

LEAF GLYPH – VISUALIZING MULTI-DIMENSIONAL DATA WITH ENVIRONMENTAL CUES

In exploratory data analysis, important analysis tasks include the assessment of similarity of data points, labeling of outliers, identifying and relating groups in data, and more generally, the detection of patterns. Specifically, for large data sets, such tasks may be effectively addressed by glyph-based visualizations. Appropriately defined glyph designs and layouts may represent collections of data to address these aforementioned tasks. Important problems in glyph visualization include the design of compact glyph representations, and a similarity or structure-preserving 2D layout. Projection-based techniques are commonly used to generate layouts, but often suffer from over-plotting in 2D display space, which may hinder comparing and relating tasks. We introduce a novel glyph design for visualizing multi-dimensional data based on an environmental metaphor. Motivated by the humans ability to visually discriminate natural shapes like trees in a forest, single flowers in a flower-bed, or leaves at shrubs, we design a leaf-shaped data glyph, where data controls main leaf properties including leaf morphology, leaf venation, and leaf boundary shape. We also define a custom visual aggregation scheme to scale the glyph for large numbers of data records. We show by example that our design is effectively interpretable to solve multivariate data analysis tasks, and provides effective data mapping. The design also provides an aesthetically pleasing appearance, which may help spark interest in data visualization by larger audiences, making it applicable e.g., in mass media.

Fuchs J., Jäckle D., Weiler N. and Schreck T. (2015), “**Leaf Glyph - Visualizing Multi-dimensional Data with Environmental Cues**”, In Proceedings of the 6th International Conference on Information Visualization Theory and Applications (VISIGRAPP 2015), ISBN 978-989-758-088-8, pp. 195-206, DOI: [10.5220/0005292801950206](https://doi.org/10.5220/0005292801950206)