

CSCI 552 (Spring 2021)

Homework #2

Handout: Thursday, March 11, 2021

Due: 11:59 pm, Thursday, March 25, 2021

Total points: 35

All assignments will be submitted through Canvas. Documents will need to be in either Word or PDF format. Images need to be in jpeg format.

1. In multi-dimensional data visualization, some techniques are more suited for large volume of data (size) and some are better suited for data set of very high dimensions. List 2 techniques that are good for large size of data and 2 for very high dimensional data (there can be overlaps). Please explain why in each case.
2. In radial layout visualization of multi-dimensional data, variables (dimensions) are places in a circle, and data points can be drawn as dots within the circle that best reflect the data points' attribute values (coordinates). This can be done through minimizing an object function to determine the location of each dot. Derive an object function formula for an n -dimensional data set for this type of radial visualization.
3. One benefit of radial layout of node-link visualization is that it has more space for deeper level nodes.
 - (a) Show that this benefit is still not sufficient to overcome the exponential growth of nodes in hierarchical data sets.
 - (b) Explain why hyperbolic tree visualization can more effectively overcome this problem.