Paper Critique

Information Visualization

(CSCI 628)

Ashiqur Rahman
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Paper

Modeling layout design for multiple-view visualization via Bayesian inference

Lingdan Shao, Zhe Chu, Xi Chen, Yanna Lin & Wei Zeng [2]

Instructor

Dr. David Koop

Assistant Professor

Department of Computer Science

Northern Illinois University

The paper "Modeling layout design for multiple-view visualization via Bayesian inference" analyzes the design choices in multiple view visualizations in scientific papers and proposes a model to predict the layout based on different design factors. As this is a new area of research, there are not many previous precedents for the authors to follow.

The authors had to assume quite a few variables for consideration while building the model due to the lack of any previous precedence. There are a few other points where the paper could be improved:

- Authors used the dataset from Chen et al. [1] and omitted viewport from annotation. However, even a tiny number of data points for mobile devices can impact the probability. Currently, more research is going towards mobile, display walls, and VR. So, why not include those?

- Authors removed 57 entries with panels which is almost 16% of the data. Even though it is challenging to annotate the panels with axis and legends, those are essential visualization parts.

- Authors employed Bayes' rule but did not try any other method for contrast. Results based on different methods and user studies could give the paper a more robust footing.

- Authors used the institute of the designer, but that does not impact personal preference or expertise level.

- Institutions are grouped based on the continent. It could be argued that continents may represent cultural preference, but it does not make sense. For example, Asia has left-to-right (Hindi, Bengali, English), right-to-left (Arabic, Hebrew), and vertical (Traditional Chinese, Japanese, Mongolian) reading practices. Maybe considering the language of the paper could give a different result?

References

[1] X. Chen, W. Zeng, Y. Lin, H. M. AI-maneea, J. Roberts, and R. Chang, "Composition and configuration patterns in multiple-view visualizations," *IEEE Transactions on Visualization and Computer Graphics*, vol. 27, no. 2, pp. 1514–1524, 2021. DOI: 10.1109/TVCG.2020.3030338.

[2] L. Shao, Z. Chu, X. Chen, Y. Lin, and W. Zeng, "Modeling layout design for multiple-view visualization via bayesian inference," *Journal of Visualization*, vol. 24, no. 6, pp. 1237–1252, Dec. 2021.