

## Topological Organization of Multidimensional Data Displays

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### Background and Objective

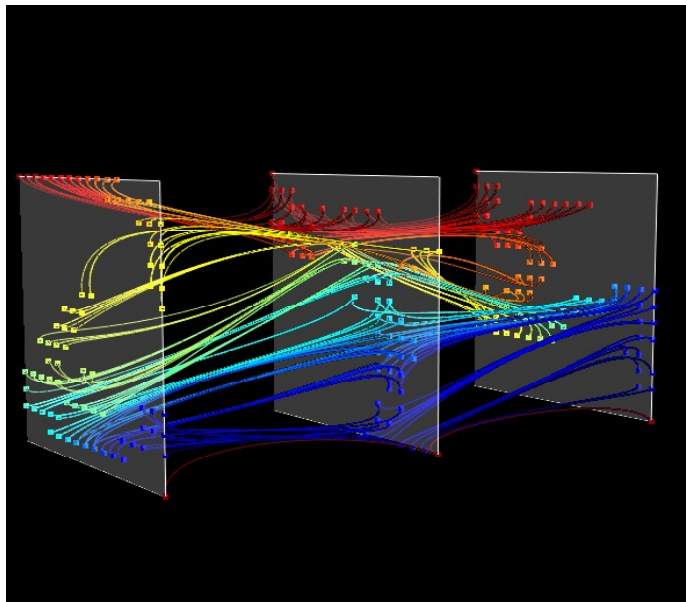
Life science fields are generating an exponential amount of data, creating a rich source of information through tools enabling knowledge discovery. Parallel coordinates are one of such visualization tools, however data can overlap and fail to show how records are correlated with one another in large data sets.

### Methods

We developed techniques that show how records and nodes are related to one another in parallel coordinates. These include bundling with Bezier curves, cylindrical piping, force-directed node placement, and coloring by dimension. Most of these techniques can be used in conjunction with one another and can utilize weight relationships and graphical positions together in grouping nodes.

### Results

These approaches are implemented as an interactive tool, which provides for selection, interaction and display of the data. The figure below shows a snapshot of the bundling of parallel coordinates.



### Discussion and Conclusions

We show examples of a microarray data set explored with these techniques. We are working on implementation of similar approaches in other visualizations.

Theme: Biotechnology and Bioinformatics

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