CSCI 6612 - Visual Analytics
Fall 2019 - Assignment 2

Due 11:55 PM, Sunday, October 13th, 2019.

Instructions:

- Submit your assignment in Brightspace (https://dal.brightspace.com).
- Read the Dalhousie Policy on Plagiarism.
- The assignment must be completed **individually**.
- Properly **cite** any external sources that you used.
- You are **not allowed to use or reuse** any piece of code from **other students**.
- For this assignment, all implementation should be in JavaScript, CSS, and HTML. **Only the D3 JavaScript library is allowed for visualization purposes! You cannot use a library that implement the visualizations for you, even if it is in D3!**
- We will probably **run your code**!
- Submit all your code in a **zipped file** using your B00 as filename: B00999999.zip
- Make sure to **submit everything** necessary to run your application, including libraries.

Problem:

Implement a RadViz OR Star Coordinates visualization [1] using the D3 library. Your implementation should use HTML, CSS, and JS only! **Do not use any other library besides D3 (https://d3js.org/).**

Use one of the wine datasets provided in brightspace: winequality-red.csv or winequality-white.csv

You can make these assumptions about the dataset:

- First row will contain the attribute names
- Last column is a class or regression (prediction) and can be numeric or nominal.
- All other columns are numeric.

[100 Marks] Requirements:

Code will be marked based on functionality, structure, reusability, best practices, and documentation.

1. [50 Marks] Static visualization, showing as anchors all data attributes. For the anchor name, use the attribute's name. The last column should be mapped to a color using a proper color scale. All other columns are numeric. The last column should not be used as an anchor!
2. [20 Marks] Add interaction to your visualization.
    a. [10 Marks] Draggable anchors.
    b. [10 Marks] Slider for changing color opacity of all instances.
3. [15 Marks] Smooth transition while dragging anchors (animation).
4. [15 Marks] Add some more unique features. Ideas:
    a. Add more information to nodes (tooltip).
    b. Select which anchors to show.
    c. Automatically define anchors position to better represent data clusters.
    d. Some kind of data highlight/selection.

    The grade will be based on the complexity and usefulness of the feature. You may need to create some extra interface to control one or more of your unique features. Feel free to add it the way you prefer, as long as it is still contained in the webpage.
5. **[+30 bonus marks]** Implement both visualizations (RadViz and Start Coordinates) and include the functionality of selecting a new .csv file and show it in the visualization.
    a. Also, test using the iris dataset (iris.csv). Version uploaded to brightspace contains column names.
    b. Grading will follow the same requirements previously stated on items 1 to 4 with marks: 14, 5, 2, 2 and 7 for the dataset changing functionality (selecting a new csv).
    c. You can do the same assumptions for the datasets as stated previously.
    d. Bonus marks will be added to this or previous assignment with the lowest grade. Maximum grade is still 100.
    e. You can show both visualizations at the same time or provide a way to switch between them.
    f. For changing the CSV, you may use the standard browser file dialog to access the file.