High Performance Data Analytics and Visualisation project

Giorgio Bettonte

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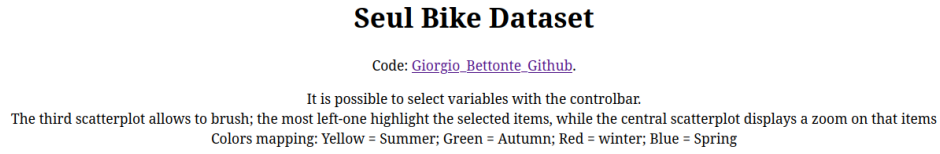
1 Introduction

This work deals with the visualization of the information contained in the dataset "SeoulBikeData". My proposed visualizations relies on three different scatterplots and on a controlbar. In the following sections I will explain the motivation of my choices and how this project can be improved

2 Welcome message

The web page contains a very simple welcome message and some information about the usage of the application.
There is the source reference for the code; the explanation of the three different scatterplots and the relative legend for used colors.



3 Components

In this section there is the desciption of each component in my application.

3.1 ControlBar component

This controlbar allows the user to select the numerical variables of the dataset for axis; then the scatterplots will update according to the selection.

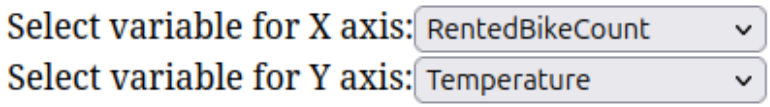


Figure 1: Controlbar for axis

3.2 Scatterplots

There are three scatterplots in line; at the begin of the application, they all display the same cloud of points, with different colors. I chose to use only scatterplots since I think that they are as simple as actually effective to trasmit information.

3.2.1 First scatterplot

This scatterplot highlights the items selected on the third scatterplot, while keeping the others in black. In this case, there isn't any zoom.

3.2.2 Second scatterplot

This scatterplot is dedicated to the zoom of the items selected on the third scatterplot. I decided to implement this "zoom" because only highlight the items in the scatterplot is not sufficient to have a clear idea of their reciprocal disposition.

3.2.3 Third scatterplot

This scatterplot is positioned on the right extreme of the screen and allow to brush.
At the beginning, this is the only chart engaged with colors.

4 Example of flow

Here some images illustrating a possible execution flow:

4.1 Selection

In the image [4.3], some elements are selected using a window.

4.2 Highlight

In the image, 4.3 selected items are highlighted in the first plot and zoomed in the second

4.3 Change variables

Now, suppose that the user would like to visualize the selected items in a different configuration (different variables for axis). As it is shown in the image 4.3, we still see the items selected in the previous selection, and how they are dispose with respect to different variables

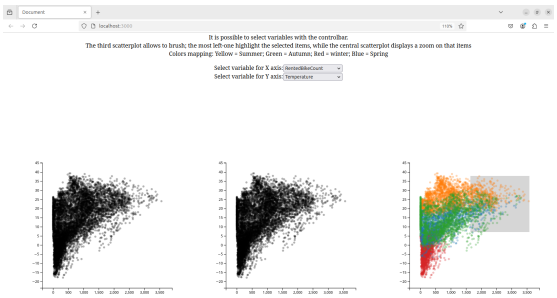


Figure 2: Select elements

Figure 3: Highlight selected elements

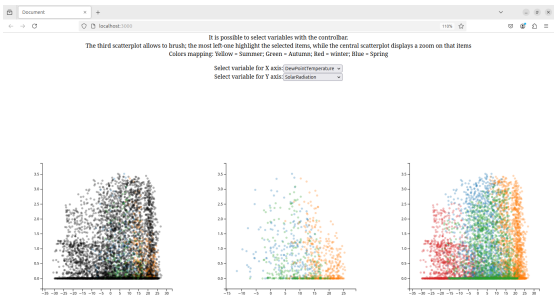


Figure 4: Highlight selected elements in different configuration

5 What can be improved?

[h] Currently, the transition induced by the brush selection is a bit slow, but still acceptable. For a larger amount of data, it can be too slow and consequently annoying for an user. Surely, this aspect would be the first one to improve in my opinion. Secondly, it would be interesting to implement other types of chart and not only scatterplots. For this work, I decide to limit myself only on scatterplots since I think they are simple and effective, but it could be interesting to have other representations of data.