Assignment 04- Parallel Coordinates

Project 2

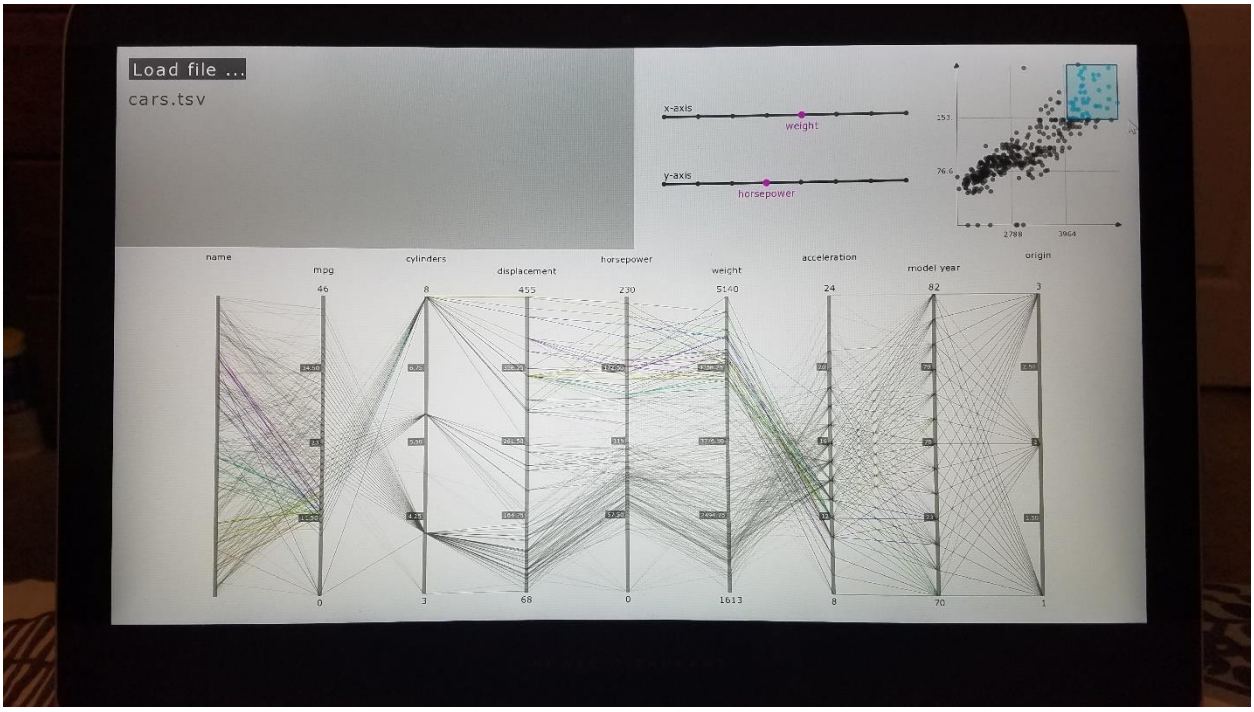
I chose to do a multiple-view visualization with the scatter plot. The reason being, parallel coordinate plot is useful for a summarized view of all the attributes for all the items. In addition, to complement, the viz should also offer some mechanism to visualize the dataset more closely and observe the behavior of a few attributes at a time. I felt scatter plot would best fit under the circumstances.

User can use the two sliders on the left of scatterplot to choose what attribute has to be loaded on x and y axis.

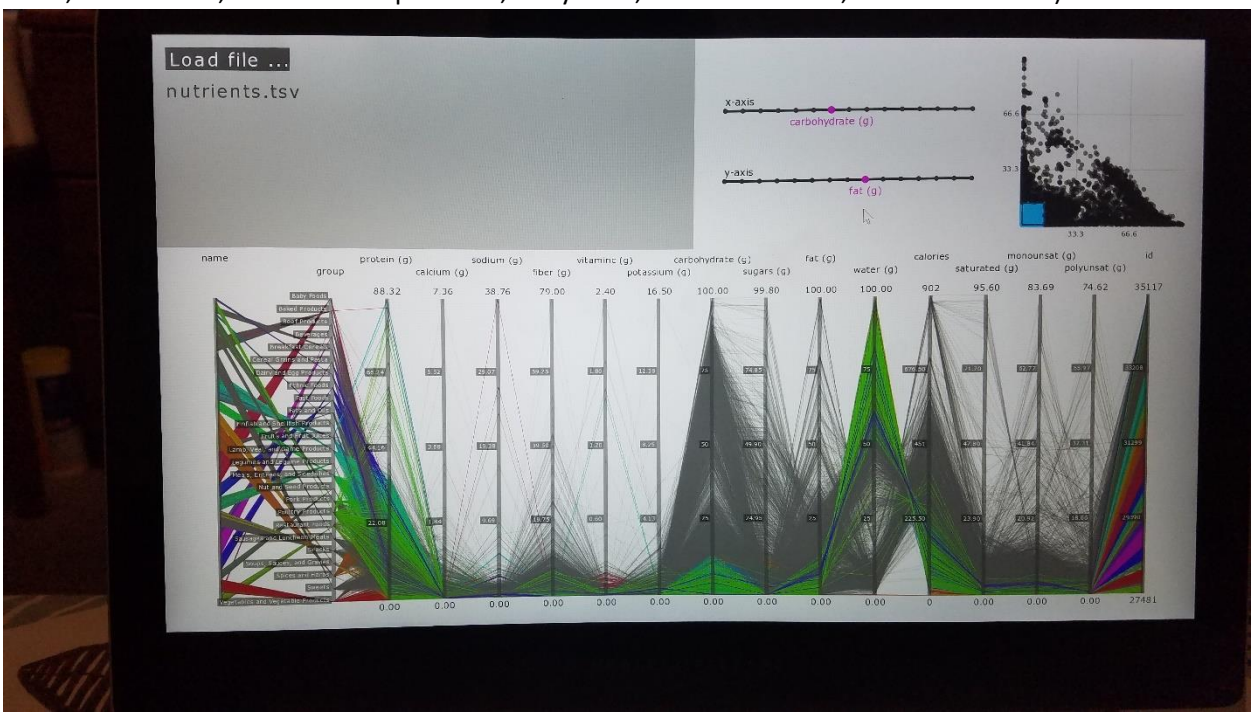
I extended the brushing interaction to brush both scatterplot and parallel coordinate when brushing is done from either of them. This way, user can immediately see the results of his brushing action.

Some of the inferences from datasets

1. I used the scatterplot & parallel coordinates to observe relationships between mpg, cylinders, weight and horsepower. I loaded the x-axis of scatterplot with weight and y-axis with horsepower. I immediately noticed the an almost linear relationship between them. I wanted to know what would be the attributes of cars with heavy weight and high horsepower. So, I brushed the top-right corner of scatterplot. Now when you observe the parallel plot, you can easily see that these cars have 8 cylinders which makes sense because of higher horsepower and heavy weight. When continued, I also noticed that these cars have low mpg which makes sense because of high horsepower. But these cars have a mid to low acceleration because of their weight. This makes sense as these models are made mostly in the early 70s. I'm guessing the newer models have high horsepower with lesser weight which can increase acceleration.



2. I used scatterplot & parallel coordinates to observe nutrients dataset. I first loaded the carbohydrates on x-axis and fat on y-axis. I wanted to know the foods that would have low carbohydrates and low fat. So, I brushed a tiny square near origin. Because of the group colors, one can easily find out what class of foods have low carbs and low fat. (which are, Vegetables & Vegetable products, Spices & Herbs, Poultry products, Meals, Entrée, and Sidedishes, Some fruits, Some Lamb, Veal & Game products, Baby food, Breakfast cereal, and Ethnic foods).



In general, I found scatterplot and parallel coordinates to be most useful especially with brushing. These helped the most in filtering and looking at the dataset more closely. On the contrary, box plots were very useful in determining attribute variance and see the big picture. And group coloring helped me a lot to visualize data better. I only wish I had achieved bundling/hierarchical clustering to avoid noise from so many lines.