogue allows people to query a database trough small sets of samples in a fully visual way. But people sometimes switch between loose explorative browsing and formal-rational searching. Verbal access to the attribute dimensions and attribute values can also be supported through visual means.

- attribute values shown for selected samples
- attribute weights are recovered when user adapt layout

name: violadotz
brand: rollerblade
activity: recreate
price: fl 250,-

KEEP   CLEAR
nothing in notebook

- layout of current selection is tuned by weighting attributes

Stappers & Pasman (submitted, CHI99)

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Clicking *between* the icons
A short introduction to MDS-Interactive.

MDS_Interactive is a visual interface technique that lets people search product databases by manipulating a small set of sample objects. It is especially useful for questions which are complex or involve subjective judgements and matters of 'taste'.

What sort of questions? What databases?
Examples are a music CD, a movie video, a wine that resembles yesterday's Bordeaux, but a little in the direction of a Burgundy, a house at a real estate agent's, or a colour for the wallpaper or the sofa.

Why visual?
Current word-based search interfaces are of little help here, because they force you to use a jargon you may not know (as for wines) or which doesn't help (as for colours).

How does it work?
The visual field:
MDS-Interactive works through a visual field of samples. The relations between the samples are visualized through a spatial configuration.

Adding samples:
The user can ask for a new sample by clicking in the space between the samples. The database then searches for a sample that matches the position that was clicked: similar to the samples that are close in the screen, and at the same time different from the samples that are far away. The best fit is added to the screen.

Removing samples:
The user can weed out samples he thinks are irrelevant to his question by dragging them off the screen.
By adding and removing samples, the user navigates through the databases multidimensional search space. He only needs to judge samples. He doesn't have to understand the jargon underlying the database or search commands.

When does the search stop?
MDS-Interactive presents suggestions and shows samples in their relations. It doesn't prescribe which ones the user should like, or when the search is finished. The user can continue searching the landscape until he finds a sample that fits his expectations well enough, or until he finds that no such sample exists.

Several enhancements can work together with the MDS-Interactive principle:

Weights
The user can change the importance of certain samples by using weight sliders or, in our examples, a weighting triangle. In this way he can indicate the relative importance of, say, price, size, and location of a house. Instead of having to indicate an explicit price range, he can give price a high weight, and click near the cheap houses and far from the expensive ones. The weighting affects both the grouping in the display and the search in the database.

Sample Attribute Viewers
Because not all attributes (properties) of a sample can be easily visualized, most demos show the major attributes of the last sample that was selected. This allows the user to verify his impressions, or to find out why some samples group together. In the current demos we concentrate on the visual interface, and try to minimize verbal distraction, but a further integration of visual and verbal ways of searching is possible. For instance, MDS-Interactive visual queries can be combined with verbal attribute filters, so people can, for instance, state a precise range for the price they seek, but use the visual interaction method for other attributes.

For information, contact

dr. Pieter Jan Stappers,
ID-StudioLab, Delft University of Technology
e-mail: P.J.Stappers@io.tudelft.nl
phone: +31 15 278 5202
internet: http://studiolab.io.tudelft.nl/mdsi/