CSCI 552 (Spring 2015)

Assignment #3

Handout: Thursday, March 12, 2015
Due: 11:59 pm, Wednesday, April 1, 2015
Total points: 100

Non-programming problems (50 pts)

1. In Scattered Plot Matrix, only half of the matrix is used for visualizing the scattered plots due to symmetry. This allows the space of the other half be used for aditional visualization functions. Propose three different visualization functions you may apply using the spare space in the scattered plot matrix, and explain how these additional visualization methods can supplement the original scattered plot functions.

2. In node-link visualization of a hierarchical dataset (tree), traditional node-link layout and radial layout (radial diagram) are the most common methods. In both methods, it is often necessary to decrease the size of the node as the depth of the tree increases. Derive the formula for calculating the proper size of the node, as a function of depth $d$, for these two visualization techniques. We assume that the average number of children for each node is $b$, the maximum depth is $D$ and the screen space for visualization is an $n$ by $n$ square window.

Programming problems (50 pts)

In this project, you will generate a graph visualization for the IUPUI Computer Science Department’s web site (http://cs.iupui.edu/). Your graph does not need to include links to pages outside the CS department nor faculty personal pages. Specific requirements include:

1. Generate a graph data set using the current CS web site links. You may rename the nodes for simplicity or clarity.

2. Use an existing tool (VTK, Matlab, D3, ProtoVis, Prefuse, R, Tableau, etc) to visualize this graph. You will need to describe the tool and the specific functions you used.

3. Visualize a personalized subgraph within the large graph that intersect your academic path or interest. This can be done, for example, by highlighting the subgraph using a different color.

Please submit at least 5 visualization images to demonstrate your visualization results, and a one-page description of your tool, techniques and other details that you want to share with me. You are not required to submit your original programs.