Assignment 2

Question 1 (25 points in total)

Visit the Periodic Table of Visualization methods

Choose two of the compound visualization techniques.

a) **(10 points) Describe each technique (including which combination of methods it uses)**

Two compound visualization Techniques depicted in the Periodic Table of Visualization Methods are :

1) *Graphic facilitation*

Graphic facilitation is a type of Compound Visualization that uses large scales images and other visual tools to lead individuals and groups towards a certain goal. This visualization technique is based on the fact that pictures or visual information can be sustained in the memory longer than text. Graphic facilitation helps groups to develop a shared understanding, think through a concept/problem/complexity, provide feedback, discuss over the matter and communicated effectively. Combining the images with speech increases the probability of remembering information and hence graphic visualization is an effective technique especially when the information is something that needs to be solves or learnt.

Graphic facilitation can be said as a combination of few methods like Gestalt's Principle. Graphic facilitation includes connection, enclosure and continuity to convey information in a more successful way. It follows methods of pre-attentive features. Continuum is a data visualisation method which is a part of graphic visualisation. Tree map is also one of the methods.

2) *Knowledge Map*

Knowledge map is another kind of compound visualization sing visual tools like flowcharts, that displays 'where' the knowledge can be found within a company or organisation. It does not include big information but just where the knowledge can be found. It does not include unwanted junk like big concepts. In simple words, knowledge map helps in accessing the knowledge instead of searching for it. A knowledge map is very intuitive and a great platform to showcase knowledge assets.

Knowledge Map can be said as a combination of few methods like Miller's number 7. Without following Miller's number 7, knowledge map can be too crowded and less effective. Knowledge map also follows methods like connection and continuity (Gestalt's Principle). It follows methods of pre-attentive

features. Continuum is a data visualisation method which is a part of knowledge map. Tree map is also one of the methods.

b) (5 points) compare it to one technique we= discussed in class and

One technique we discussed in class was *Interaction technique*. Now comparing *Graphic Facilitation* and *Knowledge Map* with Interaction Technique.

Interaction Technique is digital based visualization technique.

Graphic Facilitation can be done even on paper.

Knowledge map as well can be printed out on a paper and does not necessarily have to have a digital platform.

Interaction technique is of four types – zoom, focus, linking, brushing. Linking and Brushing are applied to group a few different data representations to show comparisons or trends – for example, different bar graphs showing population of Norway from 2001 to 2009.

Graphic Facilitation does not have any groupings of data representations but simply one representation using images and visual tools to convey the information to the group.

Similarly, knowledge map also do not 'group' different data but instead focuses on conveying where the knowledge can be found.

c) (10 points) describe two things you like and/or dislike about the technique.

Graphic Facilitation

Two things I like about this technique are that :

1) It is much more likely to stay in the immediate memory of people than other visualization techniques and hence increases memory and comprehension.
2) This technique does not need also maintains the focus of the group. Sometimes, when we use a data visualization technique, the audience tend to loose focus because it may seem

'boring'. However, graphic facilitation uses large scale imagery and some other visual tools which tend to keep the focus of the audience.

Knowledge Map

Two things I like about knowledge map are :

1) Knowledge maps too are an efficient way of giving a memorable representation of data.
2) Knowledge maps are an effective way of helping understand the structure between the knowledge assets.

Question 2 (25 points)

Find two different visualization techniques for multivariate or univariate data that we did not discuss and that are not included on the periodic chart of visualization methods, excluding visualization techniques for time series. Describe the techniques, and include advantages and disadvantages.

I chose the following two univariate techniques (and I checked it is neither in the periodic table nor was it discussed in class)

1) *Swarm plot*

   A swarm plot is actually similar to a strip plot. Swarm plot is also called '*beeswarm'* sometimes given the visual representation it gives finally. Swarm plot is made by plotting independent values of the given data (data points) with jitter, meaning that the points are adjusted so they don't overlap. A swarm plot can be either horizontal or vertical. The data to be graphed can be inputted in various formats like vectors of data represented as lists, a long form data frame in which the x, y and hue value decide the way data will be plotted, or a wide form data frame such that each numeric column will be plotted.

   Advantages :
   - ⇨ The represented data elegantly displays independent value while showing the trend. It can also be drawn with box plot to display more data like where the median or mean lies.
   - ⇨ Data of three different data can be graphed in one swarm plot and then the trend can be compared

   Disadvantages :
   - ⇨ Swarm plot can not be used for large data
   - ⇨ One swarm plot can not display a lot of attributes

2) *Rug Plot*

A rug plot is another univariate technique to represent data displayed as marks along an axis. It is kind of an analogous to histogram, the difference is that there is a protection of raw data points on one axis without any binning process like in histogram.

Advantages :

- ⇨ Easy to visualize the distribution of data
- ⇨ We can know what the mode of the data is

Disadvantages :

- ⇨ Can not be used for very large data
- ⇨ increased number of attribute will make it clustered.