Data Quality Visualization for Multivariate Hierarchic Data

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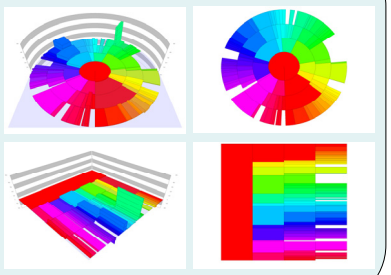
Motivation

In [11], a visualization system for hierarchically structured, multidimensional and time-varying data was presented and applied for financial data analysis.

Structure was represented by spatial decomposition, while **time-dependency** was represented using animation.

We currently experiment with **visualization of data uncertainty** by using glyphs, transparency, and texture-based approaches.

This poster presents our preliminary results.



Uncertainty Visualization

Current surveys [4, 6, 8, 9] indicate that available techniques include:

- **Free graphical variables**: color, size, saturation of color, position, angle, clarity, fuzziness, transparency, edge crispness;
- **Additional graphical objects**: uncertainty glyphs, labels, isosurfaces, textures;
- **Animation**: speed, duration, blinking, motion blur;
- **Interaction**: clickable maps, difference images, mouse over effects, magic lenses;
- **Acoustic or haptic techniques**: sound, vibration.

Effective approaches for spatial data include blinking, adjacency and overlay [7].

An open issue is the combination of qualitative and quantitative uncertainty information [3].

Although many techniques for multivariate data visualization exist, **techniques for visualization of multivariate data uncertainty are still rare.**

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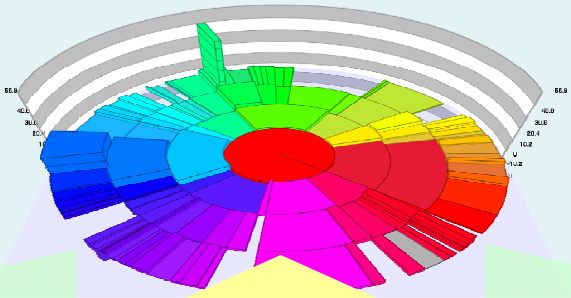
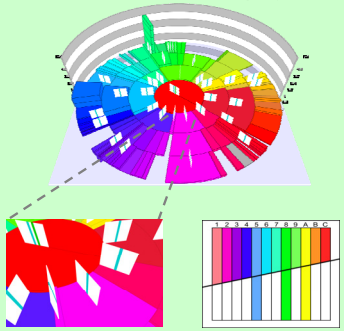


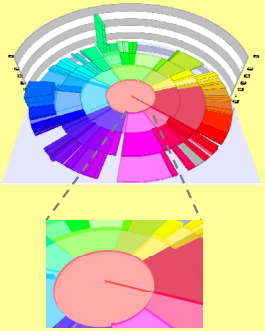
Multivariate glyphs



Pros:
- Quantitative & qualitative data
- Many dimensions
- Easy positioning

Cons:
- Occlusion

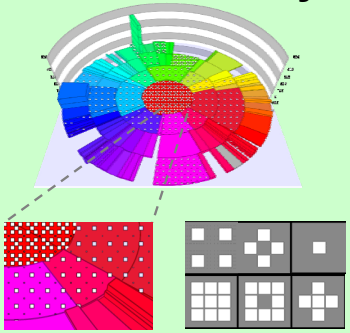
Transparency



Pros:
- Quantitative & qualitative data
- Easy interpretation

Cons:
- Aggregation to 1D needed

Texture overlay



Pros:
- Quantitative & qualitative data
- No occlusion

Cons:
- Invisible on narrow segments
- Limited number of dimensions

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