View Manipulation Lecture Notes

**Slide 6**

The LineUp system is designed to support exploration of tables with many attributes through interactive reordering and realigning. In addition to sorting by any individual attribute, the user can sort by complex weighted combinations of multiple attributes. LineUp is explicitly designed to support the comparison of multiple rankings.

The figure compares several different rankings of top universities. On the left is a customized combination of attributes and weights for the 2012 data, and in the middle is the official ranking for 2012, with coloured stacked bar charts showing the contribution of the component attributes for both. The next two columns show a compressed view with a single summary bar for two more rankings, using the data for years 2011 and 2010, and the last three columns have a collapsed heatmap view with the value encoded in grayscale rather than with bar length. The uncollapsed columns are scented widgets, with histograms showing the distributions within them at the top.

Between the bar chart columns are slope graphs, where connecting line marks link the same items together. Items that do not change their ranking between neighbouring columns are connected by horizontal lines, while highly sloped lines that cross many others show items whose ranking changed significantly.

Paper summary and examples <https://jku-vds-lab.at/publications/2013_infovis_lineup/>

JavaScript library <https://github.com/lineupjs/lineupjs>

**Slide 8**

Animated transitions paper

<https://www.researchgate.net/publication/38015417_Search_Show_Context_Expand_on_Demand_Supporting_Large_Graph_Exploration_with_Degree-of-Interest>

<https://idl.cs.washington.edu/files/2007-AnimatedTransitions-InfoVis.pdf>

This link contains some videos of animated transitions:

<https://urban-institute.medium.com/4-observations-on-animating-your-data-visualizations-cf987b069c35>

**Slide 14**

Here **pan** and **zoom** are used to mean translating the camera parallel to and perpendicular to the image plane; this loose sense matches the usage in the infovis literature. In cinematography, these motions are called trucking and dollying. The action of trucking, where the camera is translated parallel to the image plane, is distinguished from panning, where the camera stays in the same location and turns to point in a different direction. The action of dollying, where the camera is translated closer to the scene, is distinguished from zooming which changes the focal length of the camera lens. Changing the focal length of the camera lens has other effects than the size of objects and the field of view when they are in 3D.

Films can combine zooming and dollying, as was first done (famously) in Alfred Hitchock’s film Vertigo (<https://www.youtube.com/watch?v=G7YJkBcRWB8>). Given that the intention of this effect is disorientation (in this example, to show the character Scotty’s vertigo) it is not much used in infovis.

Slide 16

Line charts in a very large grid use semantic zooming, automatically adapting to the amount of space available as rows and columns are stretched and squished. When the available box is tiny, then only a single categorical variable is shown with colour coding. Slightly larger boxes also use sparklines, very concise line charts with dots marking the minimum and maximum values for that time period. As the box size passes thresholds, axes are drawn and multiple line charts are superimposed. The stretch-and-squish navigation idiom is an example of a focus+context approach.