Presentation Topic: Group 4 - Reduce Items and Attributes

Andrew Struthers

February 2023

Statements

1. Reducing the number of visible elements in a visualization helps for managing complexity, increasing readability and perception for humans, and increasing the effectiveness of the visualization. Some popular methods for reducing the visible elements are filtering elements, by removing unnecessary or irrelevant data from the visualization, and aggregation by combining elements, by combining many attributes into one (or a few) points on different charts

2. There are different ways to accomplish item aggregation, such as a continuous scatter plots, good for collapsing many datapoints to a single point on the scatterplot, or a solarplot, which is a radial histogram, allows a nice time-based or pattern-based visualization

3. Dimensionality reduction is a method for aggregating data that is applicable when a "hidden" structure and "significant redundancy" are assumed. The multidimensional scaling (MDS) approach family includes linear and nonlinear variants, and the MDS alg focuses on projecting high-dimensional data onto a low-dimensional space with minimal loss to meaning.

Questions

1. How do we quantitatively figure out which items can be filtered or aggregated from the visualization without losing pertinent information?

2. How do we know that we have removed or aggregated enough attributes to make the visualization clear?

3. Are there other choices for visualization of dimensionality reduced data besides for scatter plots?